



## **Safety Analysis Report**

Revision 5

December 2023

## EXECUTIVE SUMMARY

SRB Technologies (Canada) Inc. (SRBT) is the world's leading producer of gaseous tritium light sources (GTLS) – flame-sealed borosilicate glass capsules, internally coated with a phosphorescent powder, and vacuum back-filled with elemental tritium gas.

The low-energy beta particles emitted during the decay of the tritium gas interact with the phosphorescent powder and produce visible light. These light sources are then installed into various devices that require a reliable light source without electrical power or other extraneous power source.

As part of our operating licence, SRBT is required to document and maintain a Safety Analysis Report (SAR) that demonstrates to the Canadian Nuclear Safety Commission (CNSC) that the facility is safe to operate.

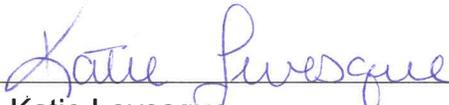
The SAR represents an important component of the licensing basis of the SRBT facility. It contains (or refers to) accurate and precise information on the safety requirements, processes and limits to which SRBT adheres when processing tritium for the purposes of making gaseous tritium light sources, and devices that rely on these sources for illumination.

The SAR provides a comprehensive description of the physical facility, the operating organization and management, and the processes implemented in manufacturing our products and assuring the safety of people and the environment. The information presented herein is intended to present sufficient assurance that nuclear and radiological safety is assured in all facets of facility operation.

# SRBT Safety Analysis Report

## Revision 5

December 2023

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## Revision History

Release Date	Reviewed By	Revision Notes
November 21, 1990 – November 8, 2000	Various	Several iterations of safety analysis were developed and tabled to the AECB / CNSC during this period which cumulatively represented the safety case for facility operation.
July 4, 2006	Ross Fitzpatrick Stephane Levesque Shane MacDougall	Revision II. Formatted to align with available guidance. Integration of previous safety analyses, with update on various characteristics and processes at the facility.
January 15, 2016	Mary-Ann Demers Ross Fitzpatrick Katie Levesque Stephane Levesque Jamie MacDonald Tanya Sennett	Revision 3. Major update in format and content to align with IAEA guidance document GS-G-4.1 in a graded fashion. Expansion of information describing the facility and processes, as well as organizational structures. Incorporation of operating limits and conditions.
November 10, 2017	Mary-Ann Demers Ross Fitzpatrick Katie Levesque Stephane Levesque Jamie MacDonald Tanya Sennett	Revision 4. Revised to incorporate CNSC staff comments on previous revision. New management system processes and structure incorporated. Updated all hypothetical incident scenarios using HOTSPOT modelling software and CSA modelling parameters for dose coefficients. Other minor corrections and updates, as well as disposition of CNSC staff comments (ref: letter from R. Rashapov to S. Levesque, October 31, 2017) on proposed original Revision 4 submitted August 25, 2017.
December 4, 2023	Mary-Ann Demers Ross Fitzpatrick Janice Hollingworth Katie Levesque Stephane Levesque Jamie MacDonald Tanya Sennett	Revision 5. Comprehensive 5-year review and revision. Final step in REGDOC-2.4.4 implementation plan. Revised in accordance with ENG-022, Rev. C. All information updated as required, including disposition of points recorded as a 'minor issue for future correction' on ENG-022-F-01. CNSC feedback on initial version (July 2023) incorporated.

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## Acronyms and Abbreviations

AECB	Atomic Energy Control Board
AHU	Air Handling Unit
ALARA	As Low as Reasonably Achievable
AOO	Anticipated Operational Occurrence
Bq	Becquerel
BDBA	Beyond Design Basis Accident
Ci	Curie
CNSC	Canadian Nuclear Safety Commission
CSA	Canadian Standards Association
DBA	Design Basis Accident
DCF	Dose Conversion Factor
DEC	Design Extension Condition
DEL	Derived Emission Limit
DRL	Derived Release Limit
DSL	Dosimetry Services Licence
DU	Depleted Uranium
ECR	Engineering Change Request
EMP	Environmental Monitoring Program
FHA	Fire Hazards Assessment
FPP	Fire Protection Program
GTLS	Gaseous Tritium Light Source
HT	Elemental Tritium Gas
HTO	Tritium Oxide
IAEA	International Atomic Energy Agency
ICRP	International Commission on Radiation Protection
ISO	International Organization for Standardization
LCH	Licence Conditions Handbook
LLC	Limited Liability Corporation

## **Acronyms and Abbreviations (cont'd)**

LSC	Liquid Scintillation Counting
MSP	Management System Procedure
NCR	Non-Conformance Report
NEW	Nuclear Energy Worker
NRC	National Research Council
NSCA	Nuclear Safety and Control Act
NSPFL	Nuclear Substance Processing Facility Licence
PDP	Preliminary Decommissioning Plan
PIE	Postulated Initiating Events
PIP	Public Information Program
PUTT	Pyrophoric Uranium Tritium Trap
RDU	Remote Display Unit
REGDOC	Regulatory Document
RP	Radiation Protection
SAR	Safety Analysis Report
SRD	Saunders-Roe Developments
SSC	Structures, Systems and Components
TAM	Tritium in Air Monitor
TASC	Tritium in Air Sample Collector
VAC	Volts of Alternating Current
WMP	Waste Management Program

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## 1. Introduction and Basis of Safety Analysis Report

### a. Purpose

The Safety Analysis Report (SAR) is intended to comprehensively document the key information which demonstrates and assures the nuclear and radiological safety of the SRBT facility in all expected operating conditions, as well as in the unlikely event of an accident or facility emergency.

The SAR represents a key source of information used by the Canadian Nuclear Safety Commission (CNSC) when independently evaluating the safety and licensing of the SRBT facility.

### b. Objectives

SRBT operates a nuclear substance processing facility for the purpose of manufacturing gaseous tritium light sources (GTLS) and self-luminous safety products, such as exit signs, which rely on GTLS as their source of illumination.

The objective of the SAR is to capture and present all relevant safety-related information in a sufficiently detailed fashion in support of continued SRBT facility operation and licensing, in a format that meets the requirements of CNSC Regulatory Document (REGDOC)-2.4.4, *Safety Analysis for Class IB Nuclear Facilities*.

### c. Scope

The SAR is intended to encompass all nuclear and radiological aspects of the SRBT facility and operations. In addition, those conventional aspects which may intersect with the nuclear and radiological safety of the facility are also deemed to be within the scope of the SAR.

### d. Guidance and Structure of SRBT SAR

The format and content of the SAR is based on the guidance of REGDOC-2.4.4, which was first published in October 2022. This is the first version of the SRBT SAR which is designed in alignment with the requirements and guidance of this document.

### e. Existing Facility Authorization Status

As of the revision date of this document, SRBT operates a nuclear substance processing facility under CNSC operating licence NSPFL-13.00/2034. This licence is valid from July 1, 2022 for a period of twelve years, expiring on June 30, 2034, unless otherwise suspended, amended, revoked or replaced.

The owner of the property and building in which the facility is located (898702 Ontario Inc.) is fully aware and familiar with the business activities conducted by SRBT<sup>[1]</sup>.

SRBT has been licensed by the AECB/CNSC since December 1990 to process tritium gas for the purposes of manufacturing GTLS and associated products.

f. General Description of Operating Organization

SRBT operates as an incorporated company within the province of Ontario and is 100% Canadian owned and operated.

The President and Vice-President of SRBT represent Senior Management, and are officers of the corporation. The President is the designated holder of the operating licence issued by the CNSC.

Senior Management is ultimately responsible for the overall safety of the facility, and for employing sufficient qualified staff in order to operate the facility in the manner described by the SRBT Management System.

Several organizational managers are employed by Senior Management in order to support safe and efficient operation of the facility. Each key aspect of facility operation is overseen by these managers, including radiation protection, environmental protection, security, fire protection, emergency management, engineering, conventional health and safety, waste management, maintenance and production.

SRBT implements several committees comprised of management and staff, in order to effectively communicate and achieve a high standard of operational safety and manufacturing quality and efficiency.

Detailed information pertaining to the SRBT operating organization can be found in Sections 3 and 9 of this report, as well as throughout the report in general.

## 2. General Plant Description

### a. Applicable Regulations, Codes and Standards

The following regulations, codes and standards are applicable to SRBT operations by virtue of it being a nuclear facility in Canada:

- Nuclear Safety and Control Act (NSCA), including the regulations pursuant to the Act.
- Canada Labour Code Part II, including regulations pursuant to the code.
- Regulations pertaining to the environment by the Ontario government, as relating to the emission of gaseous hazardous substances.
- Applicable codes and standards that are included as part of the compliance verification criteria within the in-force Licence Conditions Handbook (LCH) which supports NSPFL-13.00/2034.

*NOTE: This list only consists of regulations, codes and standards that apply to SRBT due to the specific nature of our business and facility. It is not intended to capture regulations, codes and standards which apply to all Canadian businesses or corporations.*

There are no specific regulations, codes or standards that provide general or specific design criteria for a facility such as SRBT.

### b. Basic Technical Characteristics

SRBT uses vacuum-based gas-handling equipment in order to process tritium gas ( $T_2$ ) for the purposes of manufacturing GTLS.

A GTLS consists of a hermetically sealed borosilicate glass capsule, internally coated with a phosphorescent powder and filled with elemental tritium gas. The low-energy beta radiation emitted by the tritium gas upon decay interacts with the powder and causes it to emit visible light. These 'Betalights'® are then installed into various devices which provide a reliable, uninterrupted source of light when conventional power sources are unfeasible or suboptimal.

SRBT operates several 'processing rigs' in order to create these GTLS. These rigs are vacuum-based systems of valves, pumps and tubing, and are designed to have a pyrophoric uranium tritium trap (PUTT) attached in order to fill light sources.

A PUTT is a specialized vacuum device that contains up to 30 grams of uranium (typically depleted uranium (DU)). Uranium is used as an adsorbent material for the tritium gas under vacuum conditions. At typical room temperatures, tritium gas will

adsorb onto the DU and be retained as a hydride. This property of DU allows for the safe and secure storage of significant quantities of tritium gas over time.

When the DU is heated to around 400 degrees C, tritium gas will begin to be released from the DU-hydride matrix. When these processes are performed at vacuum pressures in the absence of air or other gaseous contaminants, tritium gas can effectively be processed and used to fill light sources. This is the principal technical characteristic of the processing facility with respect to tritium.

Tritium processing equipment is located in Zone 3 of the facility, denoting the radiological zone with the greatest potential for exposure to hazards posed by the use of tritium gas. Processing takes place in an area known as the Rig Room.

Within the Rig Room, four double-sided ventilated cabinets house the main filling stations where light sources are filled with tritium. A total of eight processing rigs may be installed and in service depending on operational requirements.

A second area within Zone 3 is known as the Laser Room. In this area, laser cutting equipment is used to process long, thin GTLS which are cut to specification using specialized lasers.

Finally, within Zone 3 is the Tritium Laboratory, which houses equipment known as the Bulk Splitter. This system is used to take bulk amounts of tritium purchased by SRBT on specialized containers and subdivide it onto containers that will interface with the processing rigs. The principles of operation of the bulk splitter are the same as those used on the processing rigs.

More information on the technical characteristics of the facility (both nuclear and non-nuclear) can be found in Section 6 of this report.

#### c. Facility Description and Layout

SRBT's facility is located at 320 Boundary Road, Pembroke, Ontario. Pembroke is located approximately 150 km northwest of Ottawa on the south shore of the Ottawa River at the mouth of the Muskrat River.

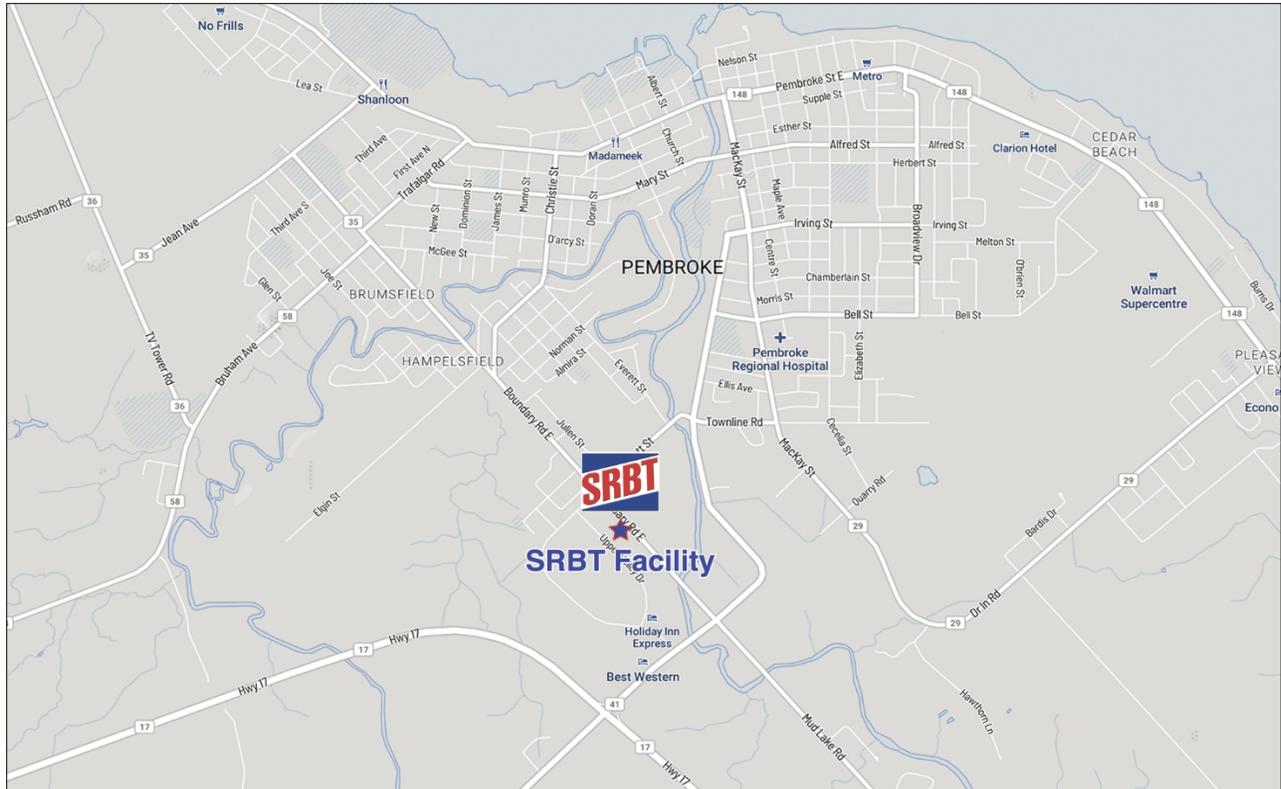


FIGURE 1: FACILITY LOCATION

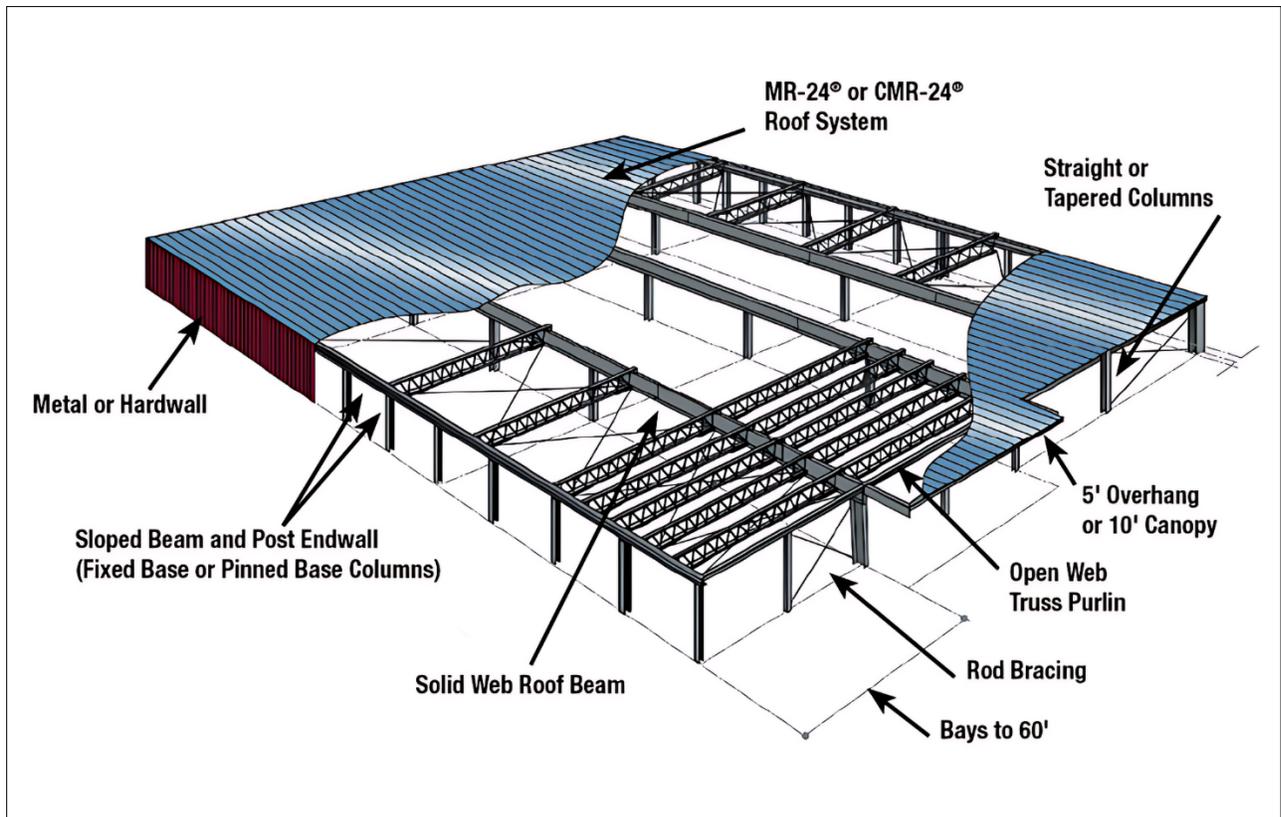


FIGURE 2: FACILITY CONSTRUCTION TYPE

The facility is located in an industrial park in the southern part of the city of Pembroke, and is housed in a three-unit Butler Building complex owned by 898702 Ontario Inc. The complex is comprised of a steel frame with a metal and block exterior.

The building is divided into four main parts that are separated by cinderblock firewalls, which are located:

- Between Zone 3 and the rest of the facility.
- Between the original main facility and the first expansion (what is now the shipping area and south offices).
- Between the first expansion and the latest expansion in 2016.

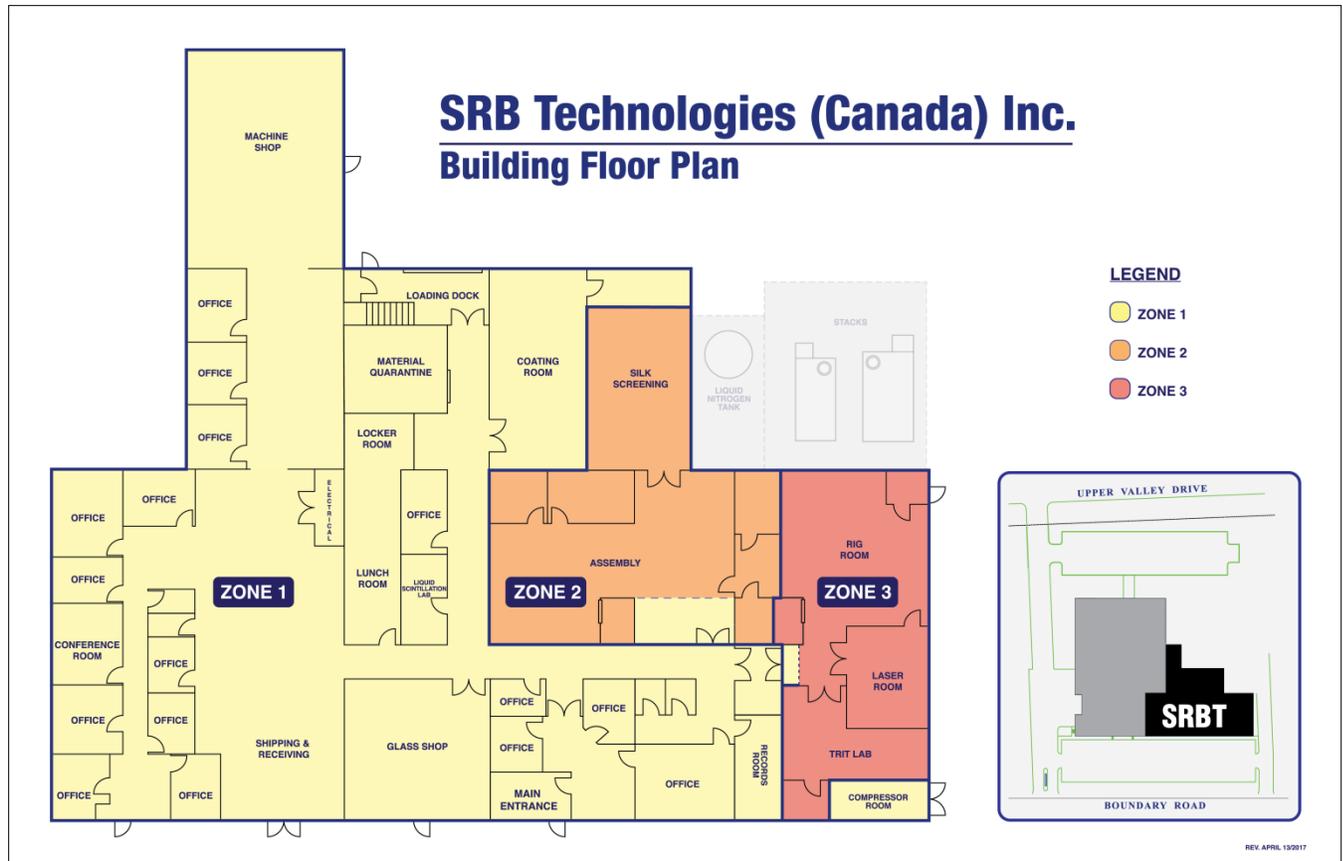
The wall between the SRBT facility and the sole neighbouring building tenant is a fire separation with a fire resistance rating of one hour. SRBT occupies the unit at the northern end of the building (Unit 140).

SRBT is typically accessed by vehicular traffic via Boundary Road. Road access is provided at two points. In addition, access from Upper Valley Drive is provided to the southwest via a roadway to the south side of the complex.

All building services are provided by conventional means. The City of Pembroke provides water and sewer systems, and electricity and natural gas supply is provided by the common publicly-accessible utilities.

The facility is divided into several main areas that support the manufacture of GTLS and associated devices:

- Office areas at the front end of the facility, and in the south and west ends.
- The Glass Shop where borosilicate glass capsule preforms are made.
- The Coating Room where the phosphorescent powder coating is applied to the internal surfaces of the glass preforms.
- The Rig Room where tritium gas is processed into the capsules, which are then sealed as a GTLS.
- The Assembly area where GTLS are inspected for quality and assembled into devices.
- Shipping and receiving where packages of GTLS and devices are prepared and shipped in accordance with requirements.
- The Molding and Machining area where cases for specialized safety devices are manufactured from raw plastics.
- The Stores area where materials are kept until required by process.
- The Liquid Scintillation Counting laboratory where samples are analyzed for tritium.



**FIGURE 3: FACILITY FLOOR PLAN**

Radiologically, the facility is divided into three zones as outlined in the Radiation Safety Program. These zones are depicted in the above floor plan. See Section 11 for a detailed description of the zoning of the facility.

d. Operating Modes

There are two facility operating modes that are considered to be relevant to the safety analysis:

- Tritium Processing – the mode of operation where tritium is being processed in the Rig Room: GTLS filling operations, bulk splitting operations, and / or laser cutting operations are being conducted.
- Tritium Processing Shut Down – the mode of operation where tritium is not being processed in the Rig Room.

Tritium processing is prohibited during times where measurable precipitation is occurring. This restriction is in place in order to provide protection of groundwater resources. Further information on the subject of groundwater protection is provided in Section 13 of this report.

## e. Additional Referenced Analyses

The following list of references constitutes the majority of the analysis of the safety of the SRBT facility since operation began in 1990. Several of these documents are referred to within this report. It is not intended to be a comprehensive list:

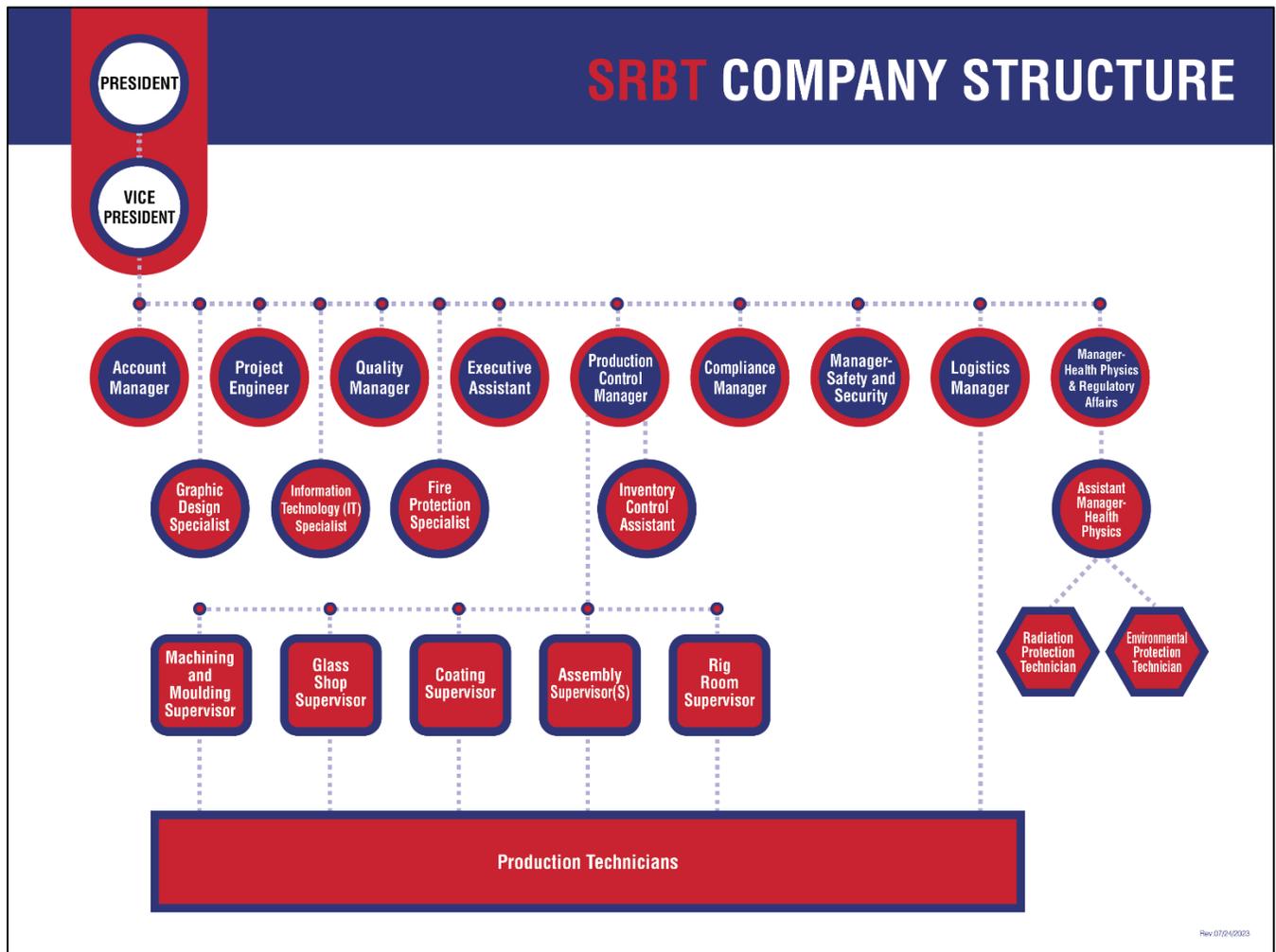
- Nuclear Safety Note NSN-SRD-071, Population Densities and Estimated Doses from Accidental Releases for the SRB Tritium Lamp Plant, Pembroke (1990)
- Atomic Energy Control Board Member Document 90-192, Saunders-Roe (Canada) Inc. Licensing for a Gaseous Tritium Light Source Manufacturing Facility (1990)
- Safety Analysis Report, Potential Radiological Impact from Hypothetical Release of Tritium at the SRB Technologies, Canada Facility, Prepared by Alpha-Dyne LLC (1996)
- CRWS Report 6523-03, A Revised DEL Calculation for the Pembroke Facility (1996)
- Safety Analysis Report for Potential Radiological Impact from Hypothetical Release of Tritium from a Smouldering Fire Incident at the SRB Technologies, Canada Facility, Prepared by Alpha-Dyne LLC (2000)
- Canadian Environmental Assessment Act Screening Report – Operation of SRB Technologies (Canada) Inc. Pembroke, Ontario (2000)
- SRBT Safety Analysis Report Rev. II (2006)
- Derived Release Limits (DRLs) for the SRB Pembroke Facility (2006)
- Systematic and Quantitative Analysis of Tritium Sources and their Potential Contribution to Groundwater Contamination (2007)
- Comprehensive Report – Groundwater Studies at the SRB Technologies Facility, Pembroke, ON (2008)
- Review of Hypothetical Incident Scenarios (2008)
- Release Limit Rationale in Support of Licence Renewal Application (2009)
- SRBT Conceptual Model Document in Support of the Annual Status Report to the Commission (2011)
- CNSC Environmental Assessment Information Report: SRBT NSPFOL Licence Renewal (2015)
- Derived Release Limits (DRLs) for the SRB Pembroke Facility – 2016 Update (2016)

- Environmental Risk Assessment (ERA) – SRB Technologies (Canada) Inc. (2021)
- Derived Release Limits (DRLs) for the SRBT Pembroke Facility – 2021 Update (2021)
- CNSC Environmental Protection Review Report: SRB Technologies (Canada) Inc. (2022)

### 3. Management of Safety

#### a. Organizational Structure

The following organizational chart represents the current organizational structure (as of the revision date of this document) which ensures SRBT meets the Nuclear Safety and Control Act, Regulations and conditions of the Licence.



**FIGURE 4: ORGANIZATIONAL CHART**

This organization is in place to ensure that SRBT is qualified to carry out the licensed activities, and, in carrying on those activities, SRBT makes adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security.

The President and Vice President comprise the Senior Management team, with the President representing the facility authority and licence holder. Senior Management is supported by several managers who are responsible to oversee all key elements of

facility operation and safety. SRBT management is responsible and accountable for compliance with the NSCA and associated regulations, with the ultimate accountability being held by the President.

Each production area includes assigned supervisors who possess an extensive amount of expertise and experience in their particular area. Production Technicians perform processing and manufacturing operations under the guidance and oversight of supervision.

Detailed descriptions of each titled organizational unit are provided for within the descriptive document *Organizational Structure and Responsibilities*.

b. Operational Management Philosophy

SRBT implements a management system that complies with the requirements of Canadian Standards Association (CSA) N286-12, *Management system requirements for nuclear facilities*.

The chief operational management philosophy of SRBT is contained within the Quality Manual - *Quality Policy*, where the company vision, mission, goals, values and policy are documented.

The Quality Policy represents the main statement of SRBT on our safety, health and environmental policies.

The Quality Policy is provided below in its entirety in Figure 5. It is posted on our website, as well as throughout the facility for all staff to refer to. Workers are informed of the policy upon hiring, and it is emphasized that all personnel are committed to compliance with our management system, including all safety programs and procedures.

c. Safety Culture

As required by N286-12, SRBT management uses our management system to understand and promote a strong, positive and healthy safety culture.

A safety culture monitoring process is implemented in order to provide management with a consistent methodology of evaluating the safety culture of the organization, and to take action to ensure that it remains healthy and strong. As clearly shown by the Quality Policy, the safety of persons and the environment are the overarching priority of the operation of the facility at all times, and by all employees.

## QUALITY POLICY

### **OUR VISION**

Strive to maintain or exceed the standing required to allow our company to process tritium and manufacture life safety devices to fulfill the needs of our customers.

### **OUR MISSION**

Continuously improve company programs in order to meet or exceed the requirements of the Nuclear Safety and Control Act, Regulations and conditions of the licence in order to strive to achieve higher grades in all safety areas.

### **OUR GOALS**

1. To promote a strong safety culture throughout the organization by having all employees continuously assess and analyze any impact the operations may have on the public and the environment.
2. To reduce any risk to the public and the environment due to the operations to ensure that requirements of the Nuclear Safety and Control Act, Regulations, conditions of the licence and ISO 9001 requirements are met or exceeded.
3. To be transparent, visible and open with our community, our regulators, and our staff.
4. To ensure that the products are supplied to customer requirements and specifications and to the requirements of the Nuclear Safety and Control Act, Regulations, conditions of the licence and ISO 9001 requirements.
5. To continue to lower emissions and improve the effectiveness of our programs and processes.

### **OUR VALUES**

We will achieve our goals by acting with integrity with the regulators, the members of the public and our employees, and by respecting their input and contribution by making improvements based on this input.

### **OUR POLICY**

It is the policy of the company and its employees to learn from our operational experience and research, to consider the input of all stakeholders and be conservative in our decision making to ensure the protection of the public and the environment to achieve the goals that we have set to meet our ultimate vision.

Compliance to the Quality Management System is an obligation throughout the company for all employees; all workers are committed to adhere with all requirements of the Quality Management System, and are encouraged to contribute to the continual improvement and upgrading of the company's Quality Management System.

**FIGURE 5: QUALITY POLICY**

#### d. Quality Assurance

SRBT implements an overall Quality Manual that acts as the top-tier document of our Management System. All programs, processes and procedures must comply with the provisions of the Quality Manual.

Numerous processes contribute to the assurance of quality and safety, including (but not limited to):

- Internal audits are independently performed by the Compliance Manager to ensure that all requirements are being met, and improvement is driven continuously. The requirements of QAS-007, *Audits* govern these activities.
- Management review processes are conducted on a periodic basis in order to ensure consistent review of all aspects of operations. The requirements of MSP-008, *Management Review* govern these activities.
- Self-assessment processes are also in place to ensure that managers routinely reflect on their areas of responsibility in a self-critical fashion in order to drive continuous improvement. The requirements of MSP-010, *Self-assessment* govern these activities.
- Procurement of goods and services are controlled in order to ensure that an acceptable level of quality is achieved. The provisions of the Contractor Management Program govern all aspects of external services, while MAT-013, *Supplier Approvals* and MAT-014, *Supplier Evaluations* ensure that vendors are vetted and approved for safety-significant goods and services that are procured by SRBT.

The reader should consult with the in-force revision of the Quality Manual for further detailed information on the Quality Assurance processes implemented by SRBT.

#### e. Committees

SRBT implements a comprehensive set of committees that are tasked with ensuring that safety issues relating to all aspects of the operation of our facility are understood and addressed.

Committees are often made up of representatives of both management and worker-level employees, in order to provide perspectives from all levels of the organization. These committees are staffed in a way that ensures that a wide range of experience and knowledge is available and focused on the issues which a particular committee is responsible for.

The process by which committees are formed and operate is fully detailed in the descriptive document *Committee Process and Descriptions*. The following committees

in particular play key roles in ensuring compliance, and continuous, safe operations of the facility:

- Executive Committee
- Health Physics Team
- Mitigation Committee
- Workplace Health and Safety Committee
- Fire Protection Committee
- Maintenance Committee
- Training Committee
- Waste Management Committee
- Safety Culture Committee
- Public Information Committee
- Production Committee

These sub-organizations ensure that a level of independent oversight is applied in all pertinent areas relating to safe operations.

f. Monitoring and Review of Safety Performance

As noted above, SRBT implements a comprehensive internal audit program that provides independent assurance that the safety policies of the organization are being implemented effectively, and that lessons are learned from experience of both our organization and external parties in order to continuously enhance safety performance.

Management system process MSP-012, *Corrective Action* ensures that issues are identified, corrected and documented in order to help the organization continuously improve. Non-Conformance Reports (NCR) represent a key tool when management review and self-assessment takes place. Any staff member may request that an NCR be raised to document a problem, issue or event that is out of conformance with expectations or requirements.

#### **4. Site Characteristics**

##### **a. Site Location – Area Under Control of Licensee**

The SRBT facility is located at 320 Boundary Road in Pembroke, Ontario. The building which houses the facility is situated on parts of lots 28 and 29 of Concession 1, and was constructed in 1990 with a slab-on-grade floor.

The current zoning of the facility is M3 (Industrial Park Zone) as designated under municipal by-law 88-17. This zoning excludes residential use.

SRBT fully controls approximately 1,400 square metres of the interior floor space of the building, as well as the immediate surrounding grounds outside of the facility.

A fenced compound is maintained on the northwest corner of the facility, housing the primary active ventilation system components (fans, motors, stacks).

The floor plan diagram in Section 2 illustrates the area of the building and property that are under the direct control of SRBT.

##### **b. Site Location – Surrounding Area**

The SRBT facility resides within an area known as TransCanada Corporate Park – an industrial park within the boundary of the City of Pembroke.

Within the same building as the SRBT facility are two other commercial / industrial businesses. The adjacent business is a company that specializes in the manufacture of personal protective equipment and clothing intended for such application as bomb disposal and military special operations. A third tenant provides various industrial process gas and equipment to local customers.

Directly across the road from SRBT is a commercial pool and spa services vendor, as well as a small propane distribution facility. Other commercial businesses are located along Boundary Road in both directions.

Farmland is generally to the west of the facility, extending out approximately 300-500 metres. The Pembroke Fire Department is located 200 metres to the west of the facility, while the local detachment of the Ontario Provincial Police is 500 metres due southwest.

To the southeast there are a dance studio and an electrical supply store located about 250 metres away. To the south, there are two major-chain hotels, an engineering firm, and another office building occupied by the County of Renfrew.

To the northeast of the property is the Pembroke and Area Community Centre, which houses a full-size skating rink. Several other businesses are located within 500 metres to the north and north east.

To the east-southeast, an expanse of land that used to host a lumber yard and mill is present, but is currently unused.

The nearest zoned residential area is called Johnson's Meadows, which was originally developed in the 1970s but has expanded since. From the location of the active ventilation system stacks, the nearest residential area is approximately 250 metres to the northwest. In addition, a narrow band of land along Boundary Road to the southeast is zoned residential.

The main portion of the City of Pembroke lies north of the facility.

#### c. Geological Characteristics

The facility is located on the oldest part of the Canadian Shield, in the Central Metasedimentary Belt Boundary and the Central Gneiss Belt of (tectonic) Grenville Province. The dominant crust is the "Algonquin Terrane" and the most common deposit is the Opeongo domain. The Ottawa Valley Clay Plain and the Petawawa Sand Plain are the physiographic regions present.

The soils in the area of the facility are generally clay silt, silty clay and clayey silt mixtures, and for the most part are characterized by relatively poor drainage.

Additional detailed information pertaining to the site geology is available in the 2008 Comprehensive Report – Groundwater Studies at the SRB Technologies Facility, Pembroke, ON, prepared by EcoMetrix Inc<sup>[2]</sup>.

#### d. Seismological Characteristics

The SRBT facility lies within the Western Quebec Seismic Zone, which constitutes a vast territory that encloses the Ottawa Valley from Montreal to Temiscaming, as well as the Laurentians and Eastern Ontario.

For the period of December 1990 – May 2023, a total of 1,417 recorded earthquakes greater than 2 on the Richter scale have been recorded by the National Research Council (NRC) within a radius of 200 km from Pembroke, none of which were higher than 5.2 on the Richter scale.

All earthquakes recorded within a 20 km radius of Pembroke were less than 3.5 in magnitude, except for one instance on October 20, 2015 (magnitude of 3.7). NRC defines earthquakes between 3.5 and 5.4 on the Richter scale to rarely cause damage, with earthquakes of a magnitude less than 3.5 not generally being felt.

More information on the seismological characteristics of the Pembroke area can be found at [www.earthquakescanada.nrcan.gc.ca](http://www.earthquakescanada.nrcan.gc.ca)<sup>[3]</sup>.

e. Volcanic Characteristics

The area where the SRBT facility is located is extremely stable volcanically, with no known activity or hazard potential requiring special design consideration.

f. Hydrological Characteristics

There are no large bodies of water that interface with the facility or the property upon which the facility resides.

To the south and east of the property lies the Muskrat River, which flows in a north direction through the City of Pembroke, ultimately meeting the Ottawa River.

The Muskrat River is approximately 420 m away from the site of licensed activity at its nearest point, due directly east of the facility. The smaller Indian River lies to the north and west of the facility, being approximately 1,000 m away from the facility at its nearest point due directly north.

The Muskrat River is quite narrow and its elevation is approximately 20 meters below the elevation of the SRBT facility. It is extremely unlikely that this river could present a flooding hazard to the facility.

The Ottawa River lies north of SRBT, approximately 4 km due north. This river delineates the northern boundary of the city of Pembroke. At this distance it is also extremely unlikely that this river could present a flooding hazard to the facility.

g. Hydrogeological Characteristics

The local characteristics of the hydrogeology of the area are well understood, and are documented within the 2008 Comprehensive Report – Groundwater Studies at the SRB Technologies Facility, Pembroke, ON, prepared by EcoMetrix Inc<sup>[2]</sup>.

An extensive amount of research has been invested in understanding the hydrogeology and groundwater conditions at the SRBT facility. Overburden typically includes a thin layer of topsoil, underlain at some locations by silty sand or gravel fill with underlying native material consisting mainly of grey silty clay, generally compact above the water table. Bedrock ranges between 5.2 to 7.5 metres below ground surface, and consists of shaley limestone. The upper 1 to 3 metres of bedrock exhibits fracture, with rock quality designation values between 0% and 75%.

The direction of groundwater flow is generally to the east toward the Muskrat River, and water levels in the area range between 120-130 metres above sea level, with seasonal variations ranging over 7 metres.

For a detailed picture of the hydrogeology of the area upon which the facility is located, the reader is encouraged to consult the 2008 Comprehensive Report – Groundwater Studies at the SRB Technologies Facility, Pembroke, ON, prepared by EcoMetrix Inc [2].

h. Meteorological Characteristics

Temperature:

The following temperature data is derived from the ‘Pembroke’ weather station, covering 13 years of data between November 10, 2010 to June 12, 2023, as obtained from <https://climatedata.ca>[4]:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Daily Mean (°C)	-11.3	-10.0	-4.0	4.2	12.4	17.1	20.1	18.8	14.2	7.9	0.2	-6.6
Extreme Maximum (°C)	11.0	13.0	20.4	27.9	35.2	34.2	35.6	34.1	32.6	28.8	24.3	15.9
Date	2018-01-12	2017-02-23	2021-03-23	2023-04-13	2020-05-27	2012-06-20	2018-07-05	2016-08-10	2017-09-25	2011-10-08	2020-11-09	2015-12-24
Extreme Minimum (°C)	-35.7	-38.2	-31.7	-17.6	-6.4	-0.5	5.6	3.5	-4.0	-10.0	-25.6	-31.3
Date	2013-01-23	2023-02-04	2016-03-03	2016-04-10	2020-05-12	2020-06-01	2015-07-16	2013-08-24	2014-09-19	2020-10-31	2018-11-23	2013-12-17

**FIGURE 6: PEMBROKE WEATHER STATION DATA (2010-2023)**

The following temperature data is derived from the most recent two DRL reports<sup>[5,6]</sup>; data is gathered from the SRBT weather station:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5-year average temp (°C) (2011-2015)	-11.3	-9.6	-1.8	5.1	14.6	18.1	20.7	19.2	15.1	8.6	1.4	-4.9
5-year average temp (°C) (2016-2021)	-8.8	-7.4	-5.4	4.0	12.3	17.6	21.7	19.6	15.3	8.2	3.7	-6.3

**FIGURE 7: WEATHER STATION MONTHLY AVERAGE TEMPERATURE DATA (2011-2021)**

The following precipitation data is obtained from the 1981-2010 ‘Canadian Climate Normals’ dataset<sup>[7]</sup>, via [https://climate.weather.gc.ca/climate\\_normals/index\\_e.html](https://climate.weather.gc.ca/climate_normals/index_e.html), for the Chalk River monitoring station, which is the closest proxy to the facility with a comprehensive data set.

The 1981-2010 data is the most recent set of data openly available at time of this SAR revision.:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Rainfall (mm)	14.9	9.8	29.1	50.1	85.0	86.8	84.8	80.7	89.4	79.8	53.0	18.9	682.2
Snowfall (cm)	42.3	34.2	28.1	9.4	1.7	0.0	0.0	0.0	0.0	3.6	22.7	40.1	182.0
Precipitation (mm)	55.2	43.7	56.8	59.3	86.7	86.8	84.8	80.7	89.4	83.4	75.3	57.3	859.3
Extreme Daily Rain (mm)	27.8	25.8	36.1	36.5	58.7	70.2	68.6	71.1	65.2	43.8	38.6	22.6	
Date	1997-01-04	1983-02-02	1980-03-21	1998-04-16	2000-05-08	2002-06-11	1994-07-08	1965-08-02	2005-09-25	1979-10-05	1999-11-02	1971-12-15	
Extreme Daily Snow (cm)	28.5	35.9	40.1	26.0	13.0	0.0	0.0	0.0	0.3	16.0	31.4	28.0	
Date	1979-01-13	1997-02-21	1979-03-17	2005-04-02	1997-05-03	-	-	-	1992-09-29	1997-10-26	1989-11-27	1986-12-02	
Extreme Daily Precipitation (mm)	28.5	35.9	49.0	36.5	58.7	70.2	68.6	71.1	65.2	43.8	41.1	29.0	
Date	1979-01-13	1997-02-21	1973-03-17	1998-04-16	2000-05-08	2002-06-11	1994-07-08	1965-08-02	2005-09-25	1979-10-05	1974-11-20	1984-12-28	
Extreme Snow Depth (cm)	55	64	68	30	1	0	0	0	0	0	18	43	
Date	2006-01-30	2006-02-24	2001-03-14	2001-04-01	2005-05-02	-	-	-	-	-	2002-11-30	2004-12-24	

**FIGURE 8: CHALK RIVER PRECIPITATION STATISTICS**

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
≥ 0.2 mm	15.5	11.8	11.3	11.7	13.6	13.7	13.9	12.9	14.4	15.0	15.8	15.8	165.3
≥ 5 mm	3.9	2.9	3.9	4.2	5.3	5.3	5.3	4.8	5.5	5.4	5.2	4.1	55.7
≥ 10 mm	1.4	1.2	1.7	1.8	3.1	2.8	2.4	2.7	2.9	3.0	2.3	1.3	26.4
≥ 25 mm	0.04	0.08	0.12	0.15	0.48	0.58	0.54	0.56	0.42	0.46	0.27	0.12	3.8

**FIGURE 9: CHALK RIVER DAYS WITH PRECIPITATION**

Monthly average wind speeds based upon data from the monitoring station at the National Research Forestry near Petawawa, Ontario are presented below:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
km/h	10.4	10.4	11.6	11.8	10.5	10.0	9.1	8.7	9.3	10.2	10.7	10.1
m/s	2.90	2.90	3.20	3.30	2.90	2.80	2.50	2.40	2.60	2.80	3.00	2.80

**FIGURE 10: MONTHLY AVERAGE WIND SPEEDS**

Wind frequency is generally characterized by west → east patterns (roughly 40% of the time based on SRBT data). Data on wind frequency from the 2021 SRBT Derived Release Limits<sup>[6]</sup> is presented below.

Wind Direction		Petawawa 1989-2004	SRBT 2011-2015		SRBT 2017-2019	
From	To		24 hour	12 hour	24 hour	12 hour
N	S	4.16%	5.90%	6.03%	5.31%	5.23%
NNE	SSW	2.45%	6.10%	6.55%	7.04%	7.19%
NE	SW	2.53%	5.20%	5.34%	5.88%	6.12%
ENE	WSW	2.38%	4.43%	5.01%	3.12%	3.47%
E	W	3.79%	5.56%	5.75%	3.29%	3.41%
ESE	WNW	10.58%	5.32%	5.02%	4.00%	4.18%
SE	NW	12.17%	5.72%	6.10%	2.72%	2.89%
SSE	NNW	4.64%	5.86%	6.11%	3.73%	3.68%
S	N	3.49%	5.26%	5.08%	3.91%	3.99%
SSW	NNE	3.69%	5.66%	5.18%	5.00%	4.89%
SW	NE	4.86%	6.49%	6.01%	4.91%	4.58%
WSW	ENE	6.26%	8.16%	7.34%	7.20%	5.84%
W	E	9.41%	7.74%	7.24%	13.40%	12.22%
WNW	ESE	10.68%	9.19%	9.75%	14.87%	15.94%
NW	SE	11.35%	7.80%	8.05%	10.43%	11.31%
NNW	SSE	7.55%	5.59%	5.44%	5.19%	5.06%

**FIGURE 11: WIND DIRECTION PROBABILITY DISTRIBUTION**

According to the Atlas of Canada, more than 70 tornadoes strike on average in a given year within the country. Approximately one-third of these typically occur in the province of Ontario, although the vast majority of these tend to happen in the extreme southern part of the province.

There have been three known categorized tornadoes in the Renfrew County area since 1980<sup>[8,9,10]</sup>.

Date	Location	Category	Maximum Wind Speed
August 21, 2004	Burnstown, ON	EF1	unrecorded
September 21, 2018	Calabogie, ON	EF1	175 km/h
September 13, 2020	Pembroke, ON	EF0	125 km/h

**FIGURE 12: KNOWN CLASSIFIED TORNADO EVENTS**

The following extreme meteorological conditions are on known record for the area:

Condition	Value	Date
High Temperature	39.4 °C	July 20, 1977
Low Temperature	-39.0 °C	January 3, 1981
Daily Precipitation	71.1 mm	August 2, 1965
Daily Snowfall	40.1 cm	March 17, 1973

**FIGURE 13: WEATHER EXTREMES**

From the perspective of radiological and nuclear safety, extreme weather conditions such as heat, cold or precipitation are not expected to result in an increase in the level of risk presented by facility operation. In the history of SRBT, there have been no safety events that were attributed to meteorological conditions affecting the facility.

There are no active systems (such as cooling pumps or emergency electrical power supplies) that can be negatively affected by extreme weather causing an external safety consequence.

Ventilation systems have historically continuously operated as required in the extreme cold and heat, as well as during significant precipitation. If the loss of ventilation were to occur due to extreme weather, the safety of the facility is assured through fail-safe design of tritium processing systems (just as it is during a conventional power outage).

Should a local emergency situation be declared due to extreme meteorological conditions, the tritium processing systems at SRBT can be easily shutdown and placed into a passive safe state, with no active safety features being needed to ensure safety of the environment, workers or the public.

i. Present and Projected Surrounding Population Distribution

The 2021 population of the City of Pembroke was assessed by Statistics Canada<sup>[11]</sup> to be 14,364 persons. Adjacent to the City of Pembroke is Laurentian Valley Township, which is considered a census subdivision of the Pembroke Population Centre. The township lies to the south and west of the SRBT facility. The 2021 population of the township was assessed to be 9,450 persons.

The representative 'critical group' of public residents is hypothetically located in the north-northwest direction from the facility, approximately 250 – 300 metres from the site. A subdivision known as Johnson Meadows exists in this area. Public residences are also located to the south-southeast of the facility on the opposite side of the Muskrat River.

j. Present and Projected Surrounding Land Use

The facility and immediately surrounding areas are zoned for industrial and commercial use. In addition, a community centre is located to the direct north of the facility.

There are currently no known major developments underway or projected within the surrounding land.

k. Evaluation of Site-Specific Hazards

There are no known site-specific hazards associated with the area where the SRBT facility lies, other than any hazard that may present itself in a stable, industrial setting near an urban centre.

l. Proximity of Industrial Facilities

Several small businesses and industrial facilities operate in proximity to the SRBT facility. Two industrial facilities within 250 m of SRBT maintain hazards analyses and emergency plans, as per applicable regulatory requirements. These facilities present potential hazards that, if realized, could have an impact on facility operations and the physical facility itself.

A small compressed industrial process gas retail supplier (Linde Canada Ltd.) occupies the southernmost unit of the building within which the SRBT facility resides. A number of compressed gas cylinders are stored and distributed from this facility, containing gases including oxygen, nitrogen, argon, and acetylene. A 3,000-gallon bulk liquid nitrogen filling station is also present and used to fill smaller cylinders for sale.

On the opposite side of Boundary Road, a recently upgraded bulk liquid propane storage depot is operated by Superior Propane as a truck filling station for distribution of propane to customers in the area. This facility is approximately 200 metres to the east of SRBT, and includes an above-ground 49,000 USWG capacity propane storage tank.

The emergency plans and available hazard assessments for both of these industrial facilities were requested; where made available, they have been reviewed in order to understand the potential impacts on SRBT should an emergency situation arise.

In the case of the industrial process gas retailer, the emergency plan in place includes provisions for the Emergency Coordinator to notify neighbours when an emergency

situation develops. Examples of potential emergencies at this location include building fires, atmospheric hazardous materials releases, gas cylinder fires, and cryogenic releases or spills.

In the case of the propane distribution facility, a Level 2 Risk and Safety Management plan has been documented and accepted by the independent safety authority for this sector. SRBT has assessed key elements of this plan in order to determine the risks presented by this facility, and any potential impact on our facility.

The SRBT facility resides within the analyzed impact zone for five worst-case scenarios, including fatality due to a boiling liquid expanding vapour explosion (BLEVE), loss of containment accidents, and flash fire / vapour cloud explosion.

The hazard assessment shows that the expected risk probability at the distance that the SRBT facility is located relative to the propane storage facility falls within the Major Industrial Accidents Council of Canada (MIACC) acceptance threshold established for the zone, correlating to less than a 10 in a million chance for a fatality, per year.

For both neighbouring industrial facilities, the worst-case hypothetical accidents do present the potential for physical interactions with the SRBT facility should they occur (i.e. blast wave; thermal radiation effects from a fireball; explosion of compressed gas cylinders with accompanying projectiles).

Although there may be resultant building damage and conventional safety impacts to staff, the risks presented by these effects are not anticipated to increase the probability or consequences relating to nuclear, environmental or radiological safety beyond those already established for postulated initiating events of internal origin, for the following reasons:

- The probability of any significant accident occurring at either site is extremely low; in the case of the propane distribution facility, it has been shown to be below established acceptance criteria for this type of installation.
- If an emergency situation were to develop at either of these facilities, the respective emergency plans both include provisions for SRBT to be notified. Due to the nature of the possible accidents, there is a high probability that a warning will be given prior to the accident taking place, allowing personnel to put the facility and all nuclear substances into safe state (i.e. no tritium processing, all containers shut and sealed).
- The probability of possible physical interactions decreases with both distance and with the presence of physical obstructions between the accident location and the facility of concern. The gas retailer and the tritium processing areas of the SRBT

facility are separated by several walls, including another business between the two facilities. The propane distributor is 200 metres in distance from SRBT, and there is a building directly in the line of sight of the propane storage tank and the SRBT facility that would shield any blast wave or instantaneous thermal radiation effects.

- Any blast wave, projectile or fireball from a worst-case accident will be de-energized to an extent by the SRBT building itself upon impact, thus reducing the probability of an effect being realized on the storage and containment of nuclear substances.
- Any interaction between the physical effect of the worst-case accident and nuclear substances in the facility is expected to be bounded by the analysed worst-case scenarios for the SRBT facility alone, from the point of view of radiological hazards to workers, the environment and the public.

Based upon the review and assessment of the available hazard analysis of other nearby industrial facilities, and in particular on the safety analysis conclusions associated with other bounding beyond-design basis accidents (see Appendices A and B), there are no hazards that are presented by these facilities that require special consideration in the design and operation of our facility, in order to mitigate nuclear, radiological or environmental consequences stemming from the nuclear substances processed in our facility.

m. Proximity of Transport Facilities

There are no major rail lines, airports, ports or other transport facilities within several kilometers of the SRBT facility which would present a hazard that requires special consideration in the design and operation of the facility, based upon the lack of historical events of this nature in the area near the facility.

n. Proximity of Military Facilities

The closest military facility is Garrison Petawawa, one of the major military bases in Canada. The base is approximately 17 kilometers away from the SRBT facility, and its presence is not expected to present a hazard that requires special consideration in the design and operation of the facility, based upon the lack of historical events of this nature in the area near the facility.

o. Radiological Conditions due to External Sources

There is one other major nuclear facility in the area surrounding SRBT. The Canadian Nuclear Laboratories in Chalk River, Ontario, is located approximately 35 km to the north-west. Just as with SRBT, this facility is authorized by licence by the CNSC to

release radioactive substances to the environment, including tritium; however, the existence of this facility nearby does not present a hazard that requires special consideration in the design and operation of the facility.

p. Site-Related Issues in Emergency Management

SRBT relies upon both internal and external support in the event of emergency. In the history of operations, there has not been an identified site-related issue that could adversely affect emergency response capabilities of support organization.

Refer to Section 12 for a detailed description of the provisions in place for the management of emergency situations.

q. Monitoring of Site-Related Parameters

There are several parameters that are monitored in order to support safe operation of the facility.

SRBT employs an extensive Environmental Monitoring Program that evaluates the level of tritium in a wide variety of media in the affected area surrounding the facility. Detailed information is presented in Section 13 of this report.

In addition, gaseous and liquid effluent parameters are monitored closely through an Effluent Monitoring Program to ensure that SRBT meets and exceeds all requirements and expectations with respect to releases of nuclear substances.

Precipitation is monitored in real time in order to provide Rig Room staff with immediate feedback when rain or snow begins to fall. This ensures that processing operations are shut down at the soonest possible juncture, thus ensuring the optimized safety of groundwater and the environment in general.

The weather station collects data pertaining to wind speed and direction, relative humidity, temperature and other meteorological data in order to support analysis of environmental and effluent monitoring data.

## 5. General Design Aspects

### a. Facility Safety Objectives

#### Context for Safety Objectives – Normal Operations

For normal facility operations, the primary safety objective that governs the design and operation of the facility is to ensure that all regulatory limits relating to radiation dose (both nuclear energy workers (NEW) and members of the public) are not exceeded, and that doses are maintained as low as reasonably achievable (ALARA) at all times.

- Public Dose

Annual doses to the most-exposed member of the public have been assessed as well below regulatory limits throughout the history of the facility.

Based upon Environmental Monitoring Program (EMP) data, highly conservative dose calculations show that no member of the public is expected to be exposed to greater than around 10  $\mu\text{Sv}$  in any given year – a dose that has been noted to correspond to a trivial level of risk<sup>[12]</sup>.

Note that for the preceding five years of operations (2018-2022), the average calculated dose to the public has been 2.462  $\mu\text{Sv}$  per year.

Annual targets are set on the quantity of tritium emitted via gaseous effluent streams, as well as the ratio of tritium emitted versus processed, in order to track the achievement of these objectives and identify issues that may need attention in order to ensure the ALARA principle is maintained.

Depending on production, and barring any significant events or incidents, it would not be unexpected that the value of 10  $\mu\text{Sv}$  may be exceeded; however, the continuing objective remains to achieve less than this value year-to-year.

- Worker Dose

Doses to NEWs have also been continuously driven down in recent years due to operational improvements. All workers at SRBT are designated as NEWs; since 2015, the highest exposed member of the workforce has consistently received an annual committed effective dose (CED) less than the regulatory limit for exposure to a member of the general public.

Targets are set in order to track the achievement of dose objectives and to identify issues that may need attention in order to ensure the ALARA principle is maintained.

Depending on production, and barring any significant events or incidents, it would not be unexpected that the value of 1 mSv for worker dose may be exceeded; however, the continuing objective remains to achieve less than this value year-to-year.

Note that for the preceding five years of operations (2018-2022), the averaged maximum annual dose to an SRBT NEW has been 0.46 mSv per year.

- Environmental Risk

SRBT operation results in small quantities of tritium being released to the environment. These releases are restricted by licence, and action limits are set in order to ensure that control over these releases is maintained at all times, and to drive corrective and improvement actions.

The environmental safety objective of normal facility operations is to minimize our environmental impacts and maintain releases ALARA. Routine operation of SRBT shall not cause any measurable biological effects in people or the environment.

#### Context for Safety Objectives – Other Than Normal Operations

In 2008 a comprehensive analysis of worst-case hypothetical scenarios that could credibly occur at SRBT was compiled. This report concluded that in all cases, regulatory limits for routine operations were not expected to be exceeded in the event of a multitude of initiating events or emergency situations.

In 2017, a review and update to these scenarios was conducted, in order to incorporate the latest meteorological data, and to reflect the latest parameters used for the calculation of the consequences of exposure to tritium (such as inhalation rates, dose coefficients, etc.).

The 2017 safety analysis is included as Appendix C to this report.

In October 2022, CNSC staff published REGDOC-2.4.4, *Safety Analysis for Class IB Nuclear Facilities*. SRBT integrated the requirements of this regulatory document into the processes that govern facility-level safety analyses, and then initiated a review and revision to the SAR which includes analyses of normal operations, abnormal operational occurrences (AOO), design-basis accidents (DBA), and a discussion on the potential consequences of beyond-design basis accidents (BDBA).

Based upon these analyses, the new requirements, and the operating history of the facility, SRBT establishes that the primary safety objectives guiding the design of the facility are to ensure that during normal operations, abnormal operating conditions, and design-basis accidents, the non-emergency regulatory limits for acceptable worker and

public radiation doses (residential dose taken to be 200 m from facility) are not expected to be exceeded.

b. Design Principles and Criteria

As part of the design measures implemented when establishing protection against potential nuclear, radiological, environmental or conventional safety hazards, the general philosophy is to follow a hierarchical approach:

1. Where feasible, a hazard-generating process or activity should not be chosen if another adequate alternative is available that will generate less of a hazard, or preferentially, none at all – in other words, the hazard should be eliminated or reduced.
2. If incorporating specific features that are designed to protect against a hazard, the feature should preferentially be passive in nature (i.e. does not require active interaction with a person in order to provide protective function).
3. Where passive design features are unavailable or prohibitive, active design features should be incorporated.
4. Finally, administrative controls should be implemented to ensure an additional layer of defense-in-depth.

Consult ENG-003, *Design Control* for specific requirements pertaining to the measures taken with respect to the design of protective features of the facility.

The following specific design principles and criteria are implemented as part of the overall nuclear and radiation safety of the facility:

- Where tritium presents a hazard to workers, ventilation and air extraction with a pressure differential favouring low to high areas of contamination shall be put in place.
- Tritium processing is always performed under ventilation and fume hoods, within Zone 3, where the highest level of radiological controls are in place.
- Large quantities of tritium are divided into smaller quantities and batches, instead of using a large amount at any one time. This principle is behind the use of PUTTs on the processing rigs.
- Processing equipment is designed to be leak-tight, and air ingress into processing systems is always minimized to a practical extent in order to limit the generation of tritium oxide (HTO).
- Prior to any processing operation, a leak check of the system being operated is performed to ensure that the system is in a state ready for processing.

- Internal volumes of process lines and equipment shall be minimized to the extent possible in order to ensure that residual tritium that is ultimately released to the ventilation system is as low as possible.
- PUTT bases are limited to a defined number of cycles of use. This is to ensure that the readsorption of residual tritium in processing equipment is efficient, thus minimizing tritium losses.
- Valve selection (i.e. normally open, normally closed) on processing rigs is such that loss of pressurized air results returns the valves to the safe state.
- Where tritium may potentially be released into the workplace, real-time tritium-in-air monitors are employed to alert workers and prompt quick and effective action.
- When processing equipment and tritium containers are not in use, they are drawn down to vacuum pressure, isolated or closed and kept in an inherently safe state.
- Real time data on facility emissions is provided to staff processing tritium via remote display units, and they are required to routinely assess and record the concentration of tritium in the gaseous effluent.

The above listed principles are not meant to be an exhaustive list; however, these principles have been proven to be effective in ensuring that safety objectives are continuously met during facility operation.

c. Defense-in-Depth

SRBT applies the concept of defense-in-depth in reducing the probability and impact of any given safety-related event as part of nuclear substance processing operations.

As per the guidance provided in REGDOC-2.4.4, five levels of defense-in-depth are normally defined for nuclear facilities. Safety analysis contributes to demonstrating that the first four levels of defense-in-depth are being achieved.

*Level 1: The aim of the first level of defence is to prevent deviations from normal operation, and to prevent failures of structures, systems and components (SSCs) relied upon for safety.*

The SRBT Management System includes several safety programs that are intended to ensure normal operations are maintained safely at all times.

Human performance is managed through a systematic approach to training, as described in the SRBT Training Program Manual which meets REGDOC-2.2.2, *Personnel Training*.

Structures, systems and components are kept reliable and fit for service through the implementation of a comprehensive Maintenance Program that incorporates a graded approach to the maintenance of important safety-related equipment at the facility.

*Level 2: The aim of the second level of defence is to detect, intercept and control deviations from normal operation in order to prevent anticipated operational occurrences (AOOs) from escalating to accident conditions, and to return the facility to a state of normal operation.*

The facility includes tritium-detection systems and components that are specifically designed to alert personnel of deviations from normal operation that may result in a nuclear safety-related issue, such as increased levels of tritium gas being released through the ventilation systems or into the general work area.

Workers that process or handle nuclear substances have extensive training to do so, as well as in the expected response should a radiological hazard or problem develop that is outside of what is considered normal operations.

From an administrative standpoint, the SRBT Management System includes processes that require problems to be identified to management at an early stage by all staff. Annual refresher training on the expectations in this area are provided to all staff and management.

*Level 3: The aim of the third level of defence is to minimize the onsite consequences of accidents by providing inherent safety features, fail-safe design, additional equipment and mitigating procedures. The most important objective for this level is to prevent releases of nuclear and associated hazardous substances or radiation levels that require offsite protective actions.*

The equipment and systems that are used for tritium processing are designed in a fail-safe fashion to restrict the release of tritium during postulated initiating events and associated sequences; for example, tritium filling rigs are designed such that the system valves revert to the safe state during power loss, ensuring that gaseous tritium is retained in the filling rig and adsorbed back onto the tritium trap.

Workers are trained and qualified in accordance with a systematic approach, specifically where a response to any given event can help minimize the offsite consequences of an accident or incident with nuclear substances.

Finally, the amount of tritium that is permitted to be possessed at any given time is limited, primarily to ensure that the impact of worst-case scenarios is kept lower than that which would result in the need for off-site protective actions, as demonstrated by the technical safety analysis.

*Level 4: The aim of the fourth level of defence is to mitigate the consequences of accidents that result from failure of the third level of defence in depth. The most important objective for this level is to maintain the containment function, thus ensuring that radioactive releases are kept as low as reasonably achievable*

Bulk quantities of elemental tritium gas are stored as a solid uranium tritide within specially-designed, sealed containers that are intended to contain the gas even under accident conditions when not in use during processing operations.

The general facility itself does not incorporate a specific containment function akin to what is typically in place for nuclear reactors; however, as shown through the safety analysis, there are no credible accident scenarios that would result in the need for significant off-site protective actions to be taken in order to meet facility safety objectives or the safety goals described in REGDOC-2.4.4.

Finally, SRBT implements a comprehensive Emergency Plan that is designed with the objective of prevention and minimization of releases of nuclear substances should emergency conditions arise. This plan includes scenarios that are regularly drilled, as well as the conduct of full-scale emergency exercises in partnership with local first responders at least once every five years, in accordance with the requirements of REGDOC-2.10.1, *Nuclear Emergency Preparedness and Response*, and REGDOC-2.10.2, *Fire Protection*.

#### d. Design Approach - Radiation Protection

As a nuclear substance processing facility, the overall design principles cited above are in fact mainly aimed at ensuring that radiation protection (RP) of workers and the public is optimized and assured at all times.

The facility layout with respect to RP is such that there are three main zones of control:

- Zone 1 is the commonly accessible area (from the point of view of RP) and includes all offices, break areas, washrooms, the Glass Shop, the Coating Room, the Liquid Scintillation Counting Laboratory, Machine Shop, Shipping and Receiving, and Stores. The shipping area is routinely monitored for tritium in air, and contamination assessments are performed weekly in this zone.
- Zone 2 consists of the Assembly area and attached rooms. Radiological controls are heightened in this zone, with additional requirements for protective equipment and clothing for staff. Airborne contamination is monitored routinely. Contamination assessments are typically conducted three times a week.
- Zone 3 consists of the Rig Room, Laser Room, Tritium Laboratory, Tritium Lab Storage Room, and the Waste Room. Radiological controls are highest in this zone, with multiple tritium in air monitors in operation continuously. Staff are

required to wear a complete set of standard protective clothing at all times (shoe covers, lab coat, gloves, safety glasses). Contamination assessments are performed daily during weekday operations.

All aspects of operation are designed to ensure that radiation exposures are kept ALARA at all times.

e. Conformance with Design Principles and Criteria

Based on the above listed design principles and criteria, the facility is well within conformance of the design principles and criteria.

f. Classification of Structures, Systems and Components

Key structures, systems and components (SSC) that influence or maintain safety are classified in a manner prescribed by the Maintenance Program. Refer to Section 9 for a description of this program.

Using a graded approach, SSCs are evaluated and classified to establish the level of maintenance that needs to be applied in order to continue to provide assurance of operability and reliability.

The following list details the SSCs that are important to safety at SRBT:

- Fire detection and alarm systems, including the fire panel.
- Sprinkler system and portable fire extinguishers.
- Emergency lights.
- Facility security system.
- Active ventilation systems servicing tritium processing equipment, including air handling units (AHU) and stacks in the compound.
- Real-time stack monitoring systems, including remote display units.
- Tritium-in-air sample collectors for stack monitoring ('bubblers').
- Tritium-in-air monitors – stationary and portable.
- Gas leakage detection equipment – stationary and portable.

The above listed SSCs are all maintained and serviced in a graded fashion, as part of the preventative maintenance program.

Each is designed or selected in order to withstand the effects of extreme environmental conditions (temperature, humidity, etc.) that would be reasonably expected to arise in the course of operations, while still performing their safety function during operations.

Historical data supports the assertion that in the range of conditions experienced in the 33+ years of operation of the facility, key equipment (for example, the air handling units

located in the compound outside of the facility) have maintained their serviceability to an acceptable degree.

An important note is that SRBT does not feature any SSC where its failure would be reasonably expected to immediately result in an appreciable hazard to workers, the public or the environment. The listed SSCs are important to safety, but not in the sense of direct harm being prevented in an active way.

g. Civil Engineering Aspects of Facility Design

The facility and associated civil structures comply with the National Building Code of Canada. The 'Butler' style of building uses a 'Widespan' structural system that is broadly used in industrial settings.

The building consists of a single story consisting of a concrete block and steel I-beam frame, with a metal clad on metal framework roof. The interior walls separating building tenants are of concrete block construction, while interior walls within the suite occupied by SRBT are generally steel frame with gypsum hardboard. Interior ceilings are either Armstrong ceiling tile or gypsum hardboard. The main floor is concrete, and tile covered in some areas.

Throughout the facility, engineered fire protection systems have been emplaced in line with the requirements of the National Fire Code of Canada and CSA standard N393-13, *Fire protection for facilities that process, handle, or store nuclear substances*. Details on these engineered SSCs are included in the Fire Protection Program, and are further discussed in this report in Section 12, and additional details can be found in the latest version of the Fire Hazards Assessment (FHA) document.

h. Equipment Qualification and Environmental Factors

As illustrated by the safety analyses, SRBT does not require equipment to be qualified to seismic or environmental standards outside of normal workspace operations.

Typically, daily workplace temperatures and humidity varies depending on the season and weather. All safety-related equipment has continuously proven to be adequately functional and reliable in all experienced environmental conditions, and is expected to remain so in cases of any safety-related events.

i. Human Factors Engineering

Tritium processing equipment is built in a way that is intended to minimize the potential for human error.

Filling rigs include a diagrammatic representation of the processing system with pneumatically-actuated valves activated and deactivated through pushbuttons on the

diagram. The panel allows the operator to visualize the sequence of valve operations needed to process tritium into GTLS.

All instrumentation is easily visible and decipherable, and valve status is displayed using illuminated indicators or physical toggle valves.

j. Protection Against Internal and External Hazards

One of the primary systems in place to protect against internal hazards is the fire protection and suppression system. SRBT has deployed a comprehensive array of smoke and heat detectors, audible and visual alarms, sprinklers and portable fire extinguishers in order to ensure that the highest level of protection against hazards posed by fire is afforded. The system is assessed annually by an independent third party for compliance with requirements and readiness for service and use, and is frequently tested during fire drills.

SRBT also has an internal security system that ensures the physical security of the business, including all nuclear substances, at all times. The description of this system is considered sensitive information and is not presented within the context of this report; however, the system in place has been inspected, assessed and accepted by CNSC staff as meeting or exceeding all requirements and expectations.

Active ventilation systems provide the main element of radiological protection to workers due to process leakage, light breakage, and other tritium-related hazards. Two trains of ventilation service the main tritium processing areas of the building, identified as the Rig and Bulk stack systems.

The Rig stack provides ventilation to all processing rigs in the Rig Room, as well as the Waste Room, and the ventilated cabinets on the west end of the room. The Bulk stack services the laser units, the bulk splitter and three other ventilated cabinets / hoods located in the Laser Room / Tritium Laboratory.

The SRBT facility structural design is not specifically built nor intended to offer protection against external hazards above and beyond that afforded by a conventional industrial production facility.

k. On-site Transport

As opposed to a larger-scale nuclear facility such as a nuclear power station or research complex, SRBT does not implement a dedicated organization to the on-site transportation of radioactive or hazardous materials.

## 6. Description of Facility Systems and Components

### a. Nuclear Systems and Components

#### i. Tritium Processing Equipment – Filling Rigs

A filling rig consists of an arrangement of stainless-steel tubing, pneumatically and manually operated valves, and pressure sensing instrumentation that is serviced by a dry-scroll vacuum pump.

The systems in use have remained the same in general design since operation began in 1990, although improvements in individual components have been incorporated as technology has advanced.

VACUUM PUMP: Commercially available dry-scroll type or equivalent, capable of delivering a minimum ultimate pressure of 6.6E-02 mbar.

TUBING: Commercially available stainless-steel tubing, of varying dimensions. Tubing internal volumes are minimized to the extent practical in order to minimize associated tritium emissions on pump out.

CONNECTORS: Where required, connectors implemented are commercially available stainless-steel fittings of various types depending on the application.

VALVES: Commercially available stainless-steel bellows-sealed valves, either manually or pneumatically operated. Valve stem tips are either polychlorotrifluoroethylene- or polyimide-based.

FILTERS: Commercially available filter elements are installed where required in order to protect PUTTs from particulate contamination.

INSTRUMENTATION: One digital pressure sensing digital programmable logic controller provides the operator with real-time pressure information on the main processing header space, in units of cm of Hg (atmospheric pressure = 76 cm Hg).

Two pirani gauges and associated active gauge displays provide pressure readings of the manifold prior to processing (for leak check) and of the ultimate vacuum pressure being delivered by the pump.

VENTILATION: Each rig occupies one half of a ventilated steel enclosure specifically built to house the equipment. The Rig stack services this equipment.

ELECTRICAL: 120 VAC conventional power supply is provided to each rig and pump; the rig instrumentation operates off stepped-down 24 VAC power generated via an on-board transformer.

PNEUMATICS: Valves to individual filling heads (connection points for up to 20 GTLS preforms), as well as valves used to isolate the PUTT, vacuum pump and manifold gauges operate using pneumatic pressure delivered by the main facility air compressor.

PURGING: An inert gas-based purging system also interfaces with each processing rig in order to ensure complete removal of residual tritium gases to the ventilation system at the conclusion of a processing operation. The system is isolated from the main rig using two manually operated bellows-sealed valves in series.

PUTT CONNECTION: Filling rigs include a male connection port where PUTTs are attached as required in order to deliver tritium to GTLS preforms.

LIQUID NITROGEN TANK: Several rigs also are equipped with an adjustable insulated tank that can be filled with liquid nitrogen. This tank permits the filling of light preforms under low-temperature conditions (around -196 degrees C), thus permitting GTLS to be filled and sealed while containing tritium pressures greater than atmospheric.

ii. Tritium Processing Equipment – Bulk Splitter

The bulk splitter is located in the Tritium Laboratory, and is contained within a ventilated ‘fume-hood’ cabinet. The principle of operation of the unit is much the same as with the processing rigs; however, all valves are manually operated toggle-type valves.

The system is designed to allow complete operator control over the dispensation of tritium gas from the bulk containers (up to around 925,000 GBq) onto smaller PUTTs (limited to 111,000 GBq).

VACUUM PUMP: Commercially available dry-scroll type, capable of delivering a minimum ultimate pressure of 6.6E-02 mbar.

TUBING: Commercially available stainless-steel tubing, no greater than 3/8” internal diameter.

CONNECTORS: Where required, connectors implemented are commercially available stainless-steel fittings of various types depending on the application.

VALVES: Commercially available stainless-steel bellows-sealed valves, manually operated. Valve stem tips are either polychlorotrifluoroethylene- or polyimide-based.

FILTERS: Commercially available filter elements are installed where required in order to protect PUTTs and bulk tritium containers from particulate contamination.

LARGE VOLUME MEASUREMENT VESSELS: Three calibrated stainless-steel vessels are attached to the bulk splitter. The amount of tritium within any given vessel is directly proportional to the measured gas pressure within, as measured by individual gauges for

each vessel. This allows an indirect but precise measurement of the quantity of tritium being dispensed during processing.

INSTRUMENTATION: 'Digitec' pressure sensing digital programmable logic controllers provides the operator with real-time pressure information for each measurement vessel.

A pirani gauge and associated active gauge display provides pressure readings of the system prior to processing (for leak check) and of the ultimate vacuum pressure being delivered by the pump.

VENTILATION: A ventilated fume hood houses the processing system, as well as the pump in the cabinet space below. The Bulk stack services this equipment.

ELECTRICAL: 120 VAC conventional power supply is provided to the pump while instrumentation operates off stepped-down 24 VAC power generated via an on-board transformer.

PURGING: An inert gas-based purging system also interfaces with the bulk splitting rig in order to ensure complete removal of residual tritium gases to the ventilation system at the conclusion of a processing operation.

### iii. Tritium Processing Equipment – Laser Cutting Units

Various designs of laser cutting units have been implemented over the operating history of the facility, with similar designed functions.

The following information pertains to the laser cutting unit in operation:

CUTTING VESSEL: A high-grade stainless-steel vessel is mounted in place and aligned with the beam line of the laser, with a lens port installed to permit the laser to enter the vessel chamber.

Long GTLS with a very small diameter are inserted into the vessel from the top through a port, with the inserted GTLS providing the ultimate atmospheric seal required when cutting. A removable collection container is located at the bottom of the cutting vessel that allows the removal of laser-cut miniature GTLS.

LASER: A CO<sub>2</sub> laser (350W, 10.6 μm wavelength) provides the cutting beam for the rotating laser stick.

LASER COOLING: A liquid chiller system delivers heat-removal capacity to the laser during operation.

MOTOR DRIVEN ROTATION: A small electrically driven motor and drive belt system permits the laser stick to be rotated inside the cutting vessel at a high rate of speed

during laser beam activation, in order to ensure a smooth and concentric cut of the GTLS.

VERTICAL INDEXING DRIVE: A programmable stepper motor permits a laser stick to be moved in a programmed distance downward as the stick is rotating and laser cutting is performed. The distance moved downward corresponds to the required length of the GTLS being manufactured.

ELECTRICAL: 120 VAC power is delivered to the system, with control and safety interlocks fed by stepped-down 24 VAC power.

PNEUMATICS: Compressed air can be introduced to the cutting vessel during GTLS manufacture in order to increase pressure relative to the laser stick, ensure sealing of the light source and prevent outward expansion due to pressure differential.

CONTROL: A digital control system is provided with touch-screen display and control of all parameters relating to the cutting of GTLS, including index length, rest times, and laser power. The control panel includes a safety switch that shuts down the system immediately.

SAFETY INTERLOCK: Sensors on the two access port doors ensure that the system cannot be operated if the ventilated cabinet is open; this ensures that operators are safe during laser activation, and that the laser cannot be fired if the system is open.

VENTILATION: The entire system is housed within a sealed polycarbonate plastic enclosure that provides protection from tritium during operation. The cabinet is ventilated to the Bulk Air Handling Unit (AHU).

#### iv. Tritium Processing Equipment – PUTTs

PUTTs consist of two main parts: a manually operated bellows-valve provides effective sealing and isolation of tritiated uranium hydride from the atmosphere or processing equipment which is contained within a welded stainless-steel vessel – the PUTT base.

The PUTT base typically contains about 30 g of uranium or depleted uranium that provides the adsorbent bed for the tritium gas, and can be heated manually using open flame in order to release the tritium gas as required by processing.

VALVE: A manually operated bellows-sealed valve is used to effectively seal the PUTT when not in use.

CONNECTORS: A female threaded connection nut is provided on the horizontal plane of the PUTT as the connector for the component to be attached to processing rigs and the bulk splitter. An O-ring on each connecting component provides an effective seal. Connectors are used between the valve and the base.

PUTT BASE: A small cylindrical volume welded to a length of stainless-steel tubing houses approximately 30 g of depleted uranium which acts as the adsorbent bed for the tritium gas at room temperatures. The tubing between the base and the valve contains a small quartz fibre filter that prevents the migration of uranium from the base during vacuum pumping, and precludes particulate contamination from entering. The base is heated manually under closed vacuum conditions whenever tritium processing is executed.

v. Tritium Processing Equipment – Bulk Tritium Containers

Tritium is delivered to SRBT within certified containers owned by the supplier. These containers are used worldwide where safe transport of moderate quantities of tritium is required. Details on these containers are available from Croft Associates Ltd. within document *Packing and Handling Instructions for Safdrum Package Design No GB/3605D*.

The containers used are designated as 0035 tritium beds, and are certified in Canada for transport under certificate number CDN/E204/-96 (CNSC file 30-10-3-128). Connections provide the capacity to attach a bulk container onto the bulk splitting rig for tritium dispensing.

The container is isolated using a bellows-sealed valve, and connected to the bulk splitter by way of a standard connector much the same as with PUTTs.

Heat is applied and carefully controlled during processing using a heating band activated by a variable power controller, with a thermocouple installed between the band and the surface of the bulk container. Heating is applied to around 500 degrees C, up to a maximum of 550 degrees C, in order to release tritium gas into the measuring volumes of the bulk splitting rig.

vi. Active Ventilation Systems

Two trains of active ventilation systems are used to ensure the radiation safety of workers in areas where tritium can present a hazard, including Zones 2 and 3. Maintenance is performed on these systems on at least a quarterly basis.

The Rig stack / extract AHU handles air supply and exhaust for the Rig Room. The unit is a Temprite model HRP 28-61/76 providing an exhaust capacity of 7,600 cubic feet per minute (cfm). The Rig AHU provides exhaust for the following:

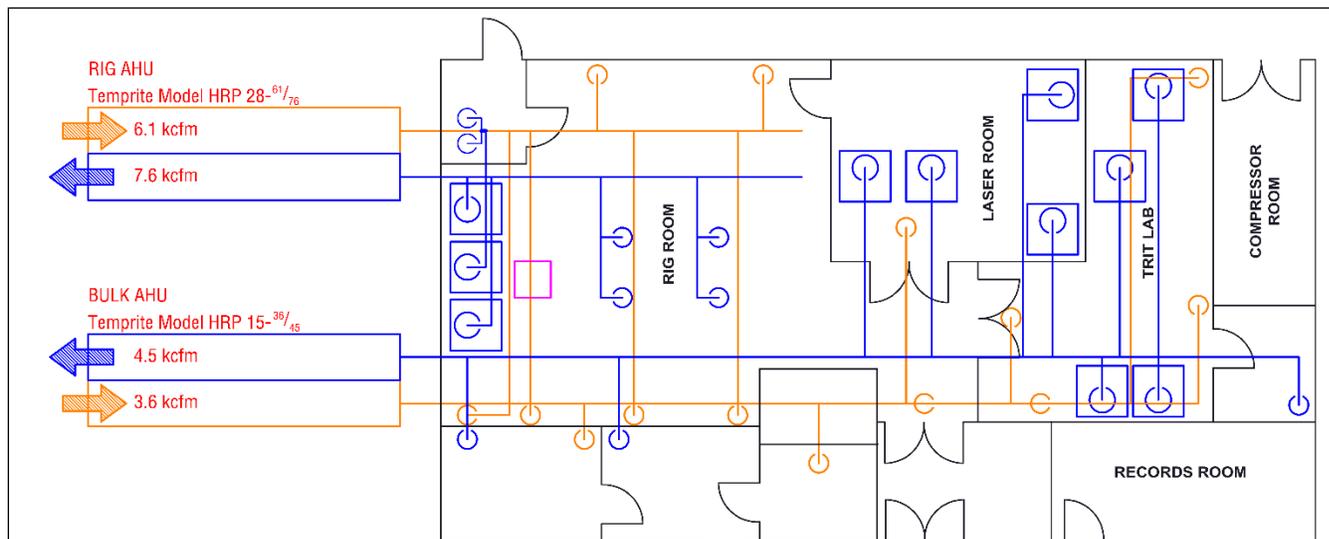
- Filling rig cabinets (four)
- Muffle fume hood
- Stub crushing fume hood
- Wash fume hood

- Waste room
- Waste drum ventilation cap

The Bulk stack / air extract AHU is a Temprite model HRP 15-36/45 providing an exhaust capacity of 4,500 cfm. The Bulk AHU provides exhaust for the following:

- Bulk Splitter fume hood
- Disassembly fume hood
- Reclamation unit fume hood and glove boxes
- Tritium lab storage room
- Laser room inspection fume hood
- Laser cutting unit fume hoods
- GTLS storage cabinet (laser room)
- Inspection preparation room
- Inspection room

Ductwork stems from each AHU located within the exterior fenced and secured compound, into the main facility, and is distributed as per the diagram below:



**FIGURE 14: ACTIVE VENTILATION SYSTEM FLOW DIAGRAM**

The AHUs consist of belt-driven fans operated by motors on 240 VAC electrical circuits, with associated filtration on the inlet flow path for particulate elimination.

Each AHU ejects exhausted air through an individual stack. The operating parameters of each AHU are carefully monitored and controlled to ensure that adequate exhaust velocities are achieved during processing operations. Daily readings of the differential pressures are obtained prior to tritium processing taking place, in order to ensure that a minimum effluent exit velocity is being achieved prior to processing getting underway.

The following table summarizes the characteristics of each AHU / stack, as well as the parameters that must be minimally achieved in order for tritium processing to occur:

PARAMETER	Rig AHU	Bulk AHU
Height of stack above ground level	11.86 m	11.09 m
Inside radius at pitot tube (measurement point for differential pressure)	0.28 m	0.20 m
Inside radius at exit	0.23 m	0.18 m
Minimum differential pressure reading required for tritium processing (corresponding to an effective stack height of 27.8 m at a wind speed of 2.2 m/s).	0.27" wc	0.38" wc

**FIGURE 15: TABLE OF AHU / STACK CHARACTERISTICS**

#### vii. Stationary Tritium in Air Monitors

SRBT deploys tritium-in-air monitors (TAM) as part of the overall approach to radiation protection in the facility, where the potential for tritium hazards exist.

These monitors consist of several integrated components within a commercially available system, including:

- An ionization chamber to collect the ionization current introduced by tritium gas decay within the chamber
- A sampling system to circulate the sample air through the ionization chamber
- An electrometer to amplify the weak ionization current
- Electronics to process the signal and display the proportionally-derived measurement of the concentration of tritium gas per unit of air circulated.

These monitors operate on conventional 120 VAC power supply, and include audible alarm capabilities with user-selectable set points.

In Zone 3, three of these units are deployed in order to provide effective protection and early detection of upset conditions. Alarm points are set to 10  $\mu\text{Ci}/\text{m}^3$ , with a flow rate of 5 L/min.

In Zone 2, one of these units are deployed in order to provide effective protection and early detection of upset conditions. The alarm point is set to 5  $\mu\text{Ci}/\text{m}^3$ , with a flow rate of 5 L/min.

In Zone 1 within the Shipping and Receiving area, one of these units are deployed in order to provide effective protection and early detection of upset conditions. The alarm point is set to 5  $\mu\text{Ci}/\text{m}^3$ , with a flow rate of 5 L/min.

Additional detailed information on these units is provided in the Radiation Safety Program document, as well as the associated operating and technical manuals provided by the manufacturer.

Each TAM is calibrated on an annual basis in order to confirm continued accuracy and reliability, and to identify the need for adjustment or repair. Members of the Health Physics team are authorized to adjust or otherwise manipulate stationary TAMs in order to achieve a high level of safety.

viii. Portable Tritium in Air Monitors

SRBT deploys portable TAMs for the use of staff where the potential for tritium hazards exist.

These units operate under the same principles as the stationary TAMs noted above, but may include the capacity to operate using battery power.

All trained and qualified staff members are authorized to use portable TAMs as required during the course of daily operations. Members of the Health Physics team are authorized to perform adjustments and otherwise manipulate portable TAMs in order to achieve a high level of safety.

ix. Real-time Stack Monitoring Equipment

The real-time stack monitoring system consists of the following physical components:

- Two stationary TAMs with 4-20 mA output capability;
- One electronic data recorder;
- Two Remote Display Units (RDUs), one connected to each TAM, and mounted in the Rig Room / Tritium Laboratory.

In addition, the electronic data recorder is supported by manufacturer-provided 'Companion' software.

The system is arranged such that a representative sample of ventilated air is drawn from the ductwork to each active ventilation stack ('Rig' and 'Bulk' stacks) at the point where the ducting exits the building. The sampled air is drawn by the TAMs at a rate between 4-6 litres/minute, and the concentration of tritium is measured in real time. This information is then relayed to the electronic data recorder located in the Ante Room area outside of Zone 3.

The 4-20 mA output posts on each TAM are connected to the electronic data recorder; the recorder logs and stores information relating to concentration of tritium in each stack, and displays trend lines on the display. All information stored can be downloaded

and analyzed using the Companion software by directly obtaining the data from the compact flash memory card in the unit.

The J2 connectors on each TAM are connected to a corresponding RDU mounted in Zone 3. This connection relays the real-time concentration of the exhaust gas and displays the reading in units of  $\mu\text{Ci}/\text{m}^3$ . The RDUs include two separate alarms (low level and high level) that audibly and visually alert staff of potential upset conditions.

Key parameters for each physical component of the real-time stack monitoring system are listed below:

#### TAMs:

- Flow rate: 4-6 litres per minute
- Alarm set point: OFF
- Noise suppression: ON

#### Electronic Chart Recorder

The following are key parameters in the set up and programming of the unit.

Channel 2 is the input port for the Rig stack, and displays info via Point 2. Channel 4 is the input port for the Bulk stack, and displays info via Point 4. Pens and charts are set up to display both stacks on the same chart, on a scale of 0 – 20,000  $\mu\text{Ci}/\text{m}^3$ .

Connections are made from the rear panel on the TAM to the appropriate channel on the back of the electronic chart recorder. Refer to section 2.3.3 of the Monarch DC2 manual for explicit instructions on making the 4-20 mA connection.

Programming of the electronic chart recorder is described in full detail within the user manual<sup>[13]</sup>, and is not repeated here except for the key parameters for accurately translating the signal to a concentration value.

#### Remote Display Units

These units take an electrical signal from the TAM via the J2 connection and an associated cable, and process it to a secondary numerical display and alarm system.

Each system operates using standard 120 VAC power supply, with a two-stage alarm that can be user-set for a low- and high-level alarm capability. Both alarms have audible and visual components.

- x. Tritium in Air Sample Collectors for Emissions Monitoring

SRBT deploys tritium-in-air sample collectors (TASC) in order to collect and measure a proportional sample of exhaust gases from both active ventilation AHUs.

The TASC operates by drawing a sample stream of air, and trapping any tritium in that air within vials containing absorbent material. The exhaust sampling line is connected to the inlet barb on the front of the unit.

To ensure virtually total collection, each main vial is succeeded by a second and third vial whose purpose is to trap any of the material which was missed by its predecessor.

Six vials are used to trap tritium oxide and elemental tritium; three vials for each species.

For the collection of tritium, the vials are filled with a mixture of clean water and glycol, in a 1:1 ratio. Between 17-18 ml of this mixture is added to the sample vials, and acts as the absorbent material.

The sampled air is first filtered for dust and then passes directly through the first three vials where all tritium oxide is collected. The sampled air is then treated in the catalytic converter where elemental tritium is converted to oxide. This tritium is then collected in the next three vials.

The remnant air stream passes through the flow moving system, which consists of the rotameter, the flow controller and, finally, the pump. The flow rate is adjusted at the factory to 100 cubic centimetres per minute, and is set by a potentiometer associated with the flow controller. The relatively tritium-free outlet gas is then routed to the exhaust system attached to the fume hood.

The critical user-controlled parameter on the TASC is the temperature of the catalytic converter. The ideal temperature for efficient conversion of elemental tritium to tritium oxide using the platinum/palladium catalyst is between 600-650 degrees Celsius. Lower temperatures will not allow the catalytic reaction to proceed at an effective rate, leaving elemental tritium to pass through the bubblers and fail to be collected. This would result in significant underestimation of the emissions of this type of tritium.

The controller on the front of the unit displays the set-point in green, and the actual measured temperature in red. The controller cycles the heater on and off periodically in order to maintain a consistent temperature at the set-point.

In-use TASC systems are verified on an annual basis by an independent third party. Maintenance processes relating to TASCs are defined in accordance with the SRBT Maintenance Program.

The system is supported by mass-flow meters which accurately measure the amount of air sampled over time. This parameter is a key component in the calculation of tritium emissions from the facility. A resettable digital timer is also included to track the elapsed sampling time, in hours.

Additional detailed information on these units is provided in procedures associated with the Effluent Monitoring Program, as well as the associated operating and technical manuals provided by the manufacturer<sup>[14]</sup>.

#### xi. Liquid Scintillation Counters

Tritium is an extremely low-level beta radiation emitting isotope, and is not detectable using conventional radiation instruments. As a result, samples must be prepared and measured using a special instrument called a Liquid Scintillation Counter (LSC). SRBT owns and operates two such counters.

Sample material is prepared and loaded into small vials specifically designed for LSC. A fluid called 'liquid scintillation cocktail' is added to the prepared vial, and the vial is sealed and mixed by shaking.

The vials are then loaded into the counter, and the assay process is activated. In sequence, each vial is loaded by the counter into a chamber that is sealed from all external light, and is heavily shielded to eliminate background radiation interference.

The cocktail interacts with any radioactive particles or rays to produce light. This light is of a frequency that is detected by photo-multiplier tubes located next to the counting chamber. The detection creates a signal which is amplified by the photo-multiplier tubes and associated circuitry. The signal is further processed and a determination is made of the number of light events per unit time (the counts per minute).

The number of counts per minute is proportional to the number of radioactive disintegration events inside the vial (disintegrations per minute), depending on the efficiency of counting. The LSC units are programmed to automatically determine the amount of tritium in a given sample vial by way of designed assays.

The two LSC units are maintained on an annual basis by qualified third-party technicians, typically personnel from the manufacturer. A weekly calibration assay is run to confirm that instrument performance continues to meet requirements, and that measurements are of a sufficient quality and accuracy.

Maintenance processes are defined in accordance with the SRBT Maintenance Program. Consult the manufacturer's operating manual for detailed information on this equipment<sup>[15]</sup>.

b. Non-nuclear Systems and Components

i. Fire Protection Systems

SRBT employs several SSCs that are focused on ensuring the fire protection of the facility at all times, in all areas.

A single stage fire alarm system monitors smoke and heat detectors located throughout the facility, with manual pull stations installed at each exit door. An alarm panel includes complete system information in real time, including the status of all detectors as well as flow, pressure and tamper alarms for the sprinkler system. Loss of municipal water supply could adversely affect the operation of the sprinkler system; however, a specific alarm is programmed into the system in case of low sprinkler water pressure.

An automatic sprinkler system is installed throughout the facility. This system was designed for an Ordinary Hazard Group 2 Occupancy, requiring a sprinkler density of 0.20 gpm / ft<sup>2</sup> over a design area of 900 square feet. This design criterion is in accordance with the requirements of National Fire Protection Association standard 13, and has been approved by the Pembroke Fire Department.

All fire protection systems employed by SRBT feed into an integrated monitoring panel that has been installed, commissioned and accepted for use.

The fire protection systems in place within the facility meet all applicable requirements, including the provisions identified in the LCH. Additional details on this system can be found in the FHA for the facility, as well as the Fire Protection Program document and associated procedure set.

ii. Security Program and Systems

Physical security of the facility is supported by the implementation of a Security Program. This program documents the provisions and controls emplaced by SRBT to prevent security events from occurring and to ensure a system is in place and maintained in an operationally ready state at all times when the facility is not occupied.

Details on these aspects of operation are confidential and as such are not discussed further in the context of the SAR. CNSC staff has assessed the physical and administrative security measures put in place by SRBT and determined them to be in compliance with requirements.

### iii. Electrical Systems

The facility is supplied electricity from the City of Pembroke electrical distribution grid, supplied by Ottawa River Power Corporation. 600 V power is stepped down to 240/120 V using transformers, feeding into breaker panels that control the facility electrical circuits. The breaker panel room is located near the Shipping and Receiving area, and is secured against unauthorized entry.

Pembroke and the surrounding area experiences power failures every few weeks, with most failures typically lasting less than an hour. A power outage is not expected to result in any nuclear or radiological hazard, as tritium processing cannot occur without electrical power supply, and processing systems automatically revert to the safe state after electrical and pneumatic power is lost.

### iv. Process Gas Systems

The following process gases are distributed through the facility as required:

- Natural gas lines extend through the facility in order to supply fuel for heating, as well as for manufacturing processes in the Glass Shop and Coating Room. Gas is sourced from subsurface distributed services, with the main facility connection point located on the exterior northwest corner of the Coating Room near the nitrogen tank.
- Compressed air is supplied from an industrial compressor located in the Compressor Room located on the northeast corner of the facility. This area is only accessible from outside the facility. The compressor is started up during operating days when facility manufacturing is ongoing, and supplies the pneumatic power to the valves on the processing rigs, as well as compressed air for several other manufacturing processes.
- Oxygen is distributed from a common head tank containing pressurized liquid oxygen. This tank is stored in the compressed gas storage room and connects to a distribution network that delivers oxygen gas to the Glass Shop and Coating Room.
- Oxygen and acetylene gases are also distributed to manually operated hand 'torches' used to end-seal GTLS once filled with tritium gas on the processing rigs. Bottles of each type of gas are attached via a regulator in the Rig Room Ante Room, with process side pressures set to approximately 15 psi(g) for oxygen, and 5 psi(g) for acetylene. Lines are clearly marked at the point of bottle connection, as well as on the physical distribution system.
- Inert gas is delivered to tritium processing equipment via a distribution system. A compressed inert gas bottle is attached via a regulator in the Rig Room Ante Room, with a process side pressure set at approximately 15 psi(g). Distribution

lines extend into the Rig Room to each processing rig, as well as the bulk splitter, in order to provide the motive force behind the purge processes at the conclusion of any processing run. Lines are clearly marked at the point of bottle connection, as well as on the physical distribution system.

All compressed bottles and tanks of process gases are stored securely when not in use inside the gas storage room near the east shipping bay. This room is kept locked, and all bottles (empty or full) are chained in place at all times.

Bottles that are in use are also chained in a manner which prevents them from tipping over. Staff are trained to leave safety chains in place at all times unless changing bottles, and to ensure that safety caps are kept securely in place over compressed gas valves when moving bottles.

#### v. Heating, Ventilation, Air Conditioning Systems

The facility is heated when required primarily through commercially available natural gas heating systems, with integrated blowers.

Non-active ventilation systems are provided to ensure adequate air exchange, and to provide worker protection for conventional hazards such as particulates that may be present when performing coating or painting operations. Air conditioning is provided both using central and local units as required during summer months.

A schematic of the conventional facility ventilation systems is provided on the following page as Figure 16.

#### vi. Gas Leakage Detection Systems

The Rig Room includes a flammable gas detection unit on the north interior wall, centrally located in order to detect any acetylene or natural gas leakage and to alert staff of the leak. A natural gas leak detector is located in the Glass Shop as well, with a portable unit also available for precise determination of leak location if needed.

#### vii. Weather Station

A weather station is operated and maintained by SRBT at the northeastern most point of the property where the facility is located. The station measures multiple variables relating to local weather conditions, including wind speed and direction, humidity, temperature, the presence of precipitation, and dewpoint.

Data is saved on file every five minutes to provide information that can be used to support the Environmental Protection Program, as well as future modelling of local weather for refinement of public dose calculations and other environmental elements such as risk assessments.

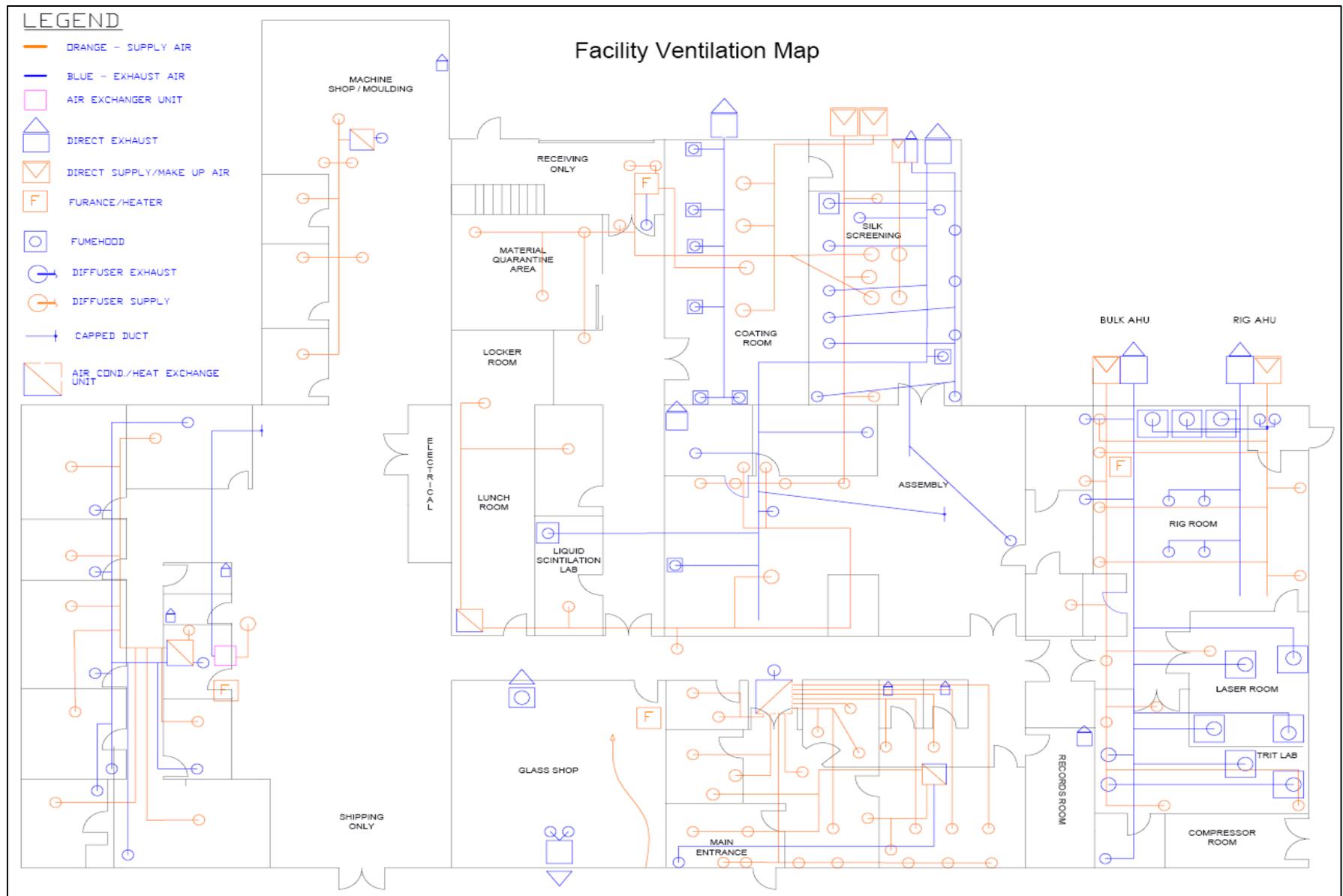


FIGURE 16: FACILITY VENTILATION MAP

viii. Precipitation Detection System

The precipitation detection system is mounted outside of the facility, and interfaces with an alarm circuit (visual and audible) mounted to the ceiling at the entrance to Zone 3.

The system is extremely sensitive, and is able to detect very small levels of precipitation. When detected, precipitation events result in an audible and visible alarm in the Rig Room, alerting staff that tritium production must cease as soon as can be safely achieved.

ix. Water Systems

Municipal water services are integrated throughout all areas of the facility, with numerous sinks and fixtures in place to support business operations, processes and sanitation. Hot water is delivered to the north, central and south sections of the facility using electrically heated hot water tanks.

x. Waste Water and Sewer Systems

The building is serviced by the network of waste water works operated by the City of Pembroke. The sewer system represents the other significant effluent pathway for the release of tritium to the environment.

Water-soluble tritium is generated as part of decontamination processes, GTLS leak check activities, and groundwater monitoring well purging. A limit of 200 GBq per year of tritium is authorized by licence to be discharged to the municipal sewer system.

On average, approximately 10,000 L/day of waste water flow is discharged from the premises at 320 Boundary Road, including all SRBT facility waste water. This fluid is routed to the west using subsurface sewer lines, and then northwest toward the Bennett Street line which moves the fluid toward the Town Line Lift Station, for final pumping and ultimate conventional treatment at the Pembroke Pollution Control Centre.

Past measurements of tritium concentration in the outfall at the Pembroke Pollution Control Centre showed conclusively that there is no significant risk to the environment or persons due to routine annual releases via this effluent pathway. For the last full year of sampling (2012), an average tritium concentration in effluent of 19.4 Bq/L was observed, with the measurement being less than 27.8 Bq/L 95% of the time.

As such, it is clear that the annual limit of 200 GBq of water-soluble tritium to the sewer system is safe and highly conservative. Over the past five years (2018-2022), an average of 6.76 GBq of tritium has been released via the liquid effluent pathway.

xi. Liquid Nitrogen Storage and Supply

Liquid nitrogen is stored in an industrial tank in a fenced and secured area adjacent to the compound in which the Rig and Bulk AHUs are located.

This fluid is used as a process liquid for submerging GTLS preforms during tritium filling operations, in order to fill to higher amounts of activity at sub-atmospheric pressures, thus allowing manual flame sealing under active ventilation.

The tank is owned and operated by a commercial supplier of liquid nitrogen, and is filled on an as-needed basis. An insulated line runs from the discharge of the tank, and onward into the building into the ceiling space above Zone 3, parallel to the Bulk AHU main duct line. The line then branches to two separate lines beside the Rig 5/7 and Rig 6/8 ventilated cabinets, and then down through the ceiling to the main Rig Room area where valves are used to control the flow of liquid.

Flexible hoses are used to fill tanks attached to these Rigs as required by process. As the liquid nitrogen heats up, it is ventilated to the AHU.

Staff are trained to take conventional health and safety precautions to protect themselves from exposure to this liquid (-196 degrees C), as well as noise hazards presented by the system when in use.

xii. Information Technology Network

A common computer server network is used to manage information at SRBT. The main components of this network are located within the Records Room near the office of the President, in an engineered cabinet that affords protection from fire and water.

Several computer stations are in place in offices and the main manufacturing areas of the facility in order to allow employees access to the information needed to perform their work. The SRBT network includes both hard-wired and wireless connection technologies that are managed and controlled according to MSP-004, *Information Management*.

Key information is retained on the server at all times, and the system is backed up on a frequent basis to ensure that loss of data and records would be minimal should failure occur.

**There are no safety-related systems or components that directly interface with the information technology network at SRBT.**

## 7. Safety Analyses

### a. Safety Objectives and Acceptance Criteria

As noted in Section 5, the overarching facility safety objective and design acceptance criterion is to ensure that during normal operations, abnormal operating conditions, and design-basis accidents, the established non-emergency regulatory limits for acceptable worker and public radiation doses are not expected to be exceeded.

Any assumptions made in relation to the analysis of the nuclear or radiological safety consequences of any given event shall be conservative, and in line with the requirements of REGDOC-2.4.4, *Safety Analysis for Class IB Nuclear Facilities*.

**Appendix A and B document the current, complete technical safety analysis for this revision of the SRBT SAR.**

### b. Description of General Process

The process for conducting facility-level safety analyses is described in ENG-022, *Facility-level Safety Analysis*. Revision 5 of the SRBT SAR is the first iteration completed through this process, which is based on the requirements of REGDOC-2.4.4, *Safety Analysis for Class IB Nuclear Facilities*.

A general outline of the methodology of performing a facility-level safety analysis is provided here. Consult Appendix A, ENG-022 and REGDOC-2.4.4 for specific requirements.

First, a list of credible internal and external events that deviate from normal operations was compiled, and the events classified using the following scheme:

- a) Anticipated operational occurrence (AOO)
- b) Design-basis accident (DBA)
- c) Beyond design-basis accident (BDBA)

Conservative safety analysis assumptions were compiled at a high level, such as which safety-related structures, systems and components (SSC) will be available and operable during events, what actions employees or responders will take once the event occurs, and the time it will take to perform the actions.

A list of internal and external postulated initiating events (PIEs) was then compiled which may credibly initiate a sequence that leads to an AOO, DBA or BDBA, depending on additional failures that occur.

The information compiled to this point was then reviewed and approved by SRBT staff who possess the technical expertise to evaluate the comprehensiveness and credibility

of the PIEs, and to identify any additional PIEs or credible events that should be considered.

The approved PIEs were then classified and grouped in accordance with their characteristics and bounding PIEs were identified for each event type. In the past, these event types would have been referred to as 'worst-case scenarios' as part of the previous iterations of the SRBT SAR.

A deterministic safety analysis was then performed for each event, in order to assess the potential consequences. The likelihood of PIEs (or event sequences) that lead to each analyzed event was established qualitatively or semi-quantitatively if warranted. Where applicable, safety-related system function and intervening human actions were incorporated into the analysis, in accordance with REGDOC-2.4.4.

For credible events that include significant potential radiological impacts on workers or members of the public, dose modelling was conducted using validated HotSpot Health Physics code software authored the Lawrence Livermore National Laboratory.

Once all dose consequences were established, and the deterministic probability of events taking place was also considered, operating limits and conditions (OLC) were established which are intended to provide assurance of adequate operational safety of the facility, and to ensure that the overall safety objective and design criterion are met in all phases of design-basis operations. These OLC are documented in Section 10 of this report.

#### c. Previous Analyses

For a complete and detailed assessment of previous safety analyses of the SRBT facility, refer to the Appendices to this report. A chronological summary of these analyses is presented here.

In 1990, SRBT contracted the services of Atomic Energy of Canada Ltd. to perform assessment of the dose to a member of the public from a hypothetical worst-case scenario. In this assessment<sup>[16]</sup>, two PIEs were identified (the release of 100% of the inventory of a PUTT and a bulk container, 100% HTO conversion).

In 1996, SRBT contracted the services of Alpha-Dyne LLC to define additional scenarios and assess the dose to a member of the public. Several other PIEs were identified for analysis<sup>[17]</sup>, including the impact of a tornado, the impact of a large rogue vehicle, and the total destruction of the building by fire.

In 2000, Alpha-Dyne LLC once again assessed additional PIEs as part of licence renewal, including a smoldering fire within the controlled area of the facility<sup>[18]</sup>, and a smoldering fire that causes structural failure of the mezzanine<sup>[19]</sup>. CNSC staff also conducted analysis of additional PIEs in support of the licence renewal<sup>[20]</sup>.

Several improvements were implemented in order to reduce or eliminate the probability of the occurrence of analysed PIEs beginning in 2000 as a result of the findings to date, including:

- Fire protection processes and programs were implemented and improved.
- Storage practices in the mezzanine area were optimized.
- New real-time tritium monitoring equipment was put in place on the active ventilation systems.
- Ventilation system performance verification was initiated routinely.
- A maintenance program was implemented.
- Operation of the bulk splitter required direct supervisory oversight.
- The maximum acceptable activity load on any PUTT or bulk container was reduced.
- Procurement of heavy cabinetry to store and protect light sources in Assembly.

In 2008, a comprehensive analysis of PIEs was initiated to establish the credibility and consequences of any given scenario with process improvements having been established. These analyses are documented within SRBT's *Review of Hypothetical Incident Scenarios* document, attached as an appendix to this SAR.

In addition, several other PIEs were identified for analysis based upon the 2007 report titled *Systematic and Quantitative Analysis of Tritium Sources and Their Potential Contribution to Groundwater Contamination*<sup>[21]</sup>. A systematic approach was implemented through an analysis of the movement of tritium through the entire facility and individual processes, a review of historical records relating to events and work practices, and interviews with staff.

The *Review of Hypothetical Incident Scenarios* identified several additional PIEs that warranted analysis for credibility and consequence, including:

- The receipt of a bulk container.
- The receipt of GTLS and devices containing GTLS.
- The operation of the reclamation rig (was already shut down at the time).
- The operation of the stub crusher in Zone 3.
- Laser cutting operations.
- GTLS leak testing.
- Sewer line leakage.
- Releases from GTLS breakage during handling.
- Releases from GTLS during packing.

In 2017, a review of the total set of PIEs identified to that point found that there were no PIEs that had gone unidentified in the latest set of analyses that were not bound already by other analyses.

The seven most significant PIEs were re-analyzed in order to account for (where appropriate) the latest meteorological data for the site, as well as the latest understandings of human-related parameters for the calculation of dose, such as inhalation rates and dose coefficients.

Refer to Appendix C for a historical accounting of these analyses.

d. Summary of Results of Analyses

SRBT's facility Safety Analysis Report was compiled, and the analyses conducted, in accordance with REGDOC-2.4.4 for the first time in 2023 (Revision 5 – current).

The complete and comprehensive results of the technical safety analysis can be found in Appendices A and B.

To summarize the results, Figure 17 is provided on the following page containing the key results of the safety analysis for bounding AOOs, DBAs and BDBAs is presented.

It is concluded that SRBT is meeting the overall safety objective identified in Section 5 for all AOOs and DBAs, as well as the criteria defined in REGDOC-2.4.4 for BDBAs.

PIE	GENERAL EVENT DESCRIPTION	EVENT CATEGORY	MAX. DOSE (mSv)	RECEPTOR	ATMOSPHERIC CONDITION	DISTANCE (m)	MAX. DISTANCE TO < 1 mSv (m)	SAFETY OBJECTIVE MET?
0012B	Leak on processing equipment	AOO	0.015	Public	Pasquill A	99	No dose > 1 mSv	Yes
0018B	Container of lights dropped during ventilation loss	AOO	0.12	Worker	N/A	N/A	N/A	Yes
0014B	Bulk container heated for a prolonged period + leak	DBA	< 0.001	Public	Pasquill A	99	No dose > 1 mSv	Yes
0024A	High heat release-rate building fire, 100% tritium loss as HTO	DBA	0.42	Public	Pasquill E	200	N/A	Yes
0024A	Smoldering fire, 100% tritium loss as HTO	DBA	0.51	Public	Pasquill E	200	N/A	Yes
0023A	Lift gate failure during pallet loading for shipment, 25% release with 25% being HTO	DBA	0.45	Public	Pasquill F	200	130	Yes
0038C	Roof collapse due to snow accumulation, 5% HTO	DBA	1.37	Public	Pasquill A	20	92	Yes
0001B	Loss of electrical and ventilation plus tritium leak on processing equipment.	DBA	14.99	Worker	N/A	N/A	N/A	Yes
0033A	Aircraft crash into facility	BDBA	0.282	Public	Pasquill B	10	No dose > 1 mSv	Yes
0014B	Bulk container heated for a prolonged period + leak 100% HTO	BDBA	0.28	Public	Pasquill A	99	120	Yes
0024B	100% tritium loss as HTO via active ventilation system	BDBA	6.59	Public	Pasquill A	99	2,700	Yes
0039D	Explosion due to natural gas leak	BDBA	6.00	Public	Pasquill D	200	1,200	Yes
0018B	Container of lights dropped during ventilation loss, 10% HTO	BDBA / DEC	12.00	Public	Pasquill F	11	110	Yes

**NOTE: Safety objectives for AOO and DBA → < 50 mSv for worker, < 1 mSv for public at 200 m.**

**NOTE: Safety objectives for DEC and BDBA as per REGDOC-2.4.4 reference [15] and [16].**

**FIGURE 17: SUMMARY OF ANALYSES**

## 8. Commissioning

### a. Historical Description of Facility Commissioning

The SRBT facility was built in 1990, and was initially authorized for operation under an AECB radioisotope licence<sup>[22]</sup> that did not require provision of a detailed process for commissioning as a component of the licence basis.

The facility was built, tested and placed into service using best practice and experience from previous GTLS manufacturing facilities. A formal commissioning plan was not required at that time.

The requirements pertaining to the control of Commissioning in nuclear facilities have become more advanced and formally detailed since the facility was put into operation.

### b. Current Commissioning Processes

As part of SRBT processes that control Engineering Change, new or modified SSCs that have a significant effect on the safety of the facility, the workers or the public must be subjected to controlled commissioning prior to being put into service.

ENG-026, *Commissioning Process* outlines the requirements associated with these activities. The Engineering Change Request (ECR) process includes commissioning as an integrated consideration, and ensures that physical changes within the facility are controlled, and documented provisions and criteria are put in place to test and place into service new or modified systems or components.

Refer to the ENG-series of procedures for more detailed information on Commissioning.

## 9. Operational Aspects

### a. Organization

Refer to the organizational chart in Section 3 of this report.

The organization that operates the SRBT facility includes Senior Management (comprising of the owners of the facility), with a team of managers that report directly to them. Each critical element of operation of the facility and the management of safety is addressed by the management team.

Supervisors for each unique manufacturing / processing area report directly to the Production Control Manager, who is tasked with overseeing the processes that ensure that our products are manufactured to quality specifications in a timely and cost-effective manner.

A complete description of the organization, including the specific job description and responsibilities of each individual organizational unit, are included within the descriptive document *Organizational Structure and Responsibilities*. Refer to the in-force revision of this top-tier management system document for more information.

In addition to the responsibilities held by individual managers in overseeing production and safety-related processes, the concept of Committees has been implemented to ensure that issues and improvements are addressed in a fashion that promotes teamwork and collective effort of the organization as a whole. Committees may include both management and workers in order to achieve their goals.

Refer to the in-force revision of the descriptive document *Committee Process and Descriptions* for additional details.

### b. Management System Procedures

Directly subordinate to the overall Quality Manual (which is the top-tier management system document) are a set of Management System Procedures that govern high level activities that are key to facility safety and control.

All managers implement these processes to ensure that there is a consistent application of requirements in several areas that affect all aspects of our operations, such as document control, management review, self-assessments, communication and information management, as well as others.

Refer to the MSP-set of processes for more information on these elements of our management system.

### c. Administrative Procedures

It is the responsibility of each internal organization to develop and maintain controlled processes that ensure continued conformance to the requirements of the NSCA, associated regulations, conditions of the operating licence, ISO 9001 and our customers.

Administrative procedures stem from the requirements of the SRBT management system, as described within the Quality Manual. Procedures are controlled as per MSP-001, *Document Control*.

A complete list of procedures and programs that are used to ensure the effective management of the facility can be obtained from the company network. A list is retained on file and is updated as required when procedures or programs are revised, or new procedures or programs are created and implemented.

### d. Operating Procedures

Operation of the facility is performed in support of the manufacture of quality products that contain and use GTLS for illumination purposes.

Procedures govern all aspects of the work that occurs at the facility in support of this business goal, as well as the execution of safety-related activities such as maintenance and health physics.

The following sets of production procedures are in place at SRBT, and can be obtained from the company network at any time:

- 100-series (Glass Shop)
- 200-series (Coating Room)
- 300-series (Extrusion Process)
- 400-series (Rig Room)
- 450-series (Tritium Laboratory)
- 500-series (Laser Cutting)
- 600-series (GTLS testing)
- 700-series (UV Printing / Silkscreening)
- 800-series (Assembly)
- 900-series (Machine Shop)

In particular, the 400-, 450-, 500- and 600-series procedures are those that have the most significant bearing on nuclear and radiological safety at the facility. These procedures are developed in a way that ensures that the facility safety objectives are met at all times.

Safety and operational programs typically include subordinate procedures that control associated activities. The following sets of programmatic procedures are in place at SRBT, and can be obtained from the Quality Manager (or company network) at any time:

- EFF-series (Effluent Monitoring)
- EMP-series (Environmental Monitoring)
- ENG-series (Engineering)
- FPP-series (Fire Protection)
- GMP-series (Groundwater Monitoring)
- HAS-series (Health and Safety)
- LSC-series (Liquid Scintillation Counting)
- MAT-series (Materials Control)
- MTC-series (Maintenance)
- PLA-series (Production Planning)
- QAS-series (Quality)
- RSO-series (Radiation Safety Operations)
- SHP-series (Shipping and Receiving)
- WMP-series (Waste Management)

Programs and procedures are in place in order to ensure the achievement of safety objectives, and compliance with the requirements of the operating licence.

e. Emergency Procedures and Accident Management

SRBT has implemented and documented an Emergency Plan that complies with the requirements of CNSC REGDOC 2.10.1, *Nuclear Emergency Preparedness and Response*.

As documented within the plan, the declaration of an emergency will result in the engagement of both internal and external response organizations in order to effectively manage the situation and return the facility to the safe state.

The SRBT Emergency Response Organization is headed by the President of SRBT, who holds the overall responsibility for the design, management and implementation of the plan, and acts as the incident commander during any emergency or exercise. In the absence of the President, the Vice-President will assume these duties.

The main emergency response is expected to be provided by conventional response organizations, including the Pembroke Fire Department, the County of Renfrew Paramedic Service, and the Ontario Provincial Police. Training and familiarization with the nature of the SRBT facility is provided as required.

A complete description of the provisions in place for the effective management of an emergency at SRBT can be found in the in-force revision of the SRBT Emergency Plan.

f. Maintenance, Surveillance, Inspection and Testing

In order to ensure that the facility remains fit for service at all times, and that corrective and preventive maintenance is scheduled, performed and controlled, SSCs that have been evaluated and graded as being important to safety or business processes are captured within the scope of the SRBT Maintenance Program.

The program establishes the responsibilities and key elements that ensure that risks associated with failure or unavailability of safety-related SSC are limited to the lowest reasonable extent.

The required intervals for periodic testing and inspection of key SSCs important to safety is also defined as part of the program. A preventive maintenance schedule is implemented in order to document and drive these activities, and detailed procedures are in place to govern the specific maintenance of these SSCs.

g. Ageing Management

As part of the overall maintenance strategy of the facility, ageing of SSCs is managed using conventional oversight. A specific program or process on ageing management is not viewed as a key element of the SRBT maintenance program.

h. Change Control Process

Changes and modifications to both SSCs and management system documents are governed using management system process MSP-007, *Change Control*.

The Project Engineer is responsible for ensuring the implementation of these controls as the steward of this process, as well as the documentation and record keeping that control changes within the facility.

As early in the process as possible, and prior to any change being implemented, an Engineering Change Request (ECR) is documented on a controlled form. An ECR may be raised by any organizational manager in order to address problems or drive improvement, or for any other reason. The rationale for the change is explicitly documented on the form in order to ensure a record of the reasons behind the change is captured and retained.

Each individual Safety and Control Area is reviewed against the proposed change to determine if the implementation of the change could result in an effect in a given safety area.

Design requirements are included on the ECR where applicable, and any supporting documentation must be kept on file with the ECR. The ECR circulates to those members of the organization that should be aware of the change, and may have feedback, suggestions or a significant stake in the change. This ensures that changes are effectively controlled, and communicated throughout the organization.

i. Qualification and Training of Personnel

SRBT maintains and implements a SAT program in order to ensure that human performance is acceptable and that human error is limited in both frequency and consequence.

CNSC REGDOC 2.2.2, *Personnel Training* establishes the requirements relating to training of workers at SRBT. Training at SRBT is controlled and governed by the requirements and processes within the CNSC-accepted SRBT Training Program Manual.

Processes that pose the potential for significant nuclear safety-related events with a human performance factor are training using a systematic approach to training which includes qualification maintenance and refresher training elements.

j. Human Factors

Although human factors are considered where applicable, the expected interactions of workers with the SSCs and processes implemented at the SRBT facility do not require the implementation of a Human Factors management program as would be expected for a nuclear power plant.

SRBT does not house any area that could be construed as a 'main control room', nor does the facility operate under a shift rotation basis where hand-off or debriefing is required to be controlled.

As well, SRBT does not fall within the scope of the requirements relating to worker fitness for duty, as documented in the REGDOC 2.2.4, *Fitness for Duty* series.

#### k. Feedback of Operational Experience

A system of routine management reviews is required by the SRBT management system, as detailed in MSP-008, *Management Review*.

Management meetings are held at least annually, and more frequently depending on circumstances, in order to discuss several areas of operation from which operational experience can be gathered and fed back into improvement processes. Such information includes:

- the status of actions from previous management reviews;
- review of the quality policy for adequacy.
- changes in external and internal issues that are relevant to the quality management system (the awareness of changes in its business environment);
- information on the performance and effectiveness of the quality management system, including trends in:
  - customer satisfaction and feedback from relevant interested parties;
  - the extent to which quality objectives have been met;
  - process performance and conformity of products and services;
  - nonconformities and corrective actions;
  - monitoring and measurement results;
  - audit results;
  - the performance of external providers;
  - self-assessment activities
  - benchmarking activities
- the adequacy of resources;
- the effectiveness of actions taken to address risks and opportunities;
- opportunities for improvement.

In addition, all committee meetings held at SRBT offer an opportunity to share and learn from operational experiences, and to take effective action in order to drive continuous improvement.

#### l. Documents and Records

Management system documentation, including programs, procedures and forms, are retained on file and managed by the Quality Manager. Record retention times are described within these documents, and important information is retained both electronically and in hard copy.

MSP-004, *Information Management* documents the processes and strategies implemented by the management at SRBT to ensure that information is managed in a fashion that complies with the requirements of the management system.

## 10. Operational Limits and Conditions

The following list of operational limits and conditions (OLCs) relate to those requirements that are to be met or adhered to in order to ensure with a high degree of confidence that the facility safety objective identified in Section 5 (a) will be met for all normal operating modes and conditions, AOOs and DBAs.

### a. Tritium Possession Limit

SRBT is authorized by licence to possess up to 6,000 TBq of tritium in any form.

### b. Tritium Processing – Precipitation

Tritium processing shall not occur during measurable periods of precipitation, as detected by the precipitation detection system or equivalent.

### c. Tritium Releases to Atmosphere – Tritium Oxide

SRBT shall not release in excess of  $6.72\text{E}+13$  Bq of tritium oxide to atmosphere in any year.

### d. Tritium Releases to Atmosphere – Tritium Oxide + Elemental

SRBT shall not release in excess of  $4.48\text{E}+14$  Bq of total tritium as tritium oxide and tritium gas to atmosphere in any year.

### e. Minimum Differential Pressure Measurements for Tritium Processing

Tritium processing operations shall not occur unless the following differential pressures are achieved, as measured by the gauges on each of the active ventilation system stacks:

- Rig Stack: 0.27 inches of water column
- Bulk Stack: 0.38 inches of water column

These measurements correspond to an average effective stack height of 27.8 metres, assuming a wind speed of 2.2 m/s.

### f. Tritium Releases to Sewer – Water-soluble Tritium

SRBT shall not release in excess of  $2.00\text{E}+11$  Bq of water-soluble tritium to the municipal sewer system in any year.

### g. PUTT Filling Cycles

Any PUTT base is limited to 30 complete bulk splitter filling cycles, after which it is no longer permitted to be used for further tritium processing.

#### h. PUTT / Bulk Container Tritium Loading Limit

PUTTs are limited to less than 111,000 GBq of tritium loading at any time.

Bulk containers are limited as follows:

- SRBT shall request no more than 925,000 GBq per bulk container when submitting a purchase order to an approved supplier of tritium gas.
- No bulk container shall exceed 1,000,000 GBq of tritium loading at any time.

#### i. Bulk Container Heating Limit

Bulk tritium containers are limited to a heating temperature of approximately 550 °C, as measured by the thermocouple placed between the heating band and the container surface. Brief and small exceedances of this value are tolerable so long as they are not sustained and the temperature is returned below this value as soon as possible.

#### j. On-site Depleted Uranium Inventory

The on-site physical inventory of depleted uranium (virgin, in use and decommissioned bases) is limited to 10 kg.

## 11. Radiation Protection

### a. Application of ALARA Principle

SRBT implements a comprehensive Radiation Protection Program, titled *Radiation Safety Program*.

Within the program, the application of the principle of keeping radiation doses as low as reasonably achievable (ALARA) is established, where it is noted that SRBT strives to achieve ALARA through the implementation of management control over work practices; personnel qualifications and training; the control of occupational and public exposure to radiation; and planning for unusual situations.

The Health Physics team is comprised of a specialized group of management and staff that are very well-versed in the nature of the facility, and the particular hazards that tritium present with respect to Radiation Protection. The team frequently reviews dose levels to ensure that radiation exposure is maintained ALARA at all times, as well as environmental monitoring results to ensure that tritium releases are minimized and the effect of the facility on the environment and the public is ALARA.

### b. Sources of Radiation

The primary source of radiation hazards in the facility is tritium in its elemental and oxide state.

Tritium gas is processed during the manufacture of GTLS, resulting in internal exposure to ionizing radiation in workers who inhale, ingest or absorb the substance.

Low, chronic exposures are experienced by staff who perform tritium processing operations, while infrequent exposures may be experienced by those in other parts of the facility, such as in the Assembly area should GTLS be broken during device assembly or packing.

Tritium may also present a hazard during the handling and storage of waste.

The small quantity of depleted uranium retained on site represents the only other source of radiation exposure to workers; however, due to the infrequent handling of the material, as well as the limitation of such a small quantity, expected doses are negligible. Confirmatory surveys are performed after any operation where DU is handled.

### c. Design Features for Radiation Protection

The active ventilation AHUs are the primary design feature of the facility that provides a radiation protection function. The AHUs have been detailed extensively in Section 6(a) (vi). Air flow is designed to flow from areas of low levels of contamination through higher (i.e. from Zone 1 to Zones 2 and 3; and from Zone 2 to 3).

There are several ventilated cabinets in Zones 2 and 3 that support safe work with tritium. Constant flow fume hoods are typically employed with closing glass sashes that permit effective isolation of contaminated items from the breathing space of workers.

The selection of dry-scroll vacuum pumps is in the interest of radiation protection. Oil-based vacuum pumps have been used in the past for tritium processing operations; however, the radiation dose consequences associated with pump operation and maintenance are significantly greater than that afforded by modern scroll pump technology. As a result, beginning in 2005 all oil-based vacuum pumps were removed and replaced with scroll pumps.

Tritium processing equipment is designed and built in a fashion that is intended to minimize internal process volume. This leads to two distinct radiation protection advantages. First, if the internal volumes are minimized, then the amount of tritium that must be desorbed during a given processing run is also minimized, as is the consequence should leakage occur. Second, at the conclusion of processing there is a residual amount of tritium that cannot be re-adsorbed back onto the PUTT. This is the primary source of routine tritium emissions. If the internal volume of the system is minimized, then so is the amount of tritium that is released through the ventilation system when the processing equipment is pumped down again.

Contamination control barriers are in place to ensure that any spread of contamination by way of personnel transitioning through zones is effectively eliminated. Radiological Zones are clearly delineated by doors and rooms. Tritium-in-air monitoring equipment is available throughout the facility.

### d. Radiation Monitoring

Three stationary TAMs provide continuous monitoring and alarm capability in Zone 3, while one stationary TAM provides monitoring in each of Zone 2 and Zone 1 (in the Shipping Area). Portable TAMs are also widely available for localized monitoring of tritium process equipment and GTLS.

Real-time stack monitors continuously assess the concentration of tritium in each active ventilation stack / AHU. This information is recorded using a digital data recorder.

Refer to the Radiation Safety Program for additional detail on TAMs at SRBT.

e. Radiation Protection Program

SRBT implements a comprehensive Radiation Protection Program, titled *Radiation Safety Program*.

The program documents the governing principles that contribute to effective radiation protection at the facility, the responsibilities of members of the organization with respect to RP, and a description of the Health Physics team and its role in ensuring the RP of all staff and the public.

The zoning strategy is described in the program, as well as the required protective equipment and clothing that must be donned by personnel entering Zones 2 and 3.

The program also describes the training requirements for RP at SRBT. All staff members who work at SRBT are designated as NEWs, and thus require an understanding of the expected risks associated with exposure to ionizing radiation. Staff are provided this indoctrination training at the earliest opportunity upon hiring, prior to any active work, and training is provided on an annual basis that is focused on the radiation safety practices in place at SRBT, as well as the risks associated with expected doses.

Contamination control provisions are described, and the frequency of checks established. Procedures are also referenced relating to the leak checking of GTLS prior to exit from Zone 3. Expected staff responses to audible alarms due to tritium in air are outlined. All items being removed from Zone 3 or 2 into Zone 1 are assessed for contamination prior to removal.

The methods and processes used to establish radiation doses for workers at SRBT are described. SRBT has maintained a Dosimetry Service Licence (DSL), issued by the CNSC, and conducts in-house routine bioassay testing of all NEWs in order to establish radiation exposures. Reports are filed with the National Dose Registry on a quarterly basis as required by the DSL, and SRBT participates in independently administered performance testing every year as a condition of the DSL.

Action levels and administrative limits are included in the program in order to drive corrective actions and ensure that control is maintained over the hazards, and radiation exposures remain ALARA.

Overall, SRBT implements a robust and mature program that fosters a high level of radiation protection in all aspects of facility operation.

For additional detail on RP at SRBT, consult the Radiation Safety Program and associated procedures.

## 12. Emergency Preparedness

### a. Emergency Plan

SRBT has implemented and documented an Emergency Plan that complies with the requirements of CNSC REGDOC 2.10.1, *Nuclear Emergency Preparedness and Response*.

### b. Emergency Response Facilities

As documented within the plan, the declaration of an emergency will result in the engagement of both internal and external response organizations in order to effectively manage the situation and return the facility to the safe state.

The SRBT Emergency Response Organization is headed by the President of SRBT, who holds the overall responsibility for the design, management and implementation of the plan, and acts as the incident commander during any emergency or exercise. In the absence of the President, the Vice-President will assume these duties.

The main emergency response is expected to be provided by conventional response organizations, including the Pembroke Fire Department, the County of Renfrew Paramedic Service, and the Ontario Provincial Police. Training and familiarization with the nature of the SRBT facility is provided as required.

A complete description of the provisions in place for the effective management of an emergency at SRBT can be found in the in-force revision of the Emergency Plan.

### c. Fire Protection Program

As part of the licensing basis of the facility, SRBT implements a comprehensive Fire Protection Program (FPP). This program meets the requirements of CSA Standard N393-13, *Fire protection programs for facilities that process, handle or store nuclear substances*.

The program details the responsibilities associated with ensuring the protection of the facility from fire hazards. The Vice-President of SRBT is responsible for the FPP, with the support of staff members with extensive experience in fire protection and suppression.

The FPP discusses procedures that ensure safety, how fire is prevented from occurring, and how systems are tested, inspected and maintained.

Requirements are documented relating to impairments of systems or components associated with fire protection, emergency provisions, and safe fire design considerations and requirements.

Fire protection systems and equipment are detailed within the FPP, and the special hazards that may be present in the facility due to its nature are itemized.

The FPP includes several plans that contribute to safety and preparedness in case of fire. A Site Plan provides a detailed set of maps that guide the reader to the location of fire safety equipment and emergency egress paths. A pre-incident fire plan documents the critical information pertaining to fire protection. Finally, a detailed Fire Safety Plan is in place to describe the expected response of workers should fire be detected.

Consult the in-force revision of the FPP for additional details on fire protection at SRBT.

### 13. Environmental Aspects

#### a. Radiological Impacts

NOTE: A comprehensive risk assessment on the environmental impacts of the operation of the SRBT facility was completed in 2021. Consult SRBT's [Environmental Risk Assessment](#)<sup>[23]</sup> report for a complete analysis of all radiological, conventional and physical impacts on the surrounding environment.

Tritium processing results in small quantities of elemental tritium gas and tritium oxide being released via the active ventilation stacks at the northwest corner of the facility. These two stacks are described in Section 6 of this report, and are located within a fenced secure compound area.

The amount of tritium that may be released to atmosphere via the gaseous effluent stream is limited by licence. On a weekly basis, stack monitoring using the TASCs discussed in Section 6 allows for the quantification of emissions of both forms of tritium over the previous period. The quantity of tritium released in any week is compared against a set of action levels in order to provide assurance that an adequate level of control is being maintained during facility operation.

Small amounts of water-soluble tritium is released to the municipal sewer system, ultimately being diluted by several orders of magnitude before being released after waste water treatment processes have been completed at the Pembroke Pollution Control Centre.

SRBT verifies that the risks remain acceptably low by implementing a comprehensive Environmental Protection Program, which includes a wide variety of sample media:

- Passive air samplers collect tritium in air, allowing a monthly integrated representation of the average tritium concentration in air in that area.
- Precipitation monitors are located in eight wind sectors; rain and snow is collected monthly and assessed for tritium concentration.
- Groundwater monitoring takes place on a routine frequency – residential, commercial and dedicated monitoring wells are sampled and assessed for tritium concentration.
- Monitoring of the nearby Muskrat River is performed on a frequent basis at a point downstream of where any effects due to SRBT operations are expected to be measured.
- Locally produced milk is collected and sampled for tritium concentration.
- Produce monitoring of both local residential and commercial gardens is conducted during the harvest season.

Various other measurements and samples have been conducted of a wide variety of media in order to determine if there was any significant risks associated with the operation of the facility.

Independent third-party expert contractors provide sampling and measurement of EMP media throughout the year.

As part of the annual compliance report, routinely collected EMP data is used to calculate the expected public dose due to SRBT operations. These calculations incorporate conservative assumptions of such parameters as breathing rate, produce and water consumption, and residence times. Four distinct classes of critical group members are analysed based upon methodologies documented in the CSA N288-series of standards.

At current rates of production, and barring any incident or event, public doses are expected to trend well below 10  $\mu\text{Sv}$  per year, a dose that is often interpreted to correspond to a trivial level of risk. Note that for the preceding five years of operations (2018-2022), the average calculated dose to the public has been 2.462  $\mu\text{Sv}$  per year.

In summary, environmental data continues to support the determination that the current design and operation of the SRBT facility results in a limited, if not negligible impact on the environment.

This determination is supported by the work of the CNSC under their Independent Environmental Monitoring Program. Results between the SRBT and CNSC programs are generally quite comparable, thus providing independent verification that the public and the environment around SRBT are safe, and that our environmental monitoring program is working.

The expected magnitude of the radiological impact to the environment is not expected to change during eventual facility decommissioning.

#### b. Non-radiological Impacts

SRBT does not currently emit any appreciable quantities of conventional chemicals or contaminants to the environment as part of facility operations. This is expected to remain the case throughout the life cycle of the facility, including during eventual decommissioning.

Any emission of conventionally hazardous materials is regulated by the Ontario Ministry of the Environment. SRBT maintains registration with the Hazardous Waste Information Network (generator number ON5968708) for certain subject wastes.

## 14. Radioactive Waste Management

### a. Control of Waste

As part of the licensing basis of the facility, a comprehensive Waste Management Program has been developed and implemented which covers all aspects of radioactive waste management at the facility. This program has been developed in line with the guidance of applicable CSA N292-series of standards, including:

- N292.0, *General principles for the management of radioactive waste and irradiated fuel.*
- N292.3, *Management of low- and intermediate-level radioactive waste.*
- N292.5, *Guideline for the exemption or clearance from regulatory control of materials that contain, or potentially contain, nuclear substances.*

Radioactive waste is controlled using processes aimed at ensuring waste is minimized, classified, segregated, characterized, stored, cleared where acceptable, and disposed of in a safe and compliant fashion.

### b. Handling of Waste

All radioactive wastes are carefully segregated according to the classification system, at the source of generation.

Segregation is conducted initially by the worker who is the primary generator or processor of the waste. Training is provided to all staff by the area supervisors on how waste is classified, segregated and initially stored in their assigned work area.

Dedicated waste receptacles are designated for the purpose of collecting radioactive waste that is generated as part of daily work. Each type of receptacle is clearly marked, and workers ensure that the correct types of materials are placed in each type of container.

Characterization is performed on all classes of radioactive wastes generated at SRBT.

For wastes generated on a routine basis, characterization is performed using established, acceptably conservative methods in order to:

- define segregation and safe handling requirements,
- define the waste package type, packaging materials and packing method requirements,
- determine the optimal disposition option, and
- to verify the suitability of the intended disposition path

The requirements relating to the handling of radioactive wastes are described in procedure WMP-002, *Waste Handling and Minimization*.

c. Minimization of Waste

At SRBT, waste minimization is recognized as a fundamental approach in protecting people and the environment. An additional benefit is that waste minimization can often result in a reduction of costs.

All personnel are encouraged to participate in identifying new methods of eliminating or reducing waste and, to a practicable extent, employ waste minimization techniques in their daily operations. The Waste Management Committee is responsible to promote waste minimization goals to all staff working at SRBT.

Minimization techniques and requirements throughout the facility are described in procedure WMP-002, *Waste Handling and Minimization*.

d. Storage of Waste

Low-level waste materials are stored in Zone 3 within the Waste Storage Room.

This 7' x 6' room is made of concrete blocks with a poured concrete floor. It has two access points - a sealed door to the outside and a door to the work area in Zone 3. Routine access is gained from the Zone 3 area. The external access door is always locked and is not routinely used for any purpose.

The Waste Storage Room is routinely assessed for non-fixed tritium contamination. Daily swipes of the Waste Storage Room are performed to monitor the area for possible surface contamination.

Any wastes that have been characterized as clearance-level waste may be stored temporarily in an appropriate area pending final disposal.

For further details regarding the storage of radioactive waste materials, refer to WMP-003, *Interim Preparation and Storage of Waste*.

e. Disposal of Waste

Low-level wastes are collected and stored until sufficient material is present to warrant performing a transfer to a licensed waste management facility using approved methods.

Clearance level waste materials are restricted by annual weight that may be disposed of, as well as a limit on activity per unit mass, as defined by the SRBT Conditional Clearance Levels document.

For additional information pertaining to the waste management practices in place at SRBT, refer to the latest accepted revision of the Waste Management Program, as well as associated procedures and technical reports.

## 15. Decommissioning and End of Life Aspects

### a. Decommissioning Plan

SRBT has a documented and approved Preliminary Decommissioning Plan (PDP) which forms part of the overall licensing basis of the facility.

Within this plan, the end state objective is stated as the permanent retiring of the SRBT facility from service in a manner that protects the health, safety and security of workers, the public and the environment. Upon completion of decommissioning, the facility will be in a condition that will permit the premises to be released from any further regulatory control by the CNSC, allowing future commercial or industrial use or redevelopment.

A 'prompt removal' strategy will be adopted for the decommissioning of the facility. Decommissioning activities begin immediately upon facility shutdown and shall continue without interruption until complete. For planning purposes, it is anticipated that the facility will be decommissioned within six months from initiation of safe shutdown.

A phased schedule of planned activities is included in the PDP, itemizing the required activities and conservative cost estimates associated with the work. In order to adequately facilitate the decommissioning, planning envelopes have been developed with defined work packages being structured within each envelope.

The PDP was last revised in 2019, and was accepted as part of the licensing basis of the facility with the issuance of NSPFL-13.00/2034. The plan is reviewed and revised on a five-year frequency.

### b. Financial Guarantee

In order to comply with the requirements of the Nuclear Safety and Control Act, as well as the operating licence, SRBT must maintain an accepted and adequate financial guarantee for the future decommissioning of the facility.

The current financial guarantee is based upon the revised 2019 PDP, and amounts to \$727,327.00. The guarantee is over-funded to 104.5% of this value as of the end of 2022.

SRBT maintains an escrow agreement combined with a security and access agreement which would provide access to the funds should SRBT be unable to meet its obligations with respect to decommissioning of the facility.

## 16. Public Information Program

SRBT implements and maintains a Public Information Program (PIP) that includes a Public Disclosure Protocol, as part of our management system. This program is developed in line with the requirements of REGDOC-3.2.1, *Public Information and Disclosure*.

An important aspect of SRBT operations is the goal to be transparent, visible and open with our community, our regulators, and our staff. The PIP is designed to build awareness that SRBT is a nuclear substance processing facility, and to ensure a proactive approach is taken with members of the public living in the vicinity of the facility, local and adjacent businesses, local special interest groups and local elected officials.

SRBT employs several public information strategies and products aimed at achieving these objectives:

- A Public Information Committee has been implemented to ensure the execution of the PIP, and to monitor public opinion and media coverage.
- SRBT offers facility tours on a frequent basis to persons who wish to learn more about our operations.
- Presentations are made to local community groups as required, including City Council.
- As required, SRBT implements public meetings where information on overall operations, emissions measurements, monitoring results, mitigation measures, incidents and any other current activity may be provided.
- SRBT publishes a pamphlet and a brochure, both of which provide details and information on the facility, as well as associated levels of risk to persons.
- A comprehensive website is maintained at [www.srbt.com](http://www.srbt.com) where anyone with internet access can learn more about our facility, and access data pertaining to our operations, including information about Environmental Protection, and environmental monitoring results.

Consult the SRBT Public Information Program for additional information on the ways that our facility interfaces with the public and stakeholders.

## 17. Safety Analysis Review Process

SRBT maintains the SAR in a controlled fashion at a defined frequency, in order to ensure that the report contains recent and relevant information pertaining to the facility operations.

The procedure that governs this activity is ENG-022, *Facility-level Safety Analysis*, and is in place to ensure compliance with the guidance pertaining to safety analysis in CSA standard N286-12, section 8.4, as well as REGDOC-2.4.4, *Safety Analysis for Class IB Nuclear Facilities*.

This procedure requires that periodically, the Manager – Health Physics and Regulatory Affairs ensures that a documented review of the SAR takes place. This review shall include, but is not limited to, evaluations of:

- changes to important site characteristics, such as hydrogeological, meteorological and seismic aspects.
- changes in the nature of other industrial facilities or businesses in the vicinity of the facility.
- internal process changes that may have an effect on safety.
- organizational changes.

Both routine and non-routine review requirements are described within ENG-022. The review is documented and controlled, and records of the review are retained on file for the operating life of the facility.

**18. References**

- [1] Letter from M. Harrington (898702 Ontario Inc.) to S. Levesque (SRBT), dated May 4, 2021.
- [2] *Comprehensive Report – Groundwater Studies at the SRB Technologies Facility, Pembroke, ON*, EcoMetrix Inc., dated January 2008 (Ref. 07-1471)
- [3] Seismic information from NRC website at <http://www.earthquakescanada.nrcan.gc.ca/zones/eastcan-eng.php#WQSZ>
- [4] <https://climatedata.ca/download/#station-download>, input 'Pembroke Climate' for weather station selection.
- [5] *Derived Release Limit for the SRB Pembroke Facility - 2016 Update*, dated 22 January 2017.
- [6] *Derived Release Limit for the SRB Pembroke Facility - 2021 Update*, dated 30 October 2021.
- [7] Meteorological information from Environment Canada website at [http://climate.weather.gc.ca/climate\\_normals/results\\_1981\\_2010\\_e.html?stnID=4243&autofwd=1](http://climate.weather.gc.ca/climate_normals/results_1981_2010_e.html?stnID=4243&autofwd=1)
- [8] Data obtained from Open Government Canada at [https://data-donnees.ec.gc.ca/data/weather/products/canadian-national-tornado-database-verified-events-1980-2009-public/canadian-national-tornado-database-verified-tracks-1980-2009-public-gis-en/GIS\\_CAN\\_VerifiedTracks\\_1980-2009.csv](https://data-donnees.ec.gc.ca/data/weather/products/canadian-national-tornado-database-verified-events-1980-2009-public/canadian-national-tornado-database-verified-tracks-1980-2009-public-gis-en/GIS_CAN_VerifiedTracks_1980-2009.csv)
- [9] <https://www.cbc.ca/news/canada/ottawa/thrid-tornado-eastern-ontario-1.4837021>
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- [11] Census information from Statistics Canada website at <http://www12.statcan.gc.ca>
- [12] IAEA Safety Report Series No. 44, *Derivation of Activity Concentration Values for Exclusion, Exemption and Clearance*, 2005.
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- [15] <http://www.perkinelmer.ca/en-ca/Catalog/Product/ID/B291000>

- [16] Pensome, *Nuclear Safety Note NSN-SRB-071, Population Densities and Estimated Doses from Accidental Releases for the SRB Tritium Lamp Plant, Pembroke*, 1990. Prepared by Atomic Energy of Canada Limited.
- [17] Tompkins and Leonard, *Safety Analysis Report AD9601 for Potential Radiological Impact from Hypothetical Release of Tritium at the SRB Technologies, Canada Facility Located at 320 Boundary Road, Pembroke, Ontario*, 1996. Prepared by Alpha-Dyne, LLC
- [18] Tompkins, *Safety Analysis Report AD2000-1 for Potential Radiological Impact from Hypothetical Release of Tritium from a Smoldering Fire Incident at the SRB Technologies, Canada Facility Located at 320 Boundary Road, Pembroke, Ontario*, 2000. Prepared by Alpha-Dyne, LLC
- [19] Tompkins, *Safety Analysis Report AD2000-1A for Potential Radiological Impact from Hypothetical Release of Tritium from a Smoldering Fire Incident that Causes Structural Failure of the Mezzanine at the SRB Technologies, Canada Facility Located at 320 Boundary Road, Pembroke, Ontario*, 2000. Prepared by Alpha-Dyne, LLC
- [20] *Review of accident scenarios for SRB Technologies Environmental Assessment*, CNSC internal report dated November 23, 2000.
- [21] *Systematic and Quantitative Analysis of Tritium Sources and Their Potential Contribution to Groundwater Contamination*, SRBT report dated March 29, 2007.
- [22] AECB Radioisotope Licence 5-11341-92
- [23] SRBT Environmental Risk Assessment report can be found through this link at <http://www.srbt.com/>

**19. Appendices**

- [A] SRBT Facility-level Safety Analysis - 2023
- [B] Data Tables for HotSpot Models - 2023
- [C] 2017 Review and Update of Hypothetical Worst-Case Scenarios for SRBT
- [D] Rationale for Change to OL&C for Minimum Effective Stack Height (effective for Revision 4) – November 2017

## **APPENDIX A**

### **SRBT Facility-level Safety Analysis - 2023**



**SRB Technologies (Canada) Inc.**

To: File  
From: Jamie MacDonald  
Manager – Health Physics and Regulatory Affairs  
Re: **ENG-022, Facility-level Safety Analysis; Section 4, Step 1**

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Procedure ENG-022, *Facility-level Safety Analysis* describes the procedure for conducting safety analysis at the facility level, the output of which is the SRBT Safety Analysis Report (SAR).

This procedure was revised in March 2023 to incorporate new requirements stemming from the publication of CNSC REGDOC-2.4.4, *Safety Analysis for Class IB Nuclear Facilities*.

Section 4 of ENG-022 describes the sequence of steps for the conduct of the analysis, which will ultimately inform the next revision of the SAR. Step 1 is as follows:

1) *Based on experience and understanding of the key nuclear substance processing operations and processes at the facility, **a list of credible internal and external events that deviate from normal operations is compiled**. These events are then classified using the following scheme:*

- a) Anticipated operational occurrence (AOO)*
- b) Design-basis accident (DBA)*
- c) Beyond design-basis accident (BDBA)*
- d) Design extension condition (DEC) – a subset of BDBA*

The purpose of this memo is to document the aforementioned list of credible internal and external events that deviate from normal operations, and may credibly have a nuclear safety-related impact on workers, members of the public, and/or the environment.



The memo will describe the methodology in creating this list, as well as the classification applied (with justification) for each credible event.

#### **METHODOLOGY:**

- A review of the current and previous versions of the SAR.
- Review of selected external events for applicability, as per Appendix C of REGDOC-2.4.4.
- Research OPEX on significant events in similar nuclear substance processing facilities.
- Discussions with, and input from the following SRBT technical experts:
  - President
  - Vice President
  - Fire Protection Specialist
  - Manager – Health Physics and Regulatory Affairs
  - Project Engineer
  - Rig Room Supervisor

#### **RESULTS:**

A review of the current and previous versions of the SAR.

Historically the SRBT SAR has analyzed the impact of events that are postulated as “hypothetical worst-case scenarios”. These were derived and carried through several iterations of the SAR as follows:

- In 1990, AECL was contracted to analyze the impact of the **release of the entire contents of tritium from one tritium trap** (56 TBq), with the assumption of the source term being 100% tritium oxide.
- In 1990, the AECB recommended a similar analysis for the **release of the entire contents of tritium from a bulk tritium transport container** (1,110 TBq), using the same parameters and site characteristics as were applied for the tritium trap event.



- In 1996, Alpha-Dyne LLC was contracted to update the facility safety analysis, incorporating certain internal and external events that could hypothetically occur. These included a **tornado**, a facility **fire**, and the **impact of a large rogue vehicle**.
- In 2000, Alpha-Dyne LLC was contracted to update the facility safety analysis to include the analysis of a **smoldering fire** that does not result in the total destruction of the building.
- In 2000, CNSC staff requested Alpha-Dyne LLC to analyze a **smoldering fire that collapses the mezzanine level of the facility** onto what was formerly the shipping area, where a significant inventory of finished products was located, in order to understand the combined impact of such a fire combined with the crushing and breakage of tritium-containing items.
- In 2000, CNSC staff conducted a review where they independently analyzed certain scenarios as part of their environmental assessment. Included in this review was the **release of the entire contents of tritium from a bulk tritium transport container loaded with its maximum inventory (1,850 TBq)**.
- In 2008, SRBT included two internal events in a revised SAR, focused on analyzing releases from **breakage during handling** and **breakage during packing**.
- In 2017, SRBT revised the SAR but did not identify any additional internal or external events that were not bounded by the set of seven “hypothetical worst-case” events analyzed.



Review of selected external events for applicability, as per Appendix C of REGDOC-2.4.4.

The following additional external events are “to be considered for applicability” with associated guidance, as per Appendix C of REGDOC-2.4.4:

- Wind and tornado loading – already included.
- **Flooding hazards** – some discussion in the current SAR on the very low probability of this type of event posing a threat.
- **Seismic hazards** – some discussion in the current SAR on the very low probability of this type of event posing a threat.
- **Aircraft crashes** – the current SAR only notes that there are no major airports near the facility.

Research OPEX on significant events in similar nuclear substance processing facilities.

The following resources were reviewed to identify other credible internal and external events:

- IAEA Nuclear Event Web-based System (NEWS) (public data only)
- US NRC Event Notification Reports, including ‘Search Event Notifications’ functions for targeted key words, under licensee type “Other Nuclear Material”.
- CNSC Nuclear-related Event Reports

The results of this review identified the following events that deviate from normal operations, which are potentially credible and/or applicable to SRBT’s Class IB nuclear substance processing facility:

- Of 336 records of events reported to the US NRC under “Other Nuclear Material”, most reports were for damaged, lost or stolen nuclear materials. These types of events are typically part of the scope of a facility security assessment, and as such will not be analyzed in detail as part of this process.

- An additional search for the keywords “emergency declaration” found the following events that may need to be considered, and are viewed as potentially credible for the SRBT facility:
  - **Wildfires**
  - **Extended loss of off-site power**
  - **Extreme weather (hot, cold, freezing rain, snow accumulation)**
  - **Building explosions (process related, fugitive flammable gas buildup)**
- Two instances of **roof fires** occurring at Canadian nuclear substance processing facilities, in 2015 and 2020, with no significant safety impact.
- A review of publicly-accessible IAEA NEWS events did not find any credible events beyond what has been found.

4. Discussions with, and input from SRBT technical experts.

All of the highlighted event types recognized through the first three exercises were compiled into a single list.

This list was shared with the aforementioned technical experts, with the following questions posed:

*In your estimation and experience, are there any other credible internal or external events that, if they took place, could have a significant, unanalyzed impact on the nuclear or radiological safety of workers, the public and / or the environment?*

Two events were recognized via this process:

- An **emergency event at a nearby facility not controlled by SRBT.**
- A skid of finished **safety signs falling off of the tailgate of a transport vehicle** while loading for transport.

#### **CATEGORIZATION OF EVENTS:**

The final list of credible internal and external events that deviate from normal operations is provided on the following pages, along with the assigned classification of each event in accordance with ENG-022 and REGDOC-2.4.4.



EVENT DESCRIPTION	PRELIMINARY CLASSIFICATION	INTERNAL / EXTERNAL	JUSTIFICATION OF CLASSIFICATION
The release of the entire contents of a tritium trap with maximum loading.	AOO	Internal	Previously analyzed, with one known event having occurred in facility history (although the trap was not loaded to the maximum).
The release of the entire contents of a bulk tritium transport container with maximum loading.	DBA	Internal	Not expected to occur at a rate greater than 10 <sup>-2</sup> per year. Facility and organizational designs are in place to mitigate the potential of this event taking place.
Breakage of tritium lights during handling.	AOO	Internal	Events of this type occur frequently; however, major events with the breakage of multiple light sources is very rare.
Breakage of tritium lights during packing.	AOO	Internal	Events of this type occur infrequently; however, major events with the breakage of multiple light sources is very rare.
Facility fire – large	DBA	Internal	Not expected to occur at a rate greater than 10 <sup>-2</sup> per year. Facility and organizational designs are in place to mitigate the potential of this event taking place.
Facility fire – small smoldering	DBA	Internal	Not expected to occur at a rate greater than 10 <sup>-2</sup> per year. Facility and organizational designs are in place to mitigate the potential of this event taking place.
Facility fire with mezzanine collapse	DBA	Internal	Not expected to occur at a rate greater than 10 <sup>-2</sup> per year. Facility and organizational designs are in place to mitigate the potential of this event taking place.

Impact of a large rogue vehicle	BDBA	External	Analyzed previously; however, this event is not likely to occur at a rate greater than $10^{-5}$ per year, and the likelihood of significant radiological or nuclear safety-related impacts are very low given the facility and organizational design considerations in place.
Tornado	DBA	External	Analyzed previously.
Flooding	BDBA	External	This event is not likely to occur at a rate greater than $10^{-5}$ per year; however, additional research and quantification of consequences of dam failures upstream on the Ottawa River may be warranted.
Seismic events	DBA	External	Minor earthquakes have been assessed (i.e., less than 4 on the Richter scale). Earthquakes greater in magnitude are very rare; however, an analysis may be warranted.
Aircraft crashes	BDBA	External	This event is not likely to occur at a rate greater than $10^{-5}$ per year given currently know air traffic patterns.
Wildfires	DBA	External	Estimated to be an event which could occur between $10^{-2}$ and $10^{-5}$ times per year given climate change.
Extended loss of off-site power	AOO	External	Events of this type occur infrequently, with the most recent event taking place in 2019.
Extreme hot weather	AOO	External	Events of this type occur infrequently.
Extreme cold weather	AOO	External	Events of this type occur infrequently.
Extreme freezing rain event	AOO	External	Events of this type occur infrequently.



Extreme snow fall event	AOO	External	Events of this type occur infrequently.
Explosion due to fugitive flammable gas	DBA	Internal / External	Not expected to occur at a rate greater than $10^{-2}$ per year. Facility and organizational designs are in place to mitigate the potential of this event taking place.
Roof fire	DBA	External	Not expected to occur at a rate greater than $10^{-2}$ per year. Facility and organizational designs are in place to mitigate the potential of this event taking place.
Emergency event at nearby facility	BDBA	External	This event is not likely to occur at a rate greater than $10^{-5}$ per year given current understanding of the safety-related provisions in place by the nearby facilities; however, it is advisable to analyze the potential impact should such a rare event occur.
Safety signs falling off of the tailgate of a transport vehicle	DBA	Internal / External	Not expected to occur at a rate greater than $10^{-2}$ per year. Facility and organizational designs are in place to mitigate the potential of this event taking place.

*AOO – Anticipated operational occurrence (REGDOC-2.4.4 probability given as an event with a likelihood of occurrence that is greater than  $10^{-2}$  per year)*

*DBA – Design-basis accident (less than  $10^{-2}$  but greater than  $10^{-5}$  per year)*

*BDBA – Beyond design-basis accident (less than  $10^{-5}$  per year)*

**NOTES:**

Final event classification will be assigned once the safety analysis process is underway. For example, once supplementary research into the frequency of an event is completed, it may either confirm these preliminary classifications, or re-classify the event based on the information and analysis.

The above classifications are solely based on the projected frequency of the event, as per REGDOC-2.4.4. The facility and organizational design factors that will impact the progression of any given event either have been established in previous analyses, OR will be established through this process.



## **CONCLUSION**

The above list of credible events, both internal and external along with their preliminary classification, will form a key input into the next steps in the facility-level safety analysis process.

Jamie MacDonald



**SRB Technologies (Canada) Inc.**

To: File  
From: Jamie MacDonald  
Manager – Health Physics and Regulatory Affairs  
Re: **ENG-022, Facility-level Safety Analysis; Section 4, Step 2**

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Procedure ENG-022, *Facility-level Safety Analysis* describes the procedure for conducting safety analysis at the facility level, the output of which is the SRBT Safety Analysis Report (SAR).

This procedure was revised in March 2023 to incorporate new requirements stemming from the publication of CNSC REGDOC-2.4.4, *Safety Analysis for Class IB Nuclear Facilities*.

Section 4 of ENG-022 describes the sequence of steps for the conduct of the analysis, which will ultimately inform the next revision of the SAR. Step 2 is as follows:

*2) Conservative safety analysis assumptions are compiled, such as which safety-related structures, systems and components (SSC) will be available and operable during events, what actions employees or responders will take once the event occurs, and the time it will take to perform the actions.*

The purpose of this memo is to document the compilation of conservative assumptions that will be considered when analyzing the various safety-related aspects of credible events.

The memo will describe the methodology in creating this list, as well as the classification applied (with justification) for each credible event.

**METHODOLOGY:**

- A review of the current and previous versions of the SAR.
- Research OPEX on significant events in similar nuclear substance processing facilities.



- Discussions with, and input from the following SRBT technical experts:
  - President
  - Vice President
  - Fire Protection Specialist
  - Manager – Health Physics and Regulatory Affairs
  - Project Engineer
  - Logistics Manager
  - Rig Room Supervisor

## **RESULTS:**

The attached tables describe:

1. The relevant SSC expected to be available to maintain defense-in-depth should credible events take place,
2. What actions are expected to be taken by employees or first responders during said events,
3. The estimated real time that can conservatively be expected before these actions are taken, and
4. Preliminary discussions on the types of postulated initiating events (PIEs) (and sequences of events, if applicable) that may contribute to the occurrence of a given credible event.

## **CONCLUSION**

These assumption will form a key input into the next steps in the facility-level safety analysis process. As well, the preliminary discussions on PIEs will contribute to the next stage of the safety analysis.

Jamie MacDonald

CREDIBLE EVENT DESCRIPTION	PRELIMINARY CLASSIFICATION	INTERNAL / EXTERNAL	JUSTIFICATION OF CLASSIFICATION	RELEVANT SSCS EXPECTED TO AVAILABLE TO MAINTAIN DEFENSE IN DEPTH	ACTIONS TAKEN BY EMPLOYEES OR FIRST RESPONDERS	ESTIMATED TIME FOR ACTIONS	PIE and SEQUENCES THAT MAY LEAD TO EVENT
The release of the entire contents of a tritium trap with maximum loading.	AOO	Internal	Previously analyzed, with one known event having occurred in facility history (although the trap was not loaded to the maximum).	Active ventilation systems, gaseous effluent monitoring systems	Attempt to limit release, including containment of tritium trap if damaged	10 minutes	<ol style="list-style-type: none"> <li>1. Operator heats tritium trap with the valve closed for prolonged period, leading to rupture (much less likely now than before with all-Swagelok design).</li> <li>2. Main vacuum valve fails in the open state combined with vacuum pump running combined with failure of operator to respond to high tritium concentration alarm on GEMS system.</li> <li>3. Physical leak of process system piping during tritium light source filling operation combined with a failure of operator to respond to high tritium concentration alarm on GEMS system.</li> </ol>
The release of the entire contents of a bulk tritium transport container with maximum loading.	DBA	Internal	Not expected to occur at a rate greater than 10-2 per year. Facility and organizational designs are in place to mitigate the potential of this event taking place.	Active ventilation systems, gaseous effluent monitoring systems	Attempt to limit release, including containment of tritium container if damaged	10 minutes	<ol style="list-style-type: none"> <li>1. Physical leak of process system piping during tritium trap filling operation combined with a failure of operator to respond to high tritium concentration alarm on GEMS system.</li> <li>2. Both operators either leave the area or become incapacitated during bulk container heating, resulting in at maximum 13 atm. of tritium pressure inside the bulk splitting rig process piping and bulk container, combined with a process system leak.</li> <li>3. Main vacuum pump left running during processing operation combined with the failure of three valves in series between tritium-bearing process piping and pump, combined with a failure of both operators to respond to high tritium concentration alarm on GEMS system.</li> </ol>

Breakage of tritium lights during handling.	AOO	Internal	Events of this type occur frequently; however, major events with the breakage of multiple light sources is very rare.	Active ventilation systems, room tritium-in-air monitors, gaseous effluent monitoring systems	Vacate the area in accordance with training.	1 minute	<ol style="list-style-type: none"> <li>1. A range of worker-related PIEs are known and understood, from a single light source slipping out of a worker's grasp, up to a container of light sources being dropped or knocked off a shelf. Worst case based on review of inventory levels in Assembly Room is around 1,200 730H light sources.</li> <li>2. Lights are left in the muffle oven or freezer by mistake for a prolonged period of time combined with light failure due to prolonged thermal stress.</li> </ol>
Breakage of tritium lights during packing.	AOO	Internal	Events of this type occur infrequently; however, major events with the breakage of multiple light sources is very rare.	Active ventilation systems, room tritium-in-air monitors, gaseous effluent monitoring systems	Vacate the area in accordance with training.	1 minute	<ol style="list-style-type: none"> <li>1. A package is dropped in shipping while being prepared.</li> <li>2. Bagged light sources are dropped in shipping while being prepared.</li> </ol>
Facility fire – large	DBA	Internal	Not expected to occur at a rate greater than 10-2 per year. Facility and organizational designs are in place to mitigate the potential of this event taking place.	Fire detection systems, fire suppression systems, fire responder alarm systems, fire zone barriers.	Facility evacuation, emergency response organization activated.	5 minutes	<ol style="list-style-type: none"> <li>1. Electrical system-related initiating event, combined with failure of fire detection system, combined with failure of fire suppression system.</li> <li>2. Electrical system-related initiating event, combined with failure of the fire detection system to effectively alert the Pembroke Fire Department.</li> <li>3. Open flame-related initiating event, combined with failure of fire detection system, combined with failure of fire suppression system.</li> <li>4. Open flame-related initiating event, combined with failure of the fire detection system to effectively alert the Pembroke Fire Department.</li> <li>5. Mechanical-related initiating event, combined with failure of fire detection system, combined with failure of fire suppression system.</li> <li>6. Mechanical-related initiating event, combined with failure of the fire detection system to effectively alert the Pembroke Fire Department.</li> </ol>

Facility fire – small smoldering	DBA	Internal	Not expected to occur at a rate greater than 10-2 per year. Facility and organizational designs are in place to mitigate the potential of this event taking place.	Fire detection systems, fire suppression systems, fire responder alarm systems, fire zone barriers.	Pull fire alarm. Attempt to extinguish fire in accordance with training for use of fire extinguishers. Facility evacuation, emergency response organization activated.	5 minutes	<ol style="list-style-type: none"> <li>1. Electrical system-related initiating event.</li> <li>2. Open flame-related initiating event.</li> <li>3. Mechanical-related initiating event.</li> </ol>
Facility fire with mezzanine collapse	DBA	Internal	Not expected to occur at a rate greater than 10-2 per year. Facility and organizational designs are in place to mitigate the potential of this event taking place.	Fire detection systems, fire suppression systems, fire responder alarm systems, fire zone barriers.	Facility evacuation, emergency response organization activated.	5 minutes	<ol style="list-style-type: none"> <li>1. Electrical system-related initiating event, combined with failure of fire detection system, combined with failure of fire suppression system.</li> <li>2. Electrical system-related initiating event, combined with failure of the fire detection system to effectively alert the Pembroke Fire Department.</li> <li>3. Open flame-related initiating event, combined with failure of fire detection system, combined with failure of fire suppression system.</li> <li>4. Open flame-related initiating event, combined with failure of the fire detection system to effectively alert the Pembroke Fire Department.</li> <li>5. Mechanical-related initiating event, combined with failure of fire detection system, combined with failure of fire suppression system.</li> <li>6. Mechanical-related initiating event, combined with failure of the fire detection system to effectively alert the Pembroke Fire Department.</li> </ol>

Impact of a large rogue vehicle	BDDBA	External	Analyzed previously; however, this event is not likely to occur at a rate greater than 10 <sup>-5</sup> per year, and the likelihood of significant radiological or nuclear safety-related impacts are very low given the facility and organizational design considerations in place.	Active ventilation systems, room tritium-in-air monitors, gaseous effluent monitoring systems	Facility evacuation, emergency response organization activated.	5 minutes	<p>1. A large rogue vehicle is driven on Boundary Road at a high rate of speed combined with accidental or willful orientation of the vehicle toward the facility, combined with the vehicle missing all ditches, trees and other vehicles before colliding with the facility at the northeastern most corner of the facility at a speed and angle that interacts with the bulk splitting rig and tritium laboratory storage room.</p> <p>2. A large rogue vehicle is driven from the east near Superior propane from a stop, ramping up to as high of a rate of speed as possible and crossing Boundary Road, combined with accidental or willful orientation of the vehicle toward the facility, combined with the vehicle missing all ditches, trees and other vehicles before colliding with the facility at the northeastern most corner of the facility at a speed and angle that interacts with the bulk splitting rig and tritium laboratory storage room.</p>
Tornado	DBA	External	Analyzed previously.	Depends on the nature and magnitude of the tornado event.	Shelter in place or facility evacuation depending on warnings	5 minutes	Natural external initiating event - tornado. F3 and greater very rare (Dunrobin tornado in 2019 was classed F3; an F4 in Chesterville took place in 1902).
Flooding	BDDBA	External	This event is not likely to occur at a rate greater than 10 <sup>-5</sup> per year; however, additional research and quantification of consequences of dam failures upstream on the Ottawa River may be warranted.	Depends on the nature and magnitude of the flood event.	Facility evacuation, emergency response organization activated.	5 minutes for evacuation depending on warnings	Double dam failure combined with 1 in 10,000 year precipitation event combined with 1 in 100 year snow accumulation (see NSDF EIS - Ottawa River credited as rising to 122 masl at CNL in this case, SRBT is about 130 masl and downstream for many km).
Seismic events	DBA	External	Minor earthquakes have been assessed (i.e., less than 4 on the Richter scale). Earthquakes greater in magnitude are very rare; however, an analysis may be warranted.	Depends on the nature and magnitude of the seismic event.	Shelter in place or facility evacuation depending on magnitude of event.	5 minutes for evacuation depending on event	Natural external initiating event - earthquake.

Aircraft crashes	BDBA	External	This event is not likely to occur at a rate greater than 10-5 per year given currently know air traffic patterns.	Depends on the nature and magnitude of the aircraft crash.	Facility evacuation, emergency response organization activated.	5 minutes	External initiating event.
Wildfires	DBA	External	Estimated to be an event which could occur between 10-2 and 10-5 times per year given climate change.	Active ventilation systems, gaseous effluent monitoring systems, fire detection systems, fire suppression systems, fire responder alarm systems.	Facility evacuation, emergency response organization activated.	5 minutes	Natural external initiating event - wildfire.
Extended loss of off-site power	AOO	External	Events of this type occur infrequently, with the most recent event taking place in 2019.	Gaseous effluent monitoring systems for a period of time to ensure safety	Facility would be shutdown, secured and monitored physically.	N/A	External initiating event. Choose PIE based on historical trends.
Extreme hot weather	AOO	External	Events of this type occur infrequently.	Ventilation systems	If electricity is lost, operators ensure facility is put into passive safe state.	N/A	External initiating event. Choose PIE based on historical trends.
Extreme cold weather	AOO	External	Events of this type occur infrequently.	Ventilation systems	If electricity is lost, operators ensure facility is put into passive safe state.	N/A	External initiating event. Choose PIE based on historical trends.
Extreme freezing rain event	AOO	External	Events of this type occur infrequently.	Ventilation systems	If electricity is lost, operators ensure facility is put into passive safe state.	N/A	External initiating event. Choose PIE based on historical trends.
Extreme snow fall event	AOO	External	Events of this type occur infrequently.	Ventilation systems	If electricity is lost, operators ensure facility is put into passive safe state.	N/A	External initiating event. Choose PIE based on historical trends.
Explosion due to fugitive flammable gas	DBA	Internal / External	Not expected to occur at a rate greater than 10-2 per year. Facility and organizational designs are in place to mitigate the potential of this event taking place.	Ventilation systems in areas where gas buildup could occur. As well, gas detection systems are deployed	If present in the facility, a gas leak would likely be detected by employees before it becomes an explosion hazard. They are trained to respond appropriately.	Within 5 minutes	1. Valve failure on a torch combined with natural gas systems in an energized state, combined with workers not being present in the area to detect leak combined with condition persisting enough to create an explosive atmosphere combined with a spark.
Roof fire	DBA	External	Not expected to occur at a rate greater than 10-2 per year. Facility and organizational designs are in place to mitigate the potential of this event taking place.	None.	Any contractors performing hot works on the roof would be under a fire watch in accordance with procedures. Fire extinguishers would be available as well.	Within minutes of a fire beginning.	1. Hot work taking place on the roof by contractors combined with inadequate fire protection measures. 2. Wildfire embers land on the roof in sufficient number and density leading to a self-fuelling fire.

Emergency event at nearby facility	BDDBA	External	This event is not likely to occur at a rate greater than 10 <sup>-5</sup> per year given current understanding of the safety-related provisions in place by the nearby facilities; however, it is advisable to analyze the potential impact should such a rare event occur.	Fire detection systems, fire suppression systems, fire responder alarm systems, fire zone barriers.	Worst-case scenario is expected to provide ample time to place the facility in a passive safe state before evacuation to a safe distance in case of BLEVE.	Within 20 minutes of being alerted of a potential BLEVE-inducing fire at nearby facility.	<ol style="list-style-type: none"> <li>1. A fire takes place under or near one of the two bulk propane storage and distribution facilities nearby, combined with first responders being ineffective at quenching the fire, resulting in a BLEVE accident.</li> <li>2. A significant ammonia leak takes place at Pem-Ice II arena combined with wind coming from the north/north east.</li> </ol>
Safety signs falling off of the tailgate of a transport vehicle	DBA	Internal / External	Not expected to occur at a rate greater than 10 <sup>-2</sup> per year. Facility and organizational designs are in place to mitigate the potential of this event taking place.	Portable tritium in air monitors to assess impact of event outside the facility.	Tritium release would be limited by the content of the packages that fall off the tailgate while being loaded. 100% release is highly unlikely. Devices are designed to withstand a degree of damage without breakage. Immediate assessment of radiological conditions. Possible activation of ERO	Within 5 minutes.	<ol style="list-style-type: none"> <li>1. A lift gate fails while a skid of signs is loaded on it, tipping over and falling 1.5 metres to the ground on its side.</li> </ol>

## PART A: IDENTIFICATION OF POSTULATED INITIATING EVENTS (PIE)

PIE ID	PIE Description	Internally / Externally Initiated?	Could Lead to... (AOO/DBA/BDBA)	Identification Methodology	Recommended Classification
0001	Loss of electrical power	External	AOO	Operating experience (OPEX); technical team review (TTR)	Loss of services
0002	Loss of domestic water supply	External	AOO	OPEX / TTR	Loss of services
0003	Loss of natural gas supply	External	AOO	OPEX / TTR	Loss of services
0004	Loss of active ventilation system – Rig Stack	Internal	AOO	OPEX / TTR	Equipment failure
0005	Loss of active ventilation system – Bulk Stack	Internal	AOO	OPEX / TTR	Equipment failure
0006	Loss of active ventilation system - both	Internal	AOO	OPEX / TTR	Equipment failure
0007	Loss of fire detection system	Internal	AOO	OPEX / TTR	Equipment failure
0008	Loss of fire suppression system	Internal	DBA	OPEX / TTR	Equipment failure
0009	Loss of compressed air / pneumatics	Internal	AOO	OPEX / TTR	Equipment failure
0010	Tritium trap heated with valve closed for prolonged period	Internal	AOO	OPEX / TTR	Human error
0011	Main vacuum valve on processing rig fails in the open state	Internal	AOO	OPEX / TTR	Equipment failure
0012	Physical leak of tritium process system piping	Internal	AOO	TTR	Equipment failure
0013	Malfunction or loss of real-time GEMS	Internal	AOO	TTR	Equipment failure
0014	Bulk container heated for prolonged period	Internal	DBA	TTR	Human error
0015	Main vacuum pump left running during bulk splitter processing operations	Internal	DBA	TTR	Human error
0016	Light source removed from processing rig during filling operations	Internal	AOO	TTR	Human error

0017	Light source breaks during filling operations	Internal	AOO	TTR	Equipment failure
0018	A bin containing 3,000 '730H' lights is dropped while being carried	Internal	AOO	TTR	Human error
0019	Lights are left in muffle oven for prolonged period of time	Internal	AOO	OPEX / TTR	Human error
0020	Lights are left in testing freezer for prolonged period of time	Internal	AOO	OPEX / TTR	Human error
0021	A package is dropped while being prepared for shipping	Internal	AOO	OPEX / TTR	Human error
0022	Bagged light sources are dropped while being prepared for shipping	Internal	AOO	OPEX / TTR	Human error
0023	Lift gate failure on truck	External	DBA	TTR	External event
0024	Ignition of flammable materials inside the facility	Internal	DBA	TTR	Special interest event
0025	Ignition of flammable materials outside of the facility	External	DBA	TTR	External event
0026	Wildfire	External	DBA	TTR	External event
0027	Ignition of flammable materials during hot works on roof	Internal / External	DBA	External OPEX / TTR	Human error
0028	Tornado – EF1	External	DBA	External OPEX / TTR	External event
0029	Flooding – complete facility inundation	External	BDBA	External OPEX / TTR	External event
0030	Flooding – moderate facility inundation due to external factors	External	AOO	OPEX / TTR	External event
0031	Flooding – minor facility ingress due to internal leak on water line	Internal	AOO	OPEX / TTR	Equipment failure
0032	Earthquake – 4 or less on Richter scale	External	DBA	TTR	External event

0033	Aircraft crash into facility	External	BDBA	TTR	External event
0034	Prolonged period of weather >40°C	External	AOO	OPEX	External event
0035	Prolonged period of weather <-40°C	External	AOO	OPEX	External event
0036	Prolonged period of freezing rain	External	AOO	OPEX	External event
0037	Three consecutive days of record rainfall	External	AOO	TTR	External event
0038	Three consecutive days of record snowfall	External	AOO	TTR	External event
0039	Fugitive flammable gas leak	Internal	DBA	TTR	Equipment failure
0040	Emergency event at nearby propane distribution facility – BLEVE	External	BDBA	TTR	External event
0041	Emergency event at nearby ice rink – ammonia leak	External	BDBA	TTR	External event
0042	Large vehicle impacting the facility	External	BDBA	TTR	External event
0043	Tornado – EF2 or worse	External	BDBA	TTR	External event
0044	Earthquake – 5 or greater on the Richter scale	External	BDBA	TTR	External event

**PART B: CLASSIFICATION OF POSTULATED INITIATING EVENTS (PIE)**

Event Classification	AOO/DBA/BDBA	PIE ID	PIE Description	Bounding Event?
Loss of services	AOO	0001	Loss of electrical power	Yes, for AOOs in this classification
	AOO	0002	Loss of domestic water supply	
	AOO	0003	Loss of natural gas supply	
Equipment failure	AOO	0004	Loss of active ventilation system – Rig stack	
	AOO	0005	Loss of active ventilation system – Bulk stack	
	AOO	0006	Loss of active ventilation system - both	
	AOO	0007	Loss of fire detection system	
	DBA	0008	Loss of fire suppression system	
	AOO	0009	Loss of compressed air / pneumatics	
	AOO	0011	Main vacuum valve on processing rig fails in the open state	
	AOO	0012	Physical leak of tritium process system piping	Yes, for AOOs in this classification
	AOO	0013	Malfunction or loss of real-time GEMS	
	AOO	0017	Light source breaks during filling operations	
	AOO	0030	Flooding – minor facility inundation due to internal leak on water line	
	DBA	0039	Fugitive flammable gas leak	Yes, for DBAs in this classification
Human error	AOO	0010	Tritium trap heated with valve closed for prolonged period	
	DBA	0014	Bulk container heated for prolonged period	Yes, for DBAs in this classification
	DBA	0015	Main vacuum pump left running during bulk splitter processing operations	
	AOO	0016	Light source removed from processing rig during filling operations	
	AOO	0018	A bin containing 3,000 '730H' lights is dropped while being carried.	Yes, for AOOs in this classification

	AOO	0019	Lights are left in the muffle oven for prolonged period of time	
	AOO	0020	Lights are left in testing freezer for prolonged period of time	
	AOO	0021	A package is dropped while being prepared for shipping	
	AOO	0022	Bagged light sources are dropped while being prepared for shipping	
	DBA	0027	Ignition of flammable materials during hot works on roof	
External event	DBA	0023	Lift gate failure on truck	Yes, for DBA in this classification
	DBA	0025	Ignition of flammable materials outside of the facility	
	DBA	0026	Wildfire	
	DBA	0028	Tornado – EF1	
	BDBA	0029	Flooding – complete facility inundation	
	AOO	0030	Flooding – moderate facility ingress due to external factors	
	DBA	0032	Earthquake – 4 or less on the Richter scale	
	BDBA	0033	Aircraft crash into facility	Yes, for BDBAs in this classification
	AOO	0034	Prolonged period of weather >40°C	
	AOO	0035	Prolonged period of weather <-40°C	
	AOO	0036	Prolonged period of freezing rain	
	AOO	0037	Three consecutive days of record rainfall	
	AOO	0038	Three consecutive days of record snowfall	Yes, for AOOs in this classification
	BDBA	0040	Emergency event at nearby propane distribution facility – BLEVE	
	BDBA	0041	Emergency event at nearby ice rink – ammonia leak	
	BDBA	0042	Large vehicle impacting the facility	
BDBA	0043	Tornado – EF2 or worse		
BDBA	0044	Earthquake – 5 or greater on the Richter scale		
Special interest event	DBA	0024	Ignition of flammable materials inside the facility	Yes, for DBAs in this classification

**PART C: REVIEW DETAILS AND APPROVAL**

Based on a review by SRBT technical specialists and experts, this list of PIEs is determined to be comprehensive, and includes all credible failures of the facility’s structures, systems and components, and all credible human errors that could occur in any operating condition of the facility more probable than 10<sup>-6</sup> occurrences per year.

**REVIEW NUMBER and DATE:**

Name: Stephane Levesque

Title: President

Signature:

Name: Ross Fitzpatrick

Title: Vice President

Signature:

Name: Jamie MacDonald

Title: Manager – Health Physics and Regulatory Affairs

Signature:

Name: Tanya Sennett

Title: Quality Manager

Signature:

Name: Owen Egan

Title: Project Engineer

Signature:

Name: Eric Gaudette

Title: Fire Protection Specialist

Signature:



**SRB Technologies (Canada) Inc.**

To: File  
From: Jamie MacDonald  
Manager – Health Physics and Regulatory Affairs  
Re: **ENG-022, Facility-level Safety Analysis; Section 4, Steps 6-8**

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Procedure ENG-022, *Facility-level Safety Analysis* describes the procedure for conducting safety analysis at the facility level, the output of which is the SRBT Safety Analysis Report (SAR).

This procedure was revised in March 2023 to incorporate new requirements stemming from the publication of CNSC REGDOC-2.4.4, *Safety Analysis for Class IB Nuclear Facilities*.

Section 4 of ENG-022 describes the sequence of steps for the conduct of the analysis, which will ultimately inform the next revision of the SAR.

Steps 6, 7 and 8 are closely related, and collectively form the actual analysis component of the potential safety-related consequences of PIEs.

These steps are as follows:

*6) A deterministic safety analysis is then performed for each event, in order to assess the potential consequences. Details on this process are included in REGDOC-2.4.4, section 4.4.1.*

*7) The likelihood of PIEs (or event sequences) that lead to each analyzed event is established qualitatively. If warranted, semi-qualitative or quantitative methods may be used to establish likelihoods.*

*8) For each event sequence, the safety functions, SSCs and administrative safety requirements that are important to maintain defense-in-depth are identified. If SSCs are found to be critical to the maintenance of safety objectives, they must be designed to withstand the effects of the event, including any extreme loadings or environmental conditions that may be encountered. Operating experience and human factors considerations are included in this step in a graded fashion.*

The purpose of this memo is introduce the technical safety analysis of previously identified PIEs.

A more detailed analysis of PIEs that are deemed to be ‘bounding’ of others in the same category is performed, while for those PIEs not deemed to be bounding, either the rationale is presented on why this is logically the case, OR an appropriate level of analysis is performed to give adequate confidence that the PIE is very unlikely to have impacts beyond the bounding case. If needed, the PIE is analyzed to the same depth as the bounding case.

The analysis methodology is intended to generally align with the guidance in IAEA TECDOC 1267; in particular, the procedural tasks for accident scenario modelling depicted in Figure 5 of TECDOC-1267 is relied upon for the logical steps in analyzing these events. This model is depicted below:

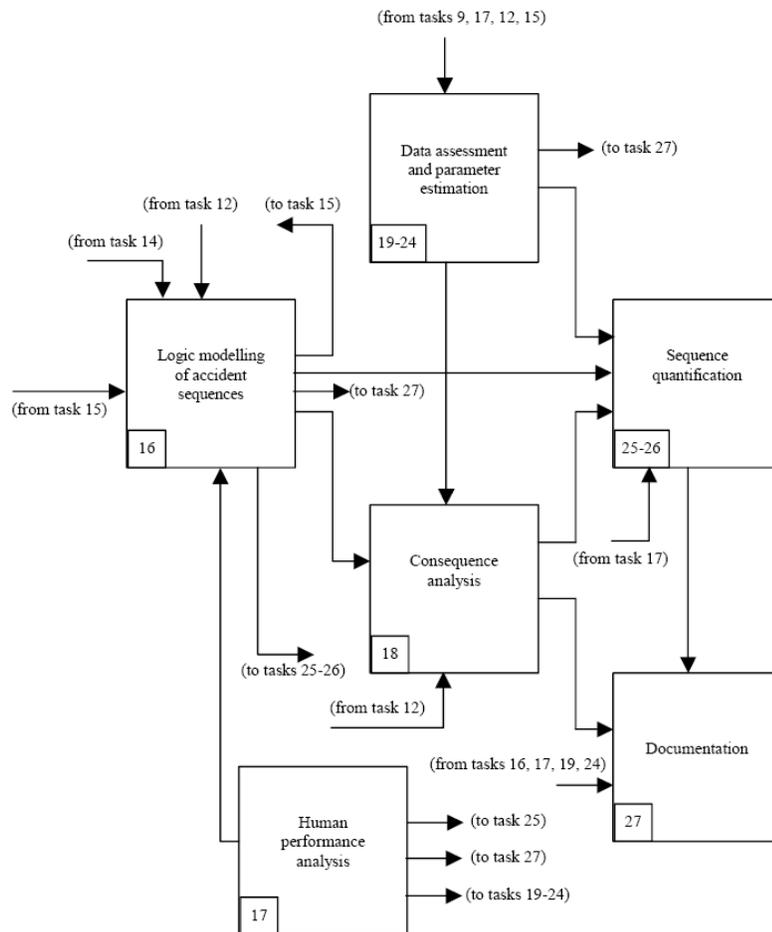


FIG. 5. Procedural tasks for accident scenario modelling.



## **RESULTS:**

Once events are analyzed, the radiological source term will be determined, both inside the facility and in the surrounding environment, as applicable.

The characteristics of that source term, including percentage of tritium oxide vs. elemental tritium, concentration and plume dynamics, and height of release point will also be established. Conservative assumptions may be applied where uncertainty may exist.

These parameters will then be input into the HotSpot modelling program in order to determine the projected dose consequences under various meteorological conditions, for impacted individuals in the surrounding area of the facility.

The dose consequences will be compared with the established safety objectives and acceptance criteria (Section 7 (a) of the SAR), in order to determine if:

- a) The event meets the safety objectives and acceptance criteria, or
- b) Compensatory measures are required in order to ensure that the event will meet safety objectives and acceptance criteria should it take place.

If needed, compensatory measures will be established in the following steps of the analysis, as per ENG-022.

Jamie MacDonald

**EVENT CLASSIFICATION: LOSS OF SERVICES**

<i>Bounding BDBA:</i>	<i>None</i>
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<i>Bounding DBA:</i>	<i>None</i>
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**Bounding AOO:**            **PIE-0001, Loss of electrical power**

**Preliminary Discussion:**

The SRBT facility has limited backup power sources for certain equipment, including the gaseous effluent monitoring system, fire detection and suppression systems, tritium-in-air monitors, and the liquid scintillation counters. This equipment will be available for up to several hours after a loss of electrical power to the facility.

In the case of the fire suppression system, the amount of water available would be limited to the charge in the piping, as the auxiliary pump would be de-energized; however, additional layers of protection are provided by employee training in the use of fire extinguishers, the number of fire extinguishers that are available on site, and the response from the Pembroke Fire Department.

**Logic modelling of accident sequences:**

SEQUENCE 0001A: Loss of electrical power → loss of ventilation → loss of compressor / pneumatics

- Employees immediately put their workstations into a safe and passive state.
- Employees leave active areas of facility (Zone 2 and 3), closing doors behind them.
- Processing equipment valves (filling rigs) automatically revert to 'closed' upon loss of pneumatic power, except for the main tritium valve which is designed to remain 'open' upon loss of pneumatic power, in order to permit any tritium in the rig to adsorb onto the tritium trap.
- After in-process tritium has completed adsorption onto traps, all trap valves are manually closed to ensure safety.
- Facility is now in a passively safe state.

SEQUENCE 0001B: Sequence 0001A + PIE-0012, Physical leak of tritium process system piping

- This sequence is deemed highly unlikely to occur given the operational history of the facility (not expected to occur at a rate greater than 10<sup>-2</sup> per year). **This sequence of events is considered a design-basis accident.**
- Tritium gas is always at a pressure that is lower than atmosphere while in processing equipment; as such, initially there will be leakage of air into the process lines.
- Once equilibrium in pressure is achieved between atmosphere and process lines, there will be competing forces where tritium is continuing to be adsorbed, but also diffusing via the leak point at a slow rate (for the most likely leak type).
- Active ventilation will not be functional, so tritium concentrations are likely to slowly increase in the Zone 3 area over time, depending on initial system pressure, leak rate, and room temperatures and pressures.
- The room will not be populated – any entry will require an assessment using a portable tritium-in-air monitor (battery operated) to determine safety measures.
- Migration of tritium in air is not expected to be significant outside of Zone 3 with doors closed; portable monitors are available to confirm if staff are present in Zone 1.

SEQUENCE 0001C: Sequence 0001A + PIE-0024, Ignition of flammable materials inside the facility

- This sequence is deemed highly unlikely to occur given the operational history of the facility (not expected to occur at a rate greater than 10<sup>-2</sup> per year). It is also bounded by Sequence 0024A (uncontrolled fire throughout facility)
- Upon power loss, all flame emitting equipment is immediately de-energized and put into safe state.
- Fire detection systems are rated for 48 hours of continuous monitoring on backup power supplies. Loss of power events have never lasted longer than 24 hours in the operational history of the facility.
- Should a fire begin in the facility during normal operating hours, staff will be available to respond in line with their fire protection training.
- The monitoring system would alert the Pembroke Fire Department who will respond within 5 minutes typically.
- Lack of ventilation and facility lighting may present additional challenges to fire response; however, these are not expected to significantly impact the ability of the responders to achieve objectives.

**Human performance analysis:**

All of the above human performance elements are captured in operational training, in practice when loss of electrical power takes place, and during emergency response exercises. In the absence of personnel in the facility (i.e. loss of power when the facility is closed), all systems will already be in a passive state.

**Data assessment and parameter estimation:**

No additional data assessment or parameter estimation other than source term and exposure calculations.

**Source term for consequence analysis:**

SEQUENCE 0001A: none

SEQUENCE 0001B:

- **This sequence of events is considered a design-basis accident.**
- Assume sign light processing rig was filling light sources at 35 cm Hg (value for 20 year lights) when loss of pneumatic power takes place, simultaneous to small leak developing in process piping.
- Conservative estimate of activity available for leak on a single rig:
  - ID of process piping = radius ¼", length of piping available for leak = 24"; thus volume = 4.71 inches cubed = about 80 cc.
  - Activity density of tritium gas = 2.589 Ci./cc at STP (76 cm Hg) = 95.8 GBq/cc @ 76 cm Hg
  - Total activity initially available = 95.8 GBq/cc x (35/76) x 80 cc = 3,529 GBq.
- Typical rate of adsorption on a tritium trap at 50 cm conservatively estimated as 10 cm adsorbed per minute initially (based on discussions with operators and OPEX), with the adsorption rate decreasing as pressure approaches baseline. Ultimately, >99% of tritium gas will be typically adsorbed within 10 minutes during a normal processing run.
- For leak rate out of system, a reasonably conservative assumption would be to analyze an immediate 50% loss of initially available activity to work area outside of process piping (i.e. 1,765 GBq of elemental tritium released as a gaseous point source).
- Work area in Zone 3 will be relatively stagnant air due to loss of ventilation. Room volume impacted is about 30 feet in length, 20 feet wide and 10 feet tall (6000 cubic feet, or about 170 cubic meters).
- If we assume uniform distribution, a concentration of (1,765 GBq / 170 m<sup>3</sup> = 10.4 GBq/m<sup>3</sup> of elemental tritium in the air.
- N288-1 dose coefficients for inhalation (Table A.14): HTO = 3.0E-11 Sv/Bq; HT – 2.0E-15 Sv/Bq
- Breathing rate of adult = 8400 m<sup>3</sup>/a = about 0.96 cubic meters of air per hour, or 0.48 cubic meters per half hour.

Conservative dose estimates for SEQUENCE 0001B, with very conservative assumptions that an individual remains in Zone 3 for 30 minutes, breathing at normal adult rates, in a contaminated atmosphere of 10.4 GBq/m<sup>3</sup> of varying oxide to elemental ratios:

- For 100% elemental tritium:
  - 10.4 GBq/m<sup>3</sup> x 0.48 m<sup>3</sup> x 2.0E-15 Sv/Bq = 0.01 mSv
- For 90% elemental tritium and 10% oxide (oxidation rates expected to be far lower than this in stagnant air – ref: LA-UR-96-2953, *Tritium Oxidation in Atmospheric Transport*):
  - (10.4 GBq/m<sup>3</sup> x 0.9 x 0.48 m<sup>3</sup> x 2.0E-15 Sv/Bq) + (10.4 GBq/m<sup>3</sup> x 0.1 x 0.48 m<sup>3</sup> x 3.0E-11 Sv/Bq) = (0.009 mSv) + (14.976 mSv) = 14.985 mSv

SEQUENCE 0001C: none

**Conclusions:** Based upon the above analysis, and considering other potential events, there is an acceptably small probability of a significant safety-related impact on workers, members of the public or the environment for PIE-0001, Loss of Electrical Power. The expected impact of Sequence 0001B falls below the safety objective for a DBA (< 50 mSv). Sequence 0001B also has multiple layers of protection to avoid worst-case impacts (training of staff for power outages, use of portable tritium monitors for entry into any area without ventilation and online room monitoring, etc.). No additional compensatory measures or OLCs need be applied.

**Additional notes on other PIEs in this classification:**

- PIE-0002, Loss of domestic water supply does not have any direct impact on any process or safety-related system. The facility would likely be shut down into a safe passive state unless compensatory measures were put in place for conventional hygienic purposes for staff at the facility.
- PIE-0003, Loss of natural gas supply would result in operational challenges, but no safety-related impacts. If facility heating was lost in the winter due to this loss of service, the facility would be placed in a safe passive state and all water lines drained.
- Neither of these PIEs are anticipated to pose synergistic effects or impacts when combined with other PIEs or events.

**EVENT CLASSIFICATION: EQUIPMENT FAILURE**

**Bounding BDBA:** See Sequence 0039D below.

**Bounding DBA:** PIE-0039, Fugitive flammable gas leak

**Preliminary Discussion:**

The SRBT facility includes natural gas lines that feed heating systems, and provide process gas where flames and torches are used in support of manufacturing. As well, acetylene gas bottles are used for hand-torches in the Rig Room for end-sealing light sources during filling operations. Only one bottle is in use at a time, with one full bottle typically waiting for use in fire-safe design storage room.

**Logic modelling of accident sequences:**

SEQUENCE 0039A: Fugitive flammable gas leak during operating hours

- 1) The leak is detected by gas detector connected to fire panel, resulting in supervisory alarm (if in Rig Room), by local gas detectors, or by employees working in the area.
- 2) Supplemental ventilation is established (doors opened etc.) to reduce gas concentrations if detected early.
- 3) An investigation into the source of the leak is conducted using detection equipment.
- 4) The leak source is isolated downstream of the main or otherwise resolved to eliminate the leak.
- 5) The inlet lines into the facility from the subsurface main may also be isolated to reduce the chance of ignition.

SEQUENCE 0039B: Fugitive flammable gas leak during off-hours

- 1) The leak is detected by gas detector connected to fire panel, resulting in supervisory alarm (if in Rig Room), by local gas detectors, or by employees working in the area.
- 2) The leak continues, with an equilibrium concentration achieved once the rate of leakage into the facility equals the rate of loss by ventilation in the area.
- 3) Upon the next employee entry, the gas detector alarms will be noted, as well as the smell of natural gas.
- 4) The employee will call 911 for assistance from the PFD, and initiate communications with Senior Management.
- 5) If possible the inlet lines into the facility from the subsurface main will be isolated as soon as possible to reduce the chance of ignition.
- 6) Upon arrival of the PFD, supplementary ventilation may be applied (opening doors) to help eliminate fugitive gases.
- 7) An investigation into the source of the leak is conducted using detection equipment under the advice of the PFD and the Fire Protection Committee

SEQUENCE 0039C: Fugitive flammable gas leak during off-hours (0039B) + PIE-0001, Loss of electrical power

- 1) In the absence of ventilation during a loss of electrical power, a leak of natural gas is more likely to reach ignition concentrations; however, the detector on the fire panel will remain functional and provide alarm.
- 2) Unmitigated, the leak would continue, with an equilibrium concentration achieved once the rate of leakage into the facility equals the rate of loss by diffusion in the area.
- 3) Upon the next employee entry, the gas detector alarms will be noted, as well as the smell of natural gas in all likelihood.
- 4) The employee will call 911 for assistance from the PFD, and initiate communications with Senior Management.
- 5) If possible the inlet lines into the facility from the subsurface main will be isolated as soon as possible to reduce the chance of ignition.
- 6) Upon arrival of the PFD, the building will be ventilated to eliminate the fugitive gases by opening doors.
- 7) Further direction will be followed to recover from the leak as per PFD instruction.
- 8) An investigation into the source of the leak is conducted using detection equipment under the advice of the PFD and the Fire Protection Committee

SEQUENCE 0039D: Sequence 0039C + ignition prior to mitigative measures occurring

- 1) This sequence of events is beyond the design basis of the facility.**
- 2) A conservative assumption would be that the building is destroyed explosively; a more likely result is that part of the building where the leak occurred will be destroyed explosively.
- 3) A conservative assumption would be that all items containing gaseous tritium are compromised and the tritium is instantly oxidized upon release at ground level; a more likely result is that the amount of tritium released depends on the area in which the explosion takes place, as well as several factors such as total available inventory of tritium gas, percentage of lights that are compromised, oxidation rate vs. dispersion rate.
- 4) No tritium on traps or bulk storage containers is released in the explosion, as these are sealed off by highly effective bellows valves that are not expected to fail in a fashion that would yield instantaneous release of contents.

**Human performance analysis:**

Training on what to do in case of a natural gas leak is given to workers. Small leaks have occurred historically where glass-shaping torch valves have allowed small quantities of gas to escape into the workspace during operations; however, these have always been quickly isolated, and then investigated using detection tools and appropriately remedied. Natural gas lines are isolated throughout the facility when unoccupied.

**Data assessment and parameter estimation:**

Worst case taken to be the design extension condition of a leak of natural gas into Rig Room area, coupled with a ventilation shutdown due to loss of electrical supply. The leak is modelled as a severed 1-inch gas line, followed by ignition when top end of ignitable concentration is reached.

- Rig room volume taken as 170 cubic meters (see Sequence 0001B).
- 5% of this volume is 8.5 cubic meters of natural gas; 15% of this volume is 25.5 cubic meters of natural gas leaked into the room. (Natural gas flammability concentration is 5-15% approximately).
- Estimate a linear flow rate of 3 m/s (typical max. flow speed in natural gas systems) from a severed 1-inch pipe (0.0005 m<sup>2</sup> orifice) – volumetric flow rate is 3 x 0.0005 = 0.0015 m<sup>3</sup>/sec.
- 8.5 m<sup>3</sup> / 0.0015 m<sup>3</sup>/sec = 5,667 seconds = about 1.6 hours to reach 5% concentration.
- 25.5 m<sup>3</sup> / 0.0015 m<sup>3</sup>/sec = 17,000 seconds = about 4.7 hours to reach 15% concentration.
- Use 'General Explosion Model' in HotSpot for all Pasquill categories, wind from 150 degrees. TNT equivalent calculated using data from <https://www.omnicalculator.com/physics/tnt-equivalent>.
- Energy density of natural gas = 669,440 J/kg
- Energy density of TNT = 4,184,000 J/kg
- Ratio = 0.16
- Density of natural gas = 0.68 kg/m<sup>3</sup>.
- Therefore, mass at worst is 25.5 m<sup>3</sup> x 0.68 kg/m<sup>3</sup> = 17.34 kg
- TNT equivalent = 17.34 kg x 0.16 = 2.77 kg TNT (6.094 lbs. for HotSpot entry)

**Source term for consequence analysis:**

- Assume facility is at maximum tritium inventory level (6,000 TBq) with 75% of inventory in the form of tritium light sources and or devices.
- Assume 100% of available gaseous tritium (4,500 TBq) impacted catastrophically and turned to oxide.

*Refer to HotSpot table summary for projected radiological doses.*

**Conclusions:**

Based upon OPEX from the facility over 30 years, and the protection in place (detection systems, ventilation, maintenance of equipment, employee training), the likelihood of a natural gas leak of a size to reach explosive limits, coupled with ventilation shut down, and the occurrence of an ignition event, resulting in an explosion and associated release is viewed as **beyond the design basis of the facility** and is extremely improbable.

For a BDBA/DEC such as Sequence 0039D, as per Section 4.8 of REGDOC-2.4.4, the licensee shall demonstrate that:

*...the offsite consequences, as calculated at the site boundaries of the licensed facility, of a BDBA included in the DEC do not exceed criteria established as a trigger for temporary evacuation, for long-term relocation of the local population, or for both temporary evacuation and long-term relocation in:*

- *Health Canada's Canadian Guidelines for Intervention During a Nuclear Emergency [15]*
- *IAEA General Safety Requirements No. GSR Part 7, Preparedness and Response for a Nuclear or Radiological Emergency [16]*

HotSpot analysis of unmitigated blast consequences shows 99% fatality within 3.3 meters; incapacitation within 13 meters; IABTI safe distance = 274 meters.

HotSpot analysis of dose consequences indicates that 'child' receptors are the most impacted, with a maximum exposure of 61 mSv at 10 meters in Pasquill D conditions (significant conventional injuries or death very likely due to blast); there would be a decreasing gradient of dose expected >1 mSv within 1,200 meters. At 200 meters from the facility (first residences), with 100% stay time in the plume the expected dose would about 6.0 mSv.

These values do not exceed GSR Part 7 or Health Canada criteria at the site boundary relative to the explosion point of the facility, and especially so considering the physical damage and risks closer to the explosion.

**Additional notes on other PIEs in this classification:**

- PIE-0008, Loss of fire suppression system by itself will not result in any significant radiological safety consequences. This PIE may be a factor when combine with other PIEs in sequence, in particular those relating to the occurrence of fire (see Classification for 'Special interest events' below). There are several layers of protection to preventing PIE-0008 for occurring, including a comprehensive testing and maintenance program, and design that incorporates delivery of pumper-supplied water once PFD on site, if required.

**Bounding AOO: PIE-0012, Physical leak of tritium process piping****Preliminary Discussion:**

Previously analyzed as an element of Sequence 0001B for leak on processing rig combined with loss of pneumatic power and loss of ventilation. This AOO assumes a worst-case immediate leak of a rig with internal tritium pressure and volume maximized.

**Logic modelling of accident sequences:**

SEQUENCE 0012A: Physical leak of tritium process piping – processing rig – BOUNDED BY SEQUENCE 0012B BELOW

- 1) Assume sign light processing rig was filling light sources at 50 cm Hg when leak develops in process piping with vacuum valve closed and all other valves open in processing rig.
- 2) Conservative estimate of activity available for leak on a single rig during processing:
  - ID of process piping = radius ¼", length of piping available for leak = 24"; thus volume = 4.71 inches cubed = about 80 cc.
  - Add processing heads internal volume (5 heads), internal space of approximately 83 cc.
  - Assume 100 light sources filled at 50 cm, each light source is a '163' (largest sign light volume); 3.25 mm ID, length 210 mm = 1,742 mm cubed each = 1.742 cc each x 100 = 174.2 cc
  - Internal volume of tritium trap: approx. 30 cc
  - TOTAL VOLUME = 367.2 cc
  - Activity density of tritium gas = 2.589 Ci./cc at STP (76 cm Hg) = 95.8 GBq/cc @ 76 cm Hg
  - Total activity initially available = 95.8 GBq/cc x (50/76) x 367.2 cc = 23,143 GBq.
- 3) Assume leak develops that immediately results in emission of entire inventory of free elemental tritium in rig – conservative assumption.
- 4) Total release = 23,143 GBq HT

SEQUENCE 0012B: Physical leak of tritium process piping – bulk splitting rig

- 1) Assume maximum tritium activity for one tritium trap being dispensed in measurement vessels (111,000 GBq), then multiply by factor of 1.25 to account for tritium in the volume of the bulk splitter piping and in the bulk container itself (very conservative). Total release = 138,750 GBq.
- 2) Assume leak develops that immediately results in emission of entire inventory of free elemental tritium in bulk splitter – conservative assumption.
- 3) Total release = 138,750 GBq HT

**Human performance analysis:**

Staff are trained to isolate all sections should a major leak be discovered during processing via GEMS. These actions would virtually certainly reduce the total source term release.

**Data assessment and parameter estimation:**

No additional data assessment or parameter estimation other than source term and exposure calculations.

**Source term for consequence analysis:** 138,750 GBq of tritium released with ventilation system operating (effective stack height ~ 28 meters); 10% oxide as a conservative measure.

*Refer to HotSpot table summary for projected radiological doses.*

**Conclusions:** Based upon the above analysis, this AOO will not result in public doses > 1 mSv. Max dose is for Pasquill A for child receptor, 10% oxide = 0.0152 mSv at a distance of 99 meters.

Doses at 200 meters are in the single microsievert range for all receptors.

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### Additional notes on other PIEs in this classification:

- PIE-0006, Loss of active ventilation system – both; this takes place during power outages, and would need to be combined with other low-probability PIEs to result in an appreciable hazard to workers. See Sequence 0001B for limiting case on processing rigs, for example. Note that PIE-0004 and PIE-0005 bounded by PIE-0006.
- PIE-0007, Loss of fire detection system by itself will not result in any significant radiological safety consequences. This PIE may be a factor when combine with other PIEs in sequence, in particular those relating to the occurrence of fire (see Classification for ‘Special interest events’ below). There are several layers of protection to preventing PIE-0007 for occurring, including a comprehensive testing and maintenance program, and a battery backup that will ensure detection for at least 48 hours.
- PIE-0009, Loss of compressed air / pneumatics; this takes place during power outages, and would need to be combined with other low-probability PIEs to result in an appreciable hazard to workers. See Sequence 0001B for limiting case on processing rigs, for example. Note that PIE-0004 and PIE-0005 bounded by PIE-0006.
- PIE-0011, Main vacuum valve on processing rig fails in the open state; bounded by Sequence 0012A for processing rigs. Also, several layers of protection are present to prevent release, including procedure that requires vacuum pump to be OFF during processing after leak check is complete on system, and remote display unit which would alert technician of AOO taking place, leading to remedial actions for which they are trained and qualified.
- PIE-0013, Malfunction or loss of real-time Gaseous Emissions Monitoring System (GEMS); bounded by Sequence 0012A and 0012B as once GEMS is off-line, tritium processing is required to be stopped until the situation is rectified or remedial actions are taken to ensure an equivalent level of safety assurance.
- PIE-0017, Light source breaks during filling operations is bounded by Sequence 0012A as this would be the equivalent of a process piping leak taking place, but with a reduced consequence as it is likely that the filling head and tritium valves will be closed, or closed immediately once the broken light is discovered, which would limit the amount of tritium released.
- PIE-0030, Flooding, minor facility inundation due to internal leak on water line is very unlikely to result in any appreciable radiological consequences to workers or the public. Environmental consequences limited by flood mitigation barriers in active zones, and the low levels of removable tritium contamination on floors as part of Radiation Safety Program requirements.

**EVENT CLASSIFICATION: HUMAN ERROR**

Bounding BDBA: None

**Bounding DBA:** PIE-0014, Bulk container heated for prolonged period

**Preliminary Discussion:**

There are several layers of protection that are designed to ensure safe operations of the bulk splitting rig at all times. For the bulk container to be heated for a prolonged period would require serious human error on the part of no fewer than two qualified technicians.

**Logic modelling of accident sequences:**

SEQUENCE 0014A: Bulk container heated for prolonged period of time during tritium trap filling operations without any operator intervention.

- A bulk container may be received by SRBT with no more than 1,000,000 GBq of activity loaded, as per current OLC.
- The bulk splitting rig is designed with fittings and vessels that are rated to certain pressures; the component with the lowest pressure rating on the system is the ferrule connection point between piping and valves, with a pressure rating of 240 bar (18,000 cm Hg) for 10 mm OD, 1 mm thickness (<https://leipzig-berlin.swagelok.com/en/tech-tips/tech-faqs/druckraten>)
- The three bulk splitter measurement vessels retain 1,806 GBq/cm Hg.
- If a bulk container was heated during a filling cycle, the pressure inside the system can be approximated as  $1,000,000 \text{ GBq} / 1,806 \text{ GBq/cm Hg} = 554 \text{ cm Hg}$ . This pressure is about 3% of the rated pressure of the components, which provides a very large margin of safety for leakage.
- Once the error is discovered the heating source would be immediately disconnected and the tritium in the bulk splitter system would be allowed to adsorb back onto the bulk container as a DU tritide.

SEQUENCE 0014B: Sequence 0014A + Sequence 0012B, Physical leak of tritium process piping – bulk splitting rig

- Essentially this is the complete loss of elemental tritium from a maximally filled bulk container (1,000,000 GBq) to the active ventilation system.
- The probability of these two sequences of events taking place is extremely low; however, whether the estimated frequency of this is beyond  $10^{-5}$  per year is difficult to say with confidence; as a result, we will treat this event as the bounding DBA for human error at the facility.

**Human performance analysis:**

- Operators of the bulk splitter undergo training that is systematically designed, developed and implemented, in accordance with REGDOC-2.4.4, *Personnel Training*.
- Operation of the bulk splitter requires no fewer than two technicians present, one of which must be fully qualified in accordance with the training program.
- Once a leak begins, the bulk splitter is designed in a way that allows for isolation of the leaking part of the processing lines and vessels. This is also a potential mitigating step that can be taken once the error becomes understood, which would reduce the ultimate source term.

**Data assessment and parameter estimation:**

No additional data assessment or parameter estimation other than source term and exposure calculations.

**Source term for consequence analysis:**

SEQUENCE 0014B:

- Assume that 1,000,000 GBq of elemental tritium gas is released to the active ventilation system at an effective stack height of 27.8 meters.
- Also calculate dose for 25% oxidation of the source term. **This is an incredible event – any evolution that results in these conditions would represent a beyond design basis accident; however, previous iterations of the SAR assumed 25% conversion to HTO for similar events.**
- *Refer to HotSpot table summary for projected radiological doses.*

**Conclusions:**

Based upon the above analysis, the safety objective of 1 mSv of dose to a member of the public will not be exceeded should Sequence 0014B take place, assuming no oxide (less than 1 microsievert).

Even if the release was 25% HTO (BDBA) the maximum dose for a child within 100 meters of the facility projects to be 0.28 mSv at worst in Pasquill A conditions, which is within REGDOC-2.4.4 criteria.

Finally, note that Sequence 0014B again has several layers of protection that would need to fail before this event became possible, especially for any appreciable level of oxide release.

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Additional notes on other PIEs in this classification:

- PIE-0015, Main vacuum pump left running during bulk splitter processing operations, is bounded by Sequence 0012B, given that other layers of protection (more than one isolation valve between tritium gas and pump, GEMS monitoring alarm, operator training in response to abnormal situation) are reasonably expected to either prevent or fully resolve this event.
- PIE-0027, Ignition of flammable materials during hot works on the roof, is bounded by sequences associated with PIE-0024, Ignition of flammable materials inside facility (discussed in 'Special interest event' section below).

**Bounding AOO:**            **PIE-0018, A bin containing 3,000 '730H' lights is dropped while being carried.**

### **Preliminary Discussion:**

A review of typical inventory levels in Assembly area, along with discussions with workers and supervisors in the Rig Room, Assembly and Shipping and Receiving areas of the facility concluded that a valid estimate of the most activity that might be physically carried by one staff member in a bin would be one which contains 1,200 units of the 730H type of sign light. This number of lights is thought to be a very conservative figure on what would actually be carried at any given time during production activities; however, for the purposes of the SAR we will add a measure of additional conservatism by assuming 1,500 lights are dropped.

### **Logic modelling of accident sequences:**

SEQUENCE 0018A: A bin containing 1,500 '730H' lights is dropped while being carried

- Each individual light source contains 30 GBq elemental tritium gas
- On occasion, sign lights are dropped from hand height to the ground during normal operations. Informal OPEX would suggest that they break at a rate less than 100%.
- As well, it would not be unreasonable to estimate that lights would break at a rate far lower than 100% given that the bin will typically have a lid on top, and most lights would be landing on top of other light sources that fell as well, which would dissipate some of the energy transference leading to fewer breakages. Given these factors, it is very conservative to ultimately credit 100% breakage of the light sources dropped.
- Total release would be 45,000 GBq to the workspace air, which will ultimately begin to be removed by the active ventilation systems over time.
- Workers are trained to immediately vacate the area to minimize dose upon a tritium-in-air alarm sounding.
- Ultimately, Sequence-0018A is therefore bounded by Sequence 0012B (Physical leak of tritium process piping – bulk splitting rig) with respect to potential impact on members of the public.
- Worker impact will depend on stay time and tritium in air concentration dynamics. See Source term for consequence analysis below.

SEQUENCE 0018B: Sequence 0018A + PIE-0001, Loss of electrical power

- **This sequence of events is considered a design extension condition accident based on probability of occurrence estimation.**
- The probability of these two events taking place concurrently is very low (less than  $10^{-2}$  per year, but is perhaps greater than  $10^{-5}$  per year based on the frequency of power outages that take place at the facility (between 3-6 events per year at the facility, combined with remote probability of lights being dropped, which has never happened at this magnitude, and certainly not bordering on the worst-case assumptions here).
- Workers evacuate active zones automatically when power is lost already, regardless of tritium-in-air monitor alarms, which do have a limited backup power supply.
- In the absence of active ventilation, the release of 45,000 GBq of elemental tritium would diffuse through the facility, and ultimately out of the facility over time as a ground-level release until active ventilation is restored.

### **Human performance analysis:**

All of the above human performance elements are captured in operational training, in practice when loss of electrical power takes place, and during emergency response exercises.

### **Data assessment and parameter estimation:**

No additional data assessment or parameter estimation other than source term and exposure calculations.

### **Source term for consequence analysis:**

SEQUENCE 0018A:

- Assume that 45,000 GBq is released as an expanding point source initially, 100% elemental tritium.
- Assume that worker remains within expanding cloud of contaminated air at the initial point for 60 seconds, then removes to area where contamination is not present. Total 'stay time' = 60 seconds.
- Contaminated cloud initially expands in a hemispherical fashion, with a radius initially increasing by 0.5 m/second until ceiling height is reached (2.5 meters).
- Volume change of contaminated cloud continues for remainder of stay time as an expanding disc of height = 2.5 meters, with radius increasing by 0.5 m/s.
- Volume of room tops out at 170 cubic meters, as per Sequence 0001B.
- Cloud dynamic modelled using MS Excel under these parameters along with breathing rate per second and dose coefficient for elemental tritium gas (taken from / derived from N288-1), and 60 second stay time.

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- See attached tables illustrating health physics calculation of worker dose in these conditions.
- Model illustrates that dose expected to be approximately 0.12 mSv with a 60 second stay time. Uncertainties not expected to influence this dose enough to warrant further detailed analysis.

### SEQUENCE 0018B:

- **This sequence of events is considered a design extension condition accident.**
- For public impact, assume a ground-level release of 45,000 GBq tritium, with 10% oxide content as an additional conservative measure, with release taking place unmitigated by building structures.
- **Refer to HotSpot table summary for projected radiological doses.**
- The most impacted receptor class is infants due to proximity to a ground-release plume.
- Using these highly conservative factors, doses to a person may exceed 1 mSv if they are directly downwind of the resultant plume and are within 110 meters in Pasquill F conditions through to 12 meters in Pasquill A conditions; however, considering the fact that building effects were ignored and no actions credited for the ERO response, the actual dose to any non-NEW in this unlikely scenario is fully expected to be less than 1 mSv.
- An infant standing 11 meters away in Pasquill E conditions is calculated to be a worst-case dose for 100% stay time (12 mSv); this scenario is not credible in any way.
- Safety objectives for design extension condition accidents established in REGDOC-2.4.4 are not exceeded in any case.

### Conclusions:

Based upon the above analysis, and considering the additional conservatisms applied to the scenario via HotSpot and the mitigative conditions that are discounted, it is reasonable to conclude that the safety objectives are not likely to be exceeded in all cases.

### Additional notes on other PIEs in this classification:

- PIE-0010, Tritium trap heated with valve closed for prolonged period – assumption of full trap (111,000 GBq) that is heated until failure, followed by release of 100% of contents as tritium oxide to active ventilation at an effective stack height of 28 meters. Maximum projected dose using HotSpot was 0.09 mSv at 98 meters from stacks.
- PIE-0016, Light source removed from processing rig during filling operations, is bounded by Sequence 0012A.
- PIE-0019, Lights are left in the muffle oven for prolonged period of time, is bounded by Sequence 0018A as the muffle oven cannot fit this many light sources at once.
- PIE-0020, Lights are left in the testing freezer for prolonged period of time, is bounded by Sequence 0018A as the freezer cannot fit this many light sources at once.
- PIE-0021, A package is dropped while being prepared for shipping, is bounded by Sequence 0018A as the highest activity package of light sources is 40,000 GBq (Type A limit). Type B certified packages of bulk tritium have more activity but it is not in gaseous form, and dropping the package will not result in a release.
- PIE-0022, Bagged light sources are dropped while being prepared for shipping, is bounded by Sequence 0018A as a bag of lights could not reasonably contain more activity than that scenario.

**EVENT CLASSIFICATION: EXTERNAL EVENT****Bounding BDBA: PIE-0033, Aircraft crash into facility****Preliminary Discussion:**

Pembroke and Area Airport is situated approximately 11 km to the northwest of the facility. Garrison Petawawa military airfield is situated approximately 22 km to the northwest of the facility. Pembroke Regional Hospital operates a heli-pad, which is situated 1.5 km to the northeast of the facility.

Air traffic in the Pembroke area is generally quite limited, with most flights consisting of either military or medical helicopters at relatively low altitudes. Commercial aircraft flying at altitude are also occasionally visible from the ground near the facility.

**Logic modelling of accident sequence:**

SEQUENCE 0033A: An aircraft crashes into the facility with resultant catastrophic damage.

- Assumption is that facility inventory is at maximum (6,000 TBq).
- 100% of inventory is released explosively as tritium oxide.

**Human performance analysis:**

Not applicable – external event.

**Data assessment and parameter estimation:**

- Event can be simulated using explosion model in HotSpot as equivalent, rather than ground-level release during normal meteorological conditions.
- The literature suggests that aircraft fuels have estimated energy densities up to about 50 MJ/kg (<https://hypertextbook.com/facts/2003/EvelynGofman.shtml>).
- TNT has an energy density of about 4.2 MJ/kg (see previous assessment of Sequence 0039D)
- ORNGE helicopters are model AW-139, manufactured by Leonardo; fuel capacity at maximum is about 1,654 kg (<https://exclases.com/aw139-2/>). Maximum gross mass is credited as 6,800 kg (<https://helicopters.leonardo.com/en/products/aw139>).
- This gives a total fuel energy of a fully fueled AW-139 as (1,654 kg x 50 MJ/kg =) 82,700 MJ.
- AW-139 has a top cruise speed of 306 km/h – very unlikely to be travelling at top cruise speed upon impact; a reasonably conservative speed given proximity of helipad could be 150 km/h.
- Kinetic energy of a crashing AW-139 at maximum mass of 6,800 kg and speed of 150 km/h (41.7 m/s) =  $(\frac{1}{2})(6800)(41.7^2) = 5.91$  MJ, or about 6 MJ. As such, kinetic energy of aircraft is a very small fraction of total energy release.
- Final energy release of helicopter crash is estimated to be 82,706 MJ. TNT equivalent of this energy is (82,706 MJ / 4.6 MJ/kg =) approximately 18,000 kg TNT equivalent (39,600 lbs. of TNT for HotSpot entry).

**Source term for consequence analysis:**

- 6,000 TBq released explosively via 18,000 kg TNT equivalent as tritium oxide.
- [Refer to HotSpot table summary for projected radiological doses.](#)

**Conclusions:**

Dose calculations under these accident conditions show that no person is expected to receive a committed effective dose greater than 0.282 mSv (10-meter distance, child, Pasquill B) in all meteorological conditions; however, fatalities are expected for over 99% of persons within 61 meters of the explosion.

From the perspective of radiological impact, the safety objectives defined in REGDOC-2.4.4 for BDBA accidents are not exceeded in the case of an aircraft crash directly incident upon the facility.

## SAFETY ANALYSIS OF POSTULATED INITIATING EVENTS – SRBT (2023)

Additional notes on other PIEs in this classification:

- PIE-0029, Flooding – complete facility inundation; this event is taken to be an incredible event, based upon the analysis of multiple dam failures upstream on the Ottawa River conduct by CNL in support of NSDF contained in [Volume 2: EIS Report](#) 232-509220-REPT-004 (Revision 3), page 10-4. This analysis notes the following: *“When the potential failure of the two upstream dams is considered combined with a 1 in 10,000-year precipitation event and snow melt from 1 in 100-year snow accumulation, the flood elevation is 122 masl for the portion of the Ottawa River adjacent to the CRL site.”* The SRBT facility sits at an elevation of about 130 masl – as such, it is extremely unlikely that a flood resulting in complete inundation of the facility is possible.
- PIE-0040, Emergency event at nearby propane distribution facility – BLEVE. Based upon the third-party emergency event analysis performed for that facility, the SRBT facility is within the lethal blast radius of such an event (340 meters). From the perspective of radiological impact of such an event, it is very likely to be bounded by both Sequence 0033A (aircraft crash) as well as worst-case sequences associated with PIE-0024 (ignition of flammable materials inside the facility). In addition, a BLEVE event takes time to develop, and the facility will very likely be able to be put into a safer passive operational state prior to personnel evacuation which would help limit releases.
- PIE-0041, Emergency event at a nearby ice rink – ammonia leak; bounded by Sequence 0014B (bulk splitter left on heat for prolonged period followed by leak to active ventilation system), as worst-case impact of PIE-0041 would be to incapacitate personnel in the facility. Most probable result of this event would be a cessation of all tritium processing followed by emergency evacuation to a safe area at the direction of authorities and emergency responders.
- PIE-0042, Large vehicle impacting the facility; bounded by worst-case sequences associated with PIE-0024 (ignition of flammable materials inside the facility).
- PIE-0043, Tornado – EF2 or worse; no safety systems are environmentally qualified to withstand serious tornado events; however, the radiological impacts of a tornado destroying the facility are very likely bounded by Sequence 0033A (aircraft crash), especially considering that any tritium releases during a tornado event will not follow a Gaussian plume model, but will instead be rapidly dispersed vertically and diluted.
- PIE-0044, Earthquake – 5 or greater on the Richter scale; no safety systems are environmentally qualified to withstand serious earthquakes beyond standard building codes; however, an earthquake could not reasonably result in a radiological impact greater than the worst-case sequences associated with PIE-0024, Ignition of flammable materials inside the facility.

**Bounding DBA:** PIE-0023, Lift gate failure on truck

**Preliminary Discussion:**

Palletized packages of tritium exit signs are routinely shipped from the facility, destined for export to the USA. These pallets of signs are typically loaded into truck trailers of shipping companies using a lift gate.

Transport accidents may obviously occur at any time between pickup at the consignor location its ultimate destination; however, this special case will be considered as a facility accident instead of a transport accident, even though the packages become the responsibility of the carrier upon pickup and signed acknowledgment of the pickup.

Each box of tritium exit signs on the pallet is classified as UN2911, Excepted Package for the purposes of compliance with TDG regulations, and the *Packaging and Transport of Nuclear Substances Regulations, 2015*.

Exit signs manufactured at the facility are made to certified designs which are designed to handle various stresses such as dropping, crushing and torsional / twisting forces without light breakage.

**Logic modelling of accident sequences:**

SEQUENCE 0023A: One pallet of tritium exit signs falls off of a lift gate when raised 150 cm off of the ground.

- The pallet is loaded onto the lift gate of a truck using a manual pallet truck.
- The lift gate is raised to maximum height.
- The lift gate fails, dropping the pallet to the asphalt in the parking lot.

**Data assessment and parameter estimation:**

None required.

**Source term for consequence analysis:**

SEQUENCE 0023A:

- It is not thought reasonable to assume 100% loss of tritium, given the certified design of the products, the packaging and wrapping of the skid, and the self-absorbing property of the pallets upon impact with the ground.
- As such, a more reasonable (yet still conservative) value of 25% breakage and loss of tritium will be assessed using HotSpot to understand the worst-case radiological impact on the public.
- Based on OPEX and discussions with the Shipping and Receiving department of the facility, the maximum amount of activity on any pallet of signs has historically been no more than about 82,000 GBq.
- As such, a conservative assumption would be to allocate 90,000 GBq of elemental tritium on the pallet in the form of self-luminous safety signs of a certified design.
- Given the above, the total release would be 22,500 GBq, comprised of 16,875 GBq of elemental tritium and 5,625 GBq of tritium oxide.
- Release is taken to be at ground level.
- **Refer to HotSpot table summary for projected radiological doses.**

**Conclusions:**

Based upon the above analysis, the safety objective of 1 mSv of dose to a member of the public is very unlikely to be exceeded should Sequence 0023A take place.

A release of 22,500 GBq of tritium (with 5,625 GBq being oxide) at ground level will not result in a dose greater than 1 mSv at distances further than 130 meters.

Maximum dose = 15 mSv at a distance of 11 meters for an infant in Pasquill E conditions; however, this situation is not reasonable nor probable in any way, and the persons who may risk such exposures will very likely be SRBT employees as they remediate the event. No member of the public will be within this distance for this prolonged period.

At 200 meters (nearest residence), the maximum dose in such a conservatively constructed event is projected to be 0.45 mSv to a child receptor in Pasquill F conditions.

## SAFETY ANALYSIS OF POSTULATED INITIATING EVENTS – SRBT (2023)

Additional notes on other PIEs in this classification:

- PIE-0025, Ignition of flammable materials outside of the facility is bounded by PIE-0024, Ignition of flammable materials inside the facility, as there is no credible mechanism where a fire outside of the facility results in worse radiological impacts.
- PIE-0026, Wildfire, is bounded by PIE-0024, Ignition of flammable materials inside the facility, as there is no credible mechanism where a fire outside of the facility results in worse radiological impacts.
- PIE-0028, Tornado – EF1; OPEX has shown that the facility has experienced no ill effects during significant wind storms bordering on EF0 tornado conditions. Considering the available OPEX on potential damage to buildings during EF1 tornado conditions, and the layers of protection should tornado conditions directly impact the facility (non-credited building protections, secure storage of free light sources, certified design of assembled products, processing shutdown due to weather), it is highly unlikely that the radiological impact to the public could exceed that of Sequence 0018B or 0023A, and thus PIE-0028 is bounded by these analyses.
- PIE-0032, Earthquake – 4 or less on the Richter scale; OPEX shows that the facility has experienced a nearby earthquake of magnitude 3.7 in 2015, with no apparent damage or negative impacts on the facility SSCs. This event is therefore very likely to be bounded by Sequences 0018B and 0023A.

**Bounding AOO:** PIE-0038, Three days of record snowfall

**Preliminary Discussion:**

The most amount of snow buildup in a single day on record in the area is 40.1 cm on March 17, 1973. Three days of this type of weather would likely result in some manageable safety-related impact on the facility and its operations.

**Logic modelling of accident sequences:**

SEQUENCE 0038A: Continuing snowfall up to 120 cm+ over three days.

- The facility would not be processing tritium due to precipitation, in line with the applicable OLC.
- As the situation developed, it would become clear that the facility should be shutdown at some point to ensure safety of employees travelling home or to the facility.
- The facility would be placed in a passively safe state while active ventilation systems, fire detection and mitigation systems and security systems continued to function as per normal.

SEQUENCE 0038B: Sequence 0038A + Sequence 0001A, Loss of electrical power

- Active ventilation would cease to function; however, this facility state remains safe with respect to any workers present, as well as the public.
- Fire detection would continue to be available for a period of approximately 48 hours.
- Barring any other PIE taking place, this sequence is not expected to impact radiological safety of workers or the public.

SEQUENCE 0038C: Sequence 0038B + roof collapse due to weight of snow.

- **This sequence of events is considered a design-basis accident.** The probability of this sequence of events is very likely to be lower than  $10^{-2}$  per year, but may be greater than  $10^{-5}$  per year.
- The probability of roof collapse is likely to be less than  $10^{-2}$  per year given building codes, thirty+ years of building existence and OPEX with similar designs of buildings.
- Roof collapse may result in tritium release provided that the collapse occurs over an area where tritium lights are out in the open, which during facility shutdown is limited.
- Based on a review of data on monthly inventory of light stock in Assembly and the Rig Room, a very conservative estimate would be that up to 2,000,000 GBq may be present in light source form.
- Most of this would be securely stored in cabinets when not being used as part of device manufacturing, and would be expected to survive a roof collapse.

**Data assessment and parameter estimation:**

None required.

**Source term for consequence analysis:**

SEQUENCE 0038C:

- A very conservative estimate would be that 50% of the available light sources in the facility are broken as a result of the roof collapse.
- Given the inventory data, this would represent a source term of 1,000,000 GBq of elemental tritium gas.
- As an additional conservative measure, the source term will be taken to include 5% tritium oxide
- Release is taken to be through the collapsed roof, with the walls of the building remaining standing (release height is therefore approximately 6 meters)
- **Refer to HotSpot table summary for projected radiological doses.**

**Conclusions:**

Based upon the above analysis, the safety objective of 1 mSv of dose to a member of the public is very unlikely to be exceeded should Sequence 0038C take place.

A release of 1,000,000 GBq of 95% elemental / 5% oxide at a release height of 6 meters will not result in a dose greater than 1 mSv to any person further away than 92 meters during any conditions.

The maximum dose conservatively calculated for 100% stay time was for a 'child' receptor 20 meters away, in Pasquill A conditions (1.37 mSv).

It is taken to be extremely unlikely that a member of the public would be within 92 meters of the facility for the duration of the plume emanation during these specific meteorological conditions. Given this, and the built-in conservative nature of the source term and the unlikely conditions that would be required to result in such a source term, no additional OLCs are recommended for this particular DBA sequence.

## SAFETY ANALYSIS OF POSTULATED INITIATING EVENTS – SRBT (2023)

Additional notes on other PIEs in this classification:

- PIE-0030, Flooding – moderate facility ingress due to external factors is not likely to result in significant radiological impacts to workers or the public. There may be limited environmental impacts due to contaminated water that may escape the facility; however, flooding barriers are maintained between Zones 2 and 3, and Zone 1, which would permit some segregation and management of this water (including characterization). This event is bounded by Sequence 0038C.
- PIE-0034, Prolonged period of weather > 40°C is bounded by Sequence 0038C; there is no reasonable mechanism for a greater radiological impact to workers or the public due to prolonged hot weather.
- PIE-0035, Prolonged period of weather < 40°C is bounded by Sequence 0038C; there is no reasonable mechanism for a greater radiological impact to workers or the public due to prolonged cold weather.
- PIE-0036, Prolonged period of freezing rain; informal OPEX suggests that the facility has remained safe through at least two major ice storms in the last few decades; this event is bounded by Sequence 0038C as there is no reasonable mechanism for a greater radiological impact to workers or the public due to freezing rain.
- PIE-0037, Three consecutive days of record rainfall is bounded by Sequence 0038C; there is no reasonable mechanism for a greater radiological impact to workers or the public due to prolonged rain.

**EVENT CLASSIFICATION: SPECIAL INTEREST EVENT**

**Bounding BDBA:** See Sequence 0024B below

**Bounding DBA:** PIE-0024, Ignition of flammable materials inside facility

**Preliminary Discussion:**

The SRBT Fire Hazards Assessment (FHA) is the licensing-basis document that analyzes the potential for fires to occur within the facility, as well as the probability of each fire-related scenario taking place, given the layers of protection that are maintained by the facility. These protections include both physical structures, systems and components dedicated to fire protection and mitigation, as well as administrative and human-performance considerations that are a component part of the facility safety management system.

Within the current version of the FHA, Section 4 is specifically dedicated to analyzing various Design-Basis Fire Scenarios and Consequences, for both external and internal fires. Appendix D provides a fulsome technical analysis of the four most serious fires that are hypothesized as possible to take place within the facility, including:

1. Fire in several bags of waste in Zone 3 (Rig Room)
2. Ignition of plastic sign parts in Zone 2 (Silk-screening Room)
3. Ignition of plastic pellets in storage area in Zone 1
4. Ignition of pallet of completed exit signs awaiting shipment in Zone 1

In all cases, CFAST modelling was applied to determine the characteristics of the fire and its subsequent impact on its surroundings, including interactions with the facility fire suppression systems (sprinklers).

The fire scenario analyses all concluded that the sprinkler systems would control the fires to prevent spreading, and minimize damage to tritium light sources.

In order to determine the possible worst-case fire-related scenario associated with the facility, PIE-0024 was modelled without the sprinkler system being available, nor any other human-related interventions such as fire response, resulting in the total loss of the maximum facility inventory of tritium as oxide during a complete building fire.

**Logic modelling of accident sequences:**

SEQUENCE 0024A: Uncontrolled fire throughout the facility over the course of four hours.

- Assume that the facility tritium inventory is 100% involved in the fire, and all tritium is released as oxide via the fire plume.

SEQUENCE 0024B: Uncontrolled fire throughout the facility over the course of four hours without breaching facility structure; all tritium released via active ventilation system.

- Assume that the facility tritium inventory is 100% involved in the fire, and all tritium is released as oxide via the active ventilation system.
- **This is an incredible event – any evolution that results in these conditions would represent a beyond design basis accident.**

**Human performance analysis:**

N/A

**Data assessment and parameter estimation:**

N/A

**Source term for consequence analysis:**

Run HotSpot modelling using two atmospheric models available in the program:

1. 'General Fire': parameters for Sequence 0024A, as follows:
  - a. Heat release rate = 148,100 calories per second, per square meter ([BSI, 2003](#) recommends heat release rates up to 620 kW/m<sup>2</sup> for industrial facilities, equal to 148,100 cal/s per m<sup>2</sup>).
  - b. Facility floor space = 1,400 m<sup>2</sup>
  - c. Total heat release rate = 2.08E+08 calories per second (recommended HRR); will also model for a lower HRR to see the effect a facility-wide smoldering fire given the same source term (smoldering fire taken as 31 kW/m<sup>2</sup> (5% of 620), or approx. 1.04E+07 cal/s from facility).
  - d. Inventory = 6.0E+15 Bq of tritium oxide
  - e. Burn time = Four hours
  - f. Physical height of fire = 6 meters for high heat release rate scenario; 1 meter for 5% HRR scenario (smoldering).

- g. Release radius = 20 meters
  - h. Air temperature = 20°C
  - i. Wind speed = 2.20 m/s
2. 'Tritium Release' for Sequence 0024B – this model assumes a fire (or other process) that converts all tritium in the facility to oxide and ejects it through the active ventilation system at an effective stack height of 28 meters. **This is an incredible event – any evolution that results in these conditions would represent a beyond design basis accident.**

*Refer to HotSpot table summary for projected radiological doses.*

**Conclusions:**

SEQUENCE 0024A:

Based upon the above analysis, in the event of a complete building fire that results in 100% of the inventory of tritium being released as oxide, no member of the public is expected to receive a dose in excess of the defined safety objectives (i.e. all resultant doses will be < 1 mSv).

Maximum theoretical dose for a high heat release rate fire is for a child receptor at 10 meters away during Pasquill E conditions (0.887 mSv); however, this is obviously not physically possible due to the circumstances of the fire itself.

More reasonably, doses at 200 meters for a high heat release rate fire the maximally exposed receptor is a child in Pasquill E conditions (0.42 mSv).

For a lower-intensity fire (i.e. smoldering) where the heat release rate is estimated to be around 5% of complete conflagration, the maximum dose to the public (at 200 meters) is elevated, but remains less than 1 mSv (0.51 mSv in Pasquill E conditions). This is due to the lower buoyancy effect of a fire with a lower heat release rate, leaving the plume closer to the ground where it interacts with persons closer by.

Emergency response crews and attending SRBT staff may incur doses greater than this as the situation is brought under control; however, emergency dose limits would apply in such a case.

SEQUENCE 0024B (BDBA):

In the completely hypothetical scenario where 100% of the full building inventory of 6,000 TBq was released at a height of 28 meters via the active ventilation systems as a plume of tritium oxide:

- The maximum dose to the public is expected to be 6.59 mSv at a distance of 99 meters in Pasquill A conditions to a child receptor (no residents reside at this distance)
- The largest distance out where doses greater than 1 mSv are expected comes during Pasquill F conditions for 'child' receptors – those residing within the downwind zone to a distance of 2.7 km away from the facility are expected to incur doses that exceed 1 mSv in this case. Other receptors and atmospheric conditions will vary in the distance that doses > 1 mSv are expected in this hypothetical BDBA.
- None of these doses exceed criteria established in REGDOC-2.4.4 for beyond design basis accidents.

Finally, note that all events that result from PIE-0024 have several layers of protection that would need to fail before this event became possible, including:

- Fire detection system
- Fire suppression system
- Staff training on fire extinguisher use
- Emergency response from Pembroke Fire Department
- Activation of Emergency Response Organization by SRBT
- Fire barriers built into the facility design
- Safe storage procedures for tritium and tritium lights
- Storage of bulk tritium as a solid tritide on sealed and robust traps and bulk containers
- Inventory limits
- Administrative barriers including Fire Protection Program, Fire Safety Plan and Fire Protection Committee.

*Bounding AOO:                      None*

## **APPENDIX B**

### **Data Tables for HotSpot Models - 2023**

The following pages consist of the programmed tritium 'HotSpot' source terms and model outputs for each of these event sequences:

- Sequence 0039D (explosion due to flammable gas leak)
- Sequence 0012B (physical leak on bulk splitting rig)
- Sequence 0014B (bulk tritium container heated for prolonged period + leak)
- Sequence 0018A (bin of lights dropped – dose to worker)
- Sequence 0018B (bin of lights dropped – dose to public)
- Sequence 0033A (aircraft crash)
- Sequence 0023A (lift gate failure)
- Sequence 0038C (record snow fall with roof collapse)
- Sequence 0024A (uncontrolled fire, complete conflagration)
- Sequence 0024B (100% of maximum inventory released as oxide to stack)

Each scenario has an associated 'mixture' file that is programmed with both the applicable source term (for both oxide (HTO) and elemental (T2) tritium gas), and the N288.1 dose conversion factors (DCF) for both oxide and elemental tritium (Sv/Bq).

The scenario is then input through HotSpot using the appropriate dispersion model (either a general plume, or for 0039D and 0033A, a general explosion).

Model runs are for adult, child and infant receptors, using the appropriate N288.1 breathing rates, at receptor heights of 1.5 m, 1.0 m and 0.5 m respectively.

Each scenario – receptor combination is modelled across six Pasquill classifications (A through F) of atmospheric stability.

For each analyzed scenario, if applicable the 'mixture' file data will be presented first, followed by all permutations of modelled variables.

The sole exception is Sequence 0018A (bin of lights dropped – dose to worker), where the HotSpot model cannot be applied as the scenario does not involve atmospheric dispersion. Geometric / temporal health physics calculations are instead applied to determine the potential impact to a worker for this scenario.

**SEQUENCE 0039D**

Explosion due to Flammable Gas Leak

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Adult Mixture.mix

0039D Adult Mixture

Mixture Scale Factor : 1.0000E+00

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Nuclide [01] :	HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.0000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.0000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.0000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.0000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.0000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.0000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.0000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.0000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.0000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.0000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.0000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.0000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.0000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.0000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.0000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.0000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	4.5000E+15
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.0000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.0000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.0000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.0000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.0000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.0000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.0000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.0000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.0000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.0000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.0000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.0000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.0000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.0000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.0000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.0000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.0000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.0000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.0000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.0000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 0.0000E+00
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Child Mixture.mix

0039D Child Mixture

Mixture Scale Factor : 1.0000E+00

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Nuclide [01] :	HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.8000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.8000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.8000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.8000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.8000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.8000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.8000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.8000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.8000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.8000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.8000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.8000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.8000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.8000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.8000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.8000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.8000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.8000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.8000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.8000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.8000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.8000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.8000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.8000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	4.5000E+15
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.5000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.5000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.5000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.5000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.5000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.5000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.5000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.5000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.5000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.5000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.5000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.5000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.5000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.5000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.5000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.5000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.5000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.5000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.5000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.5000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 0.0000E+00
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Infant Mixture.mix

0039D Infant Mixture

Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	: HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	8.0000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	8.0000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	8.0000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	8.0000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	8.0000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	8.0000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	8.0000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	8.0000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	8.0000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	8.0000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	8.0000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	8.0000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	8.0000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	8.0000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	8.0000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	8.0000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	8.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	8.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	8.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	8.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	8.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	8.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	8.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	8.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	4.5000E+15
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	5.3000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	5.3000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	5.3000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	5.3000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	5.3000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	5.3000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	5.3000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 5.3000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 5.3000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 5.3000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 5.3000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 5.3000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 5.3000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 5.3000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 5.3000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 5.3000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 5.3000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 5.3000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 5.3000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 5.3000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 5.3000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 5.3000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 5.3000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 5.3000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 0.0000E+00
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:28:23 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Adult Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Adult Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 64 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : A  
Receptor Height : 1.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.66E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.032 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : 0.27 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.3E-02	1.6E+12	4.7E+06	<00:01
0.100	3.3E-03	4.1E+11	1.2E+06	<00:01
0.200	1.5E-03	1.9E+11	5.7E+05	00:01
0.300	8.4E-04	1.0E+11	3.1E+05	00:02
0.400	5.3E-04	6.6E+10	2.0E+05	00:02
0.500	3.6E-04	4.5E+10	1.4E+05	00:03
0.600	2.6E-04	3.3E+10	9.8E+04	00:04
0.700	2.0E-04	2.5E+10	7.5E+04	00:04
0.800	1.6E-04	1.9E+10	5.8E+04	00:05
0.900	1.3E-04	1.6E+10	4.7E+04	00:06
1.000	1.0E-04	1.3E+10	3.9E+04	00:06
2.000	2.9E-05	3.6E+09	1.1E+04	00:13
4.000	7.9E-06	9.8E+08	2.9E+03	00:27
6.000	3.8E-06	4.7E+08	1.4E+03	00:40
8.000	2.3E-06	2.8E+08	8.4E+02	00:54
10.000	1.5E-06	1.9E+08	5.7E+02	01:07
20.000	4.7E-07	5.8E+07	1.7E+02	02:15
40.000	1.5E-07	1.9E+07	5.6E+01	04:30
60.000	7.9E-08	9.8E+06	2.9E+01	06:45
80.000	5.0E-08	6.3E+06	1.9E+01	09:00

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:28:54 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Adult Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Adult Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 64 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : B  
Receptor Height : 1.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.66E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.035 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : 0.40 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.5E-02	1.8E+12	5.5E+06	<00:01
0.100	4.2E-03	5.2E+11	1.6E+06	<00:01
0.200	2.4E-03	2.9E+11	8.8E+05	00:01
0.300	1.5E-03	1.8E+11	5.5E+05	00:02
0.400	1.0E-03	1.2E+11	3.7E+05	00:02
0.500	7.1E-04	8.8E+10	2.6E+05	00:03
0.600	5.3E-04	6.6E+10	2.0E+05	00:04
0.700	4.1E-04	5.1E+10	1.5E+05	00:04
0.800	3.3E-04	4.1E+10	1.2E+05	00:05
0.900	2.7E-04	3.3E+10	1.0E+05	00:06
1.000	2.2E-04	2.8E+10	8.3E+04	00:06
2.000	6.3E-05	7.9E+09	2.4E+04	00:13
4.000	1.8E-05	2.2E+09	6.6E+03	00:27
6.000	8.5E-06	1.1E+09	3.2E+03	00:40
8.000	5.1E-06	6.3E+08	1.9E+03	00:54
10.000	3.4E-06	4.3E+08	1.3E+03	01:07
20.000	1.1E-06	1.3E+08	3.9E+02	02:15
40.000	3.4E-07	4.2E+07	1.3E+02	04:30
60.000	1.8E-07	2.2E+07	6.6E+01	06:45
80.000	1.1E-07	1.4E+07	4.2E+01	09:00

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:29:10 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Adult Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Adult Mixture  
Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 64 m  
Debris Cloud Top calculated using modified cloud height methodology

UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : C  
Receptor Height : 1.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.66E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.038 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : 0.59 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.6E-02	2.0E+12	6.0E+06	<00:01
0.100	5.1E-03	6.3E+11	1.9E+06	<00:01
0.200	3.3E-03	4.1E+11	1.2E+06	00:01
0.300	2.3E-03	2.8E+11	8.5E+05	00:01
0.400	1.7E-03	2.1E+11	6.2E+05	00:02
0.500	1.3E-03	1.6E+11	4.7E+05	00:03
0.600	9.9E-04	1.2E+11	3.7E+05	00:03
0.700	8.0E-04	9.9E+10	3.0E+05	00:04
0.800	6.5E-04	8.1E+10	2.4E+05	00:05
0.900	5.5E-04	6.8E+10	2.0E+05	00:05
1.000	4.6E-04	5.8E+10	1.7E+05	00:06
2.000	1.5E-04	1.9E+10	5.6E+04	00:12
4.000	4.9E-05	6.1E+09	1.8E+04	00:25
6.000	2.6E-05	3.2E+09	9.7E+03	00:38
8.000	1.7E-05	2.1E+09	6.3E+03	00:51
10.000	1.2E-05	1.5E+09	4.6E+03	01:04
20.000	4.8E-06	6.0E+08	1.8E+03	02:08
40.000	2.1E-06	2.6E+08	7.7E+02	04:17
60.000	1.3E-06	1.6E+08	4.8E+02	06:26
80.000	9.2E-07	1.1E+08	3.4E+02	08:35

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:29:25 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Adult Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Adult Mixture  
Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 53 m  
Debris Cloud Top calculated using modified cloud height methodology

UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : D  
Receptor Height : 1.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.66E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.052 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : 0.011 km  
Exceeds Outer Dose Out To : 1.0 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	2.2E-02	2.7E+12	8.2E+06	<00:01
0.100	7.7E-03	9.5E+11	2.8E+06	<00:01
0.200	5.1E-03	6.3E+11	1.9E+06	00:01
0.300	3.8E-03	4.7E+11	1.4E+06	00:01
0.400	2.9E-03	3.6E+11	1.1E+06	00:02
0.500	2.4E-03	2.9E+11	8.8E+05	00:03
0.600	1.9E-03	2.4E+11	7.2E+05	00:03
0.700	1.6E-03	2.0E+11	6.1E+05	00:04
0.800	1.4E-03	1.7E+11	5.2E+05	00:04
0.900	1.2E-03	1.5E+11	4.5E+05	00:05
1.000	1.1E-03	1.3E+11	4.0E+05	00:06
2.000	4.2E-04	5.3E+10	1.6E+05	00:12
4.000	1.6E-04	2.0E+10	6.1E+04	00:24
6.000	9.3E-05	1.2E+10	3.5E+04	00:36
8.000	6.4E-05	7.9E+09	2.4E+04	00:48
10.000	4.8E-05	5.9E+09	1.8E+04	01:01
20.000	1.9E-05	2.4E+09	7.2E+03	02:02
40.000	8.2E-06	1.0E+09	3.1E+03	04:04
60.000	5.0E-06	6.2E+08	1.9E+03	06:06
80.000	3.5E-06	4.4E+08	1.3E+03	08:08

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:29:40 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Adult Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Adult Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 53 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : E  
Receptor Height : 1.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.66E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.049 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : 1.4 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.9E-02	2.4E+12	7.1E+06	<00:01
0.100	8.5E-03	1.1E+12	3.2E+06	<00:01
0.200	5.7E-03	7.1E+11	2.1E+06	<00:01
0.300	4.3E-03	5.4E+11	1.6E+06	00:01
0.400	3.5E-03	4.3E+11	1.3E+06	00:01
0.500	2.9E-03	3.6E+11	1.1E+06	00:02
0.600	2.4E-03	3.0E+11	9.1E+05	00:02
0.700	2.1E-03	2.6E+11	7.9E+05	00:03
0.800	1.8E-03	2.3E+11	6.9E+05	00:03
0.900	1.6E-03	2.0E+11	6.1E+05	00:04
1.000	1.5E-03	1.8E+11	5.5E+05	00:04
2.000	6.5E-04	8.1E+10	2.4E+05	00:09
4.000	2.8E-04	3.5E+10	1.0E+05	00:18
6.000	1.7E-04	2.1E+10	6.4E+04	00:27
8.000	1.3E-04	1.6E+10	4.7E+04	00:36
10.000	1.0E-04	1.2E+10	3.7E+04	00:45
20.000	4.8E-05	6.0E+09	1.8E+04	01:31
40.000	2.4E-05	2.9E+09	8.8E+03	03:02
60.000	1.5E-05	1.8E+09	5.5E+03	04:34
80.000	1.1E-05	1.4E+09	4.1E+03	06:05

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:30:11 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Adult Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Adult Mixture  
Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 53 m  
Debris Cloud Top calculated using modified cloud height methodology

UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : F  
Receptor Height : 1.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.66E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.044 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : 2.1 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.7E-02	2.1E+12	6.4E+06	<00:01
0.100	1.0E-02	1.2E+12	3.7E+06	<00:01
0.200	6.9E-03	8.5E+11	2.6E+06	<00:01
0.300	5.3E-03	6.5E+11	2.0E+06	00:01
0.400	4.3E-03	5.3E+11	1.6E+06	00:01
0.500	3.6E-03	4.4E+11	1.3E+06	00:01
0.600	3.1E-03	3.8E+11	1.2E+06	00:02
0.700	2.7E-03	3.4E+11	1.0E+06	00:02
0.800	2.4E-03	3.0E+11	9.1E+05	00:02
0.900	2.2E-03	2.7E+11	8.2E+05	00:03
1.000	2.0E-03	2.5E+11	7.5E+05	00:03
2.000	1.0E-03	1.3E+11	3.9E+05	00:06
4.000	5.0E-04	6.2E+10	1.9E+05	00:13
6.000	3.2E-04	4.0E+10	1.2E+05	00:20
8.000	2.4E-04	3.0E+10	8.9E+04	00:27
10.000	1.9E-04	2.4E+10	7.1E+04	00:34
20.000	9.0E-05	1.1E+10	3.4E+04	01:08
40.000	4.1E-05	5.1E+09	1.5E+04	02:17
60.000	2.4E-05	3.0E+09	8.9E+03	03:25
80.000	1.7E-05	2.1E+09	6.2E+03	04:34

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:33:17 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Child Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Child Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 64 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : A  
Receptor Height : 1.0 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.48E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.038 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : 0.30 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.5E-02	1.6E+12	4.7E+06	<00:01
0.100	3.9E-03	4.1E+11	1.2E+06	<00:01
0.200	1.8E-03	1.9E+11	5.7E+05	00:01
0.300	1.0E-03	1.0E+11	3.1E+05	00:02
0.400	6.3E-04	6.6E+10	2.0E+05	00:02
0.500	4.3E-04	4.5E+10	1.4E+05	00:03
0.600	3.1E-04	3.3E+10	9.8E+04	00:04
0.700	2.4E-04	2.5E+10	7.5E+04	00:04
0.800	1.9E-04	1.9E+10	5.8E+04	00:05
0.900	1.5E-04	1.6E+10	4.7E+04	00:06
1.000	1.2E-04	1.3E+10	3.9E+04	00:06
2.000	3.4E-05	3.6E+09	1.1E+04	00:13
4.000	9.3E-06	9.8E+08	2.9E+03	00:27
6.000	4.5E-06	4.7E+08	1.4E+03	00:40
8.000	2.7E-06	2.8E+08	8.4E+02	00:54
10.000	1.8E-06	1.9E+08	5.7E+02	01:07
20.000	5.5E-07	5.8E+07	1.7E+02	02:15
40.000	1.8E-07	1.9E+07	5.6E+01	04:30
60.000	9.3E-08	9.8E+06	2.9E+01	06:45
80.000	6.0E-08	6.3E+06	1.9E+01	09:00

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:33:35 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Child Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Child Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 64 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : B  
Receptor Height : 1.0 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.48E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.042 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : 0.44 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.7E-02	1.8E+12	5.5E+06	<00:01
0.100	4.9E-03	5.2E+11	1.6E+06	<00:01
0.200	2.8E-03	2.9E+11	8.8E+05	00:01
0.300	1.7E-03	1.8E+11	5.5E+05	00:02
0.400	1.2E-03	1.2E+11	3.7E+05	00:02
0.500	8.4E-04	8.8E+10	2.6E+05	00:03
0.600	6.3E-04	6.6E+10	2.0E+05	00:04
0.700	4.9E-04	5.1E+10	1.5E+05	00:04
0.800	3.9E-04	4.1E+10	1.2E+05	00:05
0.900	3.2E-04	3.3E+10	1.0E+05	00:06
1.000	2.6E-04	2.8E+10	8.3E+04	00:06
2.000	7.5E-05	7.9E+09	2.4E+04	00:13
4.000	2.1E-05	2.2E+09	6.6E+03	00:27
6.000	1.0E-05	1.1E+09	3.2E+03	00:40
8.000	6.0E-06	6.3E+08	1.9E+03	00:54
10.000	4.1E-06	4.3E+08	1.3E+03	01:07
20.000	1.2E-06	1.3E+08	3.9E+02	02:15
40.000	4.0E-07	4.2E+07	1.3E+02	04:30
60.000	2.1E-07	2.2E+07	6.6E+01	06:45
80.000	1.3E-07	1.4E+07	4.2E+01	09:00

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:33:53 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Child Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Child Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 64 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : C  
Receptor Height : 1.0 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.48E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.045 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : 0.67 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.9E-02	2.0E+12	6.0E+06	<00:01
0.100	6.0E-03	6.3E+11	1.9E+06	<00:01
0.200	3.9E-03	4.1E+11	1.2E+06	00:01
0.300	2.7E-03	2.8E+11	8.5E+05	00:01
0.400	2.0E-03	2.1E+11	6.2E+05	00:02
0.500	1.5E-03	1.6E+11	4.7E+05	00:03
0.600	1.2E-03	1.2E+11	3.7E+05	00:03
0.700	9.4E-04	9.9E+10	3.0E+05	00:04
0.800	7.7E-04	8.1E+10	2.4E+05	00:05
0.900	6.5E-04	6.8E+10	2.0E+05	00:05
1.000	5.5E-04	5.8E+10	1.7E+05	00:06
2.000	1.8E-04	1.9E+10	5.6E+04	00:12
4.000	5.8E-05	6.1E+09	1.8E+04	00:25
6.000	3.1E-05	3.2E+09	9.7E+03	00:38
8.000	2.0E-05	2.1E+09	6.3E+03	00:51
10.000	1.5E-05	1.5E+09	4.6E+03	01:04
20.000	5.7E-06	6.0E+08	1.8E+03	02:08
40.000	2.4E-06	2.6E+08	7.7E+02	04:17
60.000	1.5E-06	1.6E+08	4.8E+02	06:26
80.000	1.1E-06	1.1E+08	3.4E+02	08:35

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:34:12 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Child Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Child Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 53 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : D  
Receptor Height : 1.0 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.48E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.061 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : 0.014 km  
Exceeds Outer Dose Out To : 1.2 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	2.6E-02	2.7E+12	8.2E+06	<00:01
0.100	9.0E-03	9.5E+11	2.8E+06	<00:01
0.200	6.0E-03	6.3E+11	1.9E+06	00:01
0.300	4.5E-03	4.7E+11	1.4E+06	00:01
0.400	3.5E-03	3.6E+11	1.1E+06	00:02
0.500	2.8E-03	2.9E+11	8.8E+05	00:03
0.600	2.3E-03	2.4E+11	7.2E+05	00:03
0.700	1.9E-03	2.0E+11	6.1E+05	00:04
0.800	1.6E-03	1.7E+11	5.2E+05	00:04
0.900	1.4E-03	1.5E+11	4.5E+05	00:05
1.000	1.3E-03	1.3E+11	4.0E+05	00:06
2.000	5.0E-04	5.3E+10	1.6E+05	00:12
4.000	1.9E-04	2.0E+10	6.1E+04	00:24
6.000	1.1E-04	1.2E+10	3.5E+04	00:36
8.000	7.5E-05	7.9E+09	2.4E+04	00:48
10.000	5.6E-05	5.9E+09	1.8E+04	01:01
20.000	2.3E-05	2.4E+09	7.2E+03	02:02
40.000	9.7E-06	1.0E+09	3.1E+03	04:04
60.000	5.9E-06	6.2E+08	1.9E+03	06:06
80.000	4.2E-06	4.4E+08	1.3E+03	08:08

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:34:32 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Child Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Child Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 53 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : E  
Receptor Height : 1.0 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.48E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.057 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : 0.012 km  
Exceeds Outer Dose Out To : 1.6 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	2.3E-02	2.4E+12	7.1E+06	<00:01
0.100	1.0E-02	1.1E+12	3.2E+06	<00:01
0.200	6.7E-03	7.1E+11	2.1E+06	<00:01
0.300	5.1E-03	5.4E+11	1.6E+06	00:01
0.400	4.1E-03	4.3E+11	1.3E+06	00:01
0.500	3.4E-03	3.6E+11	1.1E+06	00:02
0.600	2.9E-03	3.0E+11	9.1E+05	00:02
0.700	2.5E-03	2.6E+11	7.9E+05	00:03
0.800	2.2E-03	2.3E+11	6.9E+05	00:03
0.900	1.9E-03	2.0E+11	6.1E+05	00:04
1.000	1.7E-03	1.8E+11	5.5E+05	00:04
2.000	7.7E-04	8.1E+10	2.4E+05	00:09
4.000	3.3E-04	3.5E+10	1.0E+05	00:18
6.000	2.0E-04	2.1E+10	6.4E+04	00:27
8.000	1.5E-04	1.6E+10	4.7E+04	00:36
10.000	1.2E-04	1.2E+10	3.7E+04	00:45
20.000	5.7E-05	6.0E+09	1.8E+04	01:31
40.000	2.8E-05	2.9E+09	8.8E+03	03:02
60.000	1.8E-05	1.8E+09	5.5E+03	04:34
80.000	1.3E-05	1.4E+09	4.1E+03	06:05

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:34:47 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Child Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Child Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 53 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : F  
Receptor Height : 1.0 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.48E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.052 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : 0.011 km  
Exceeds Outer Dose Out To : 2.4 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	2.0E-02	2.1E+12	6.4E+06	<00:01
0.100	1.2E-02	1.2E+12	3.7E+06	<00:01
0.200	8.1E-03	8.5E+11	2.6E+06	<00:01
0.300	6.2E-03	6.5E+11	2.0E+06	00:01
0.400	5.0E-03	5.3E+11	1.6E+06	00:01
0.500	4.2E-03	4.4E+11	1.3E+06	00:01
0.600	3.7E-03	3.8E+11	1.2E+06	00:02
0.700	3.2E-03	3.4E+11	1.0E+06	00:02
0.800	2.9E-03	3.0E+11	9.1E+05	00:02
0.900	2.6E-03	2.7E+11	8.2E+05	00:03
1.000	2.4E-03	2.5E+11	7.5E+05	00:03
2.000	1.2E-03	1.3E+11	3.9E+05	00:06
4.000	5.9E-04	6.2E+10	1.9E+05	00:13
6.000	3.8E-04	4.0E+10	1.2E+05	00:20
8.000	2.8E-04	3.0E+10	8.9E+04	00:27
10.000	2.3E-04	2.4E+10	7.1E+04	00:34
20.000	1.1E-04	1.1E+10	3.4E+04	01:08
40.000	4.8E-05	5.1E+09	1.5E+04	02:17
60.000	2.8E-05	3.0E+09	8.9E+03	03:25
80.000	2.0E-05	2.1E+09	6.2E+03	04:34

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:40:56 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Infant Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Infant Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 64 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : A  
Receptor Height : 0.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 8.68E-05 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.028 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : 0.24 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.1E-02	1.6E+12	4.7E+06	<00:01
0.100	2.9E-03	4.1E+11	1.2E+06	<00:01
0.200	1.3E-03	1.9E+11	5.7E+05	00:01
0.300	7.3E-04	1.0E+11	3.1E+05	00:02
0.400	4.6E-04	6.6E+10	2.0E+05	00:02
0.500	3.2E-04	4.5E+10	1.4E+05	00:03
0.600	2.3E-04	3.3E+10	9.8E+04	00:04
0.700	1.7E-04	2.5E+10	7.5E+04	00:04
0.800	1.4E-04	1.9E+10	5.8E+04	00:05
0.900	1.1E-04	1.6E+10	4.7E+04	00:06
1.000	9.1E-05	1.3E+10	3.9E+04	00:06
2.000	2.5E-05	3.6E+09	1.1E+04	00:13
4.000	6.9E-06	9.8E+08	2.9E+03	00:27
6.000	3.3E-06	4.7E+08	1.4E+03	00:40
8.000	2.0E-06	2.8E+08	8.4E+02	00:54
10.000	1.3E-06	1.9E+08	5.7E+02	01:07
20.000	4.1E-07	5.8E+07	1.7E+02	02:15
40.000	1.3E-07	1.9E+07	5.6E+01	04:30
60.000	6.9E-08	9.8E+06	2.9E+01	06:45
80.000	4.4E-08	6.3E+06	1.9E+01	09:00

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:41:22 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Infant Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Infant Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 64 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : B  
Receptor Height : 0.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 8.68E-05 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.031 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : 0.36 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.3E-02	1.8E+12	5.5E+06	<00:01
0.100	3.6E-03	5.2E+11	1.6E+06	<00:01
0.200	2.1E-03	2.9E+11	8.8E+05	00:01
0.300	1.3E-03	1.8E+11	5.5E+05	00:02
0.400	8.7E-04	1.2E+11	3.7E+05	00:02
0.500	6.2E-04	8.8E+10	2.6E+05	00:03
0.600	4.6E-04	6.6E+10	2.0E+05	00:04
0.700	3.6E-04	5.1E+10	1.5E+05	00:04
0.800	2.9E-04	4.1E+10	1.2E+05	00:05
0.900	2.3E-04	3.3E+10	1.0E+05	00:06
1.000	1.9E-04	2.8E+10	8.3E+04	00:06
2.000	5.5E-05	7.9E+09	2.4E+04	00:13
4.000	1.5E-05	2.2E+09	6.6E+03	00:27
6.000	7.4E-06	1.1E+09	3.2E+03	00:40
8.000	4.4E-06	6.3E+08	1.9E+03	00:54
10.000	3.0E-06	4.3E+08	1.3E+03	01:07
20.000	9.2E-07	1.3E+08	3.9E+02	02:15
40.000	3.0E-07	4.2E+07	1.3E+02	04:30
60.000	1.6E-07	2.2E+07	6.6E+01	06:45
80.000	9.9E-08	1.4E+07	4.2E+01	09:00

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:41:40 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Infant Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Infant Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 64 m  
Debris Cloud Top calculated using modified cloud height methodology

UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : C  
Receptor Height : 0.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 8.68E-05 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.033 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : 0.54 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.4E-02	2.0E+12	6.0E+06	<00:01
0.100	4.4E-03	6.3E+11	1.9E+06	<00:01
0.200	2.8E-03	4.1E+11	1.2E+06	00:01
0.300	2.0E-03	2.8E+11	8.5E+05	00:01
0.400	1.5E-03	2.1E+11	6.2E+05	00:02
0.500	1.1E-03	1.6E+11	4.7E+05	00:03
0.600	8.6E-04	1.2E+11	3.7E+05	00:03
0.700	6.9E-04	9.9E+10	3.0E+05	00:04
0.800	5.7E-04	8.1E+10	2.4E+05	00:05
0.900	4.8E-04	6.8E+10	2.0E+05	00:05
1.000	4.0E-04	5.8E+10	1.7E+05	00:06
2.000	1.3E-04	1.9E+10	5.6E+04	00:12
4.000	4.3E-05	6.1E+09	1.8E+04	00:25
6.000	2.3E-05	3.2E+09	9.7E+03	00:38
8.000	1.5E-05	2.1E+09	6.3E+03	00:51
10.000	1.1E-05	1.5E+09	4.6E+03	01:04
20.000	4.2E-06	6.0E+08	1.8E+03	02:08
40.000	1.8E-06	2.6E+08	7.7E+02	04:17
60.000	1.1E-06	1.6E+08	4.8E+02	06:26
80.000	8.0E-07	1.1E+08	3.4E+02	08:35

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:42:04 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Infant Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Infant Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 53 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : D  
Receptor Height : 0.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 8.68E-05 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.045 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : 0.93 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.9E-02	2.7E+12	8.2E+06	<00:01
0.100	6.6E-03	9.5E+11	2.8E+06	<00:01
0.200	4.4E-03	6.3E+11	1.9E+06	00:01
0.300	3.3E-03	4.7E+11	1.4E+06	00:01
0.400	2.6E-03	3.6E+11	1.1E+06	00:02
0.500	2.0E-03	2.9E+11	8.8E+05	00:03
0.600	1.7E-03	2.4E+11	7.2E+05	00:03
0.700	1.4E-03	2.0E+11	6.1E+05	00:04
0.800	1.2E-03	1.7E+11	5.2E+05	00:04
0.900	1.1E-03	1.5E+11	4.5E+05	00:05
1.000	9.2E-04	1.3E+11	4.0E+05	00:06
2.000	3.7E-04	5.3E+10	1.6E+05	00:12
4.000	1.4E-04	2.0E+10	6.1E+04	00:24
6.000	8.1E-05	1.2E+10	3.5E+04	00:36
8.000	5.5E-05	7.9E+09	2.4E+04	00:48
10.000	4.1E-05	5.9E+09	1.8E+04	01:01
20.000	1.7E-05	2.4E+09	7.2E+03	02:02
40.000	7.2E-06	1.0E+09	3.1E+03	04:04
60.000	4.3E-06	6.2E+08	1.9E+03	06:06
80.000	3.1E-06	4.4E+08	1.3E+03	08:08

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:42:18 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Infant Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Infant Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 53 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : E  
Receptor Height : 0.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 8.68E-05 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.042 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : 1.2 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.7E-02	2.4E+12	7.1E+06	<00:01
0.100	7.4E-03	1.1E+12	3.2E+06	<00:01
0.200	5.0E-03	7.1E+11	2.1E+06	<00:01
0.300	3.8E-03	5.4E+11	1.6E+06	00:01
0.400	3.0E-03	4.3E+11	1.3E+06	00:01
0.500	2.5E-03	3.6E+11	1.1E+06	00:02
0.600	2.1E-03	3.0E+11	9.1E+05	00:02
0.700	1.8E-03	2.6E+11	7.9E+05	00:03
0.800	1.6E-03	2.3E+11	6.9E+05	00:03
0.900	1.4E-03	2.0E+11	6.1E+05	00:04
1.000	1.3E-03	1.8E+11	5.5E+05	00:04
2.000	5.7E-04	8.1E+10	2.4E+05	00:09
4.000	2.4E-04	3.5E+10	1.0E+05	00:18
6.000	1.5E-04	2.1E+10	6.4E+04	00:27
8.000	1.1E-04	1.6E+10	4.7E+04	00:36
10.000	8.7E-05	1.2E+10	3.7E+04	00:45
20.000	4.2E-05	6.0E+09	1.8E+04	01:31
40.000	2.1E-05	2.9E+09	8.8E+03	03:02
60.000	1.3E-05	1.8E+09	5.5E+03	04:34
80.000	9.5E-06	1.4E+09	4.1E+03	06:05

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:42:36 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0039D  
Natural Gas Explosion\0039D Infant Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0039D Infant Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 6.09 Pounds of TNT  
Debris Cloud Top : 53 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 274 m (900 ft)  
Onset of shattered glass due to blast (0.5 psi): 40 m - 51 m (132 ft -  
168 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 8.0 m - 13 m (26 ft  
- 41 ft)  
Lung damage and complete incapacitation (10 psi) : 5.5 m - 8.4 m (18 ft  
- 28 ft)  
Onset of lethality (25 psi) : 3.5 m - 5.5 m (12 ft  
- 18 ft)  
Fatalities in over 99% of population (100 psi) : 1.9 m - 3.3 m (6.3  
ft - 11 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : F  
Receptor Height : 0.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 8.68E-05 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 0.038 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : 1.8 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.5E-02	2.1E+12	6.4E+06	<00:01
0.100	8.7E-03	1.2E+12	3.7E+06	<00:01
0.200	6.0E-03	8.5E+11	2.6E+06	<00:01
0.300	4.6E-03	6.5E+11	2.0E+06	00:01
0.400	3.7E-03	5.3E+11	1.6E+06	00:01
0.500	3.1E-03	4.4E+11	1.3E+06	00:01
0.600	2.7E-03	3.8E+11	1.2E+06	00:02
0.700	2.4E-03	3.4E+11	1.0E+06	00:02
0.800	2.1E-03	3.0E+11	9.1E+05	00:02
0.900	1.9E-03	2.7E+11	8.2E+05	00:03
1.000	1.8E-03	2.5E+11	7.5E+05	00:03
2.000	9.0E-04	1.3E+11	3.9E+05	00:06
4.000	4.4E-04	6.2E+10	1.9E+05	00:13
6.000	2.8E-04	4.0E+10	1.2E+05	00:20
8.000	2.1E-04	3.0E+10	8.9E+04	00:27
10.000	1.7E-04	2.4E+10	7.1E+04	00:34
20.000	7.9E-05	1.1E+10	3.4E+04	01:08
40.000	3.5E-05	5.1E+09	1.5E+04	02:17
60.000	2.1E-05	3.0E+09	8.9E+03	03:25
80.000	1.5E-05	2.1E+09	6.2E+03	04:34

**SEQUENCE 0012B**

Physical Leak on Bulk Splitting Rig

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\0012B Adult Mixture.mix

0012B Adult Mixture

Mixture Scale Factor : 1.0000E+00

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Nuclide [01] :	HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.0000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.0000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.0000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.0000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.0000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.0000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.0000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.0000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.0000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.0000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.0000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.0000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.0000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.0000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.0000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.0000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	1.3875E+13
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.0000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.0000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.0000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.0000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.0000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.0000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.0000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.0000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.0000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.0000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.0000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.0000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.0000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.0000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.0000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.0000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.0000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.0000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.0000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.0000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 1.2488E+14
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\0012B Child Mixture.mix

0012B Child Mixture

Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	: HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.8000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.8000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.8000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.8000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.8000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.8000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.8000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.8000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.8000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.8000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.8000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.8000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.8000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.8000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.8000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.8000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.8000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.8000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.8000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.8000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.8000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.8000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.8000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.8000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	1.3875E+13
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.5000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.5000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.5000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.5000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.5000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.5000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.5000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.5000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.5000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.5000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.5000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.5000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.5000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.5000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.5000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.5000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.5000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.5000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.5000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.5000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 1.2488E+14
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

## HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\0012B Infant Mixture.mix

0012B Infant Mixture

Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	: HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	8.0000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	8.0000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	8.0000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	8.0000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	8.0000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	8.0000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	8.0000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	8.0000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	8.0000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	8.0000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	8.0000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	8.0000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	8.0000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	8.0000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	8.0000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	8.0000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	8.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	8.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	8.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	8.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	8.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	8.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	8.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	8.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	1.3875E+13
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	5.3000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	5.3000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	5.3000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	5.3000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	5.3000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	5.3000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	5.3000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) :	5.3000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Ovaries	Inhalation	(Sv/Bq) :	5.3000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Adrenals	Inhalation	(Sv/Bq) :	5.3000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Breast	Inhalation	(Sv/Bq) :	5.3000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) :	5.3000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thymus	Inhalation	(Sv/Bq) :	5.3000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) :	5.3000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Esophagus	Inhalation	(Sv/Bq) :	5.3000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) :	5.3000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	5.3000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	5.3000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	5.3000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	5.3000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	5.3000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	5.3000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	5.3000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	5.3000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	1.2488E+14
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:42:39 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Adult Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)

0012B Adult Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : A  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.099 km  
 Maximum TEDE : 1.29E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	1.2E-08	1.5E+07	2.6E+01	<00:01
0.100	1.3E-05	1.6E+10	4.8E+04	<00:01
0.200	6.7E-06	8.4E+09	2.5E+04	00:01
0.300	3.4E-06	4.3E+09	1.3E+04	00:02
0.400	2.0E-06	2.5E+09	7.6E+03	00:02
0.500	1.3E-06	1.7E+09	5.0E+03	00:03
0.600	9.4E-07	1.2E+09	3.5E+03	00:04
0.700	7.0E-07	8.7E+08	2.6E+03	00:04
0.800	5.4E-07	6.7E+08	2.0E+03	00:05
0.900	4.3E-07	5.4E+08	1.6E+03	00:06
1.000	3.5E-07	4.4E+08	1.3E+03	00:07
2.000	9.2E-08	1.1E+08	3.4E+02	00:14
4.000	2.5E-08	3.1E+07	9.3E+01	00:28
6.000	1.2E-08	1.5E+07	4.4E+01	00:42
8.000	7.0E-09	8.7E+06	2.6E+01	00:56

10.000	4.7E-09	5.9E+06	1.8E+01	01:10
20.000	1.4E-09	1.8E+06	5.4E+00	02:20
40.000	4.6E-10	5.8E+05	1.7E+00	04:41
60.000	2.4E-10	3.0E+05	9.1E-01	07:02
80.000	1.6E-10	1.9E+05	5.8E-01	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:45:52 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Adult Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)

0012B Adult Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : B  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.16 km  
 Maximum TEDE : 1.07E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	7.4E-16	9.3E-01	2.4E-07	<00:01
0.100	5.4E-06	6.6E+09	1.9E+04	<00:01
0.200	1.0E-05	1.2E+10	3.7E+04	00:01
0.300	6.5E-06	8.1E+09	2.4E+04	00:02
0.400	4.2E-06	5.2E+09	1.6E+04	00:02
0.500	2.9E-06	3.5E+09	1.1E+04	00:03
0.600	2.1E-06	2.6E+09	7.7E+03	00:04
0.700	1.5E-06	1.9E+09	5.8E+03	00:04
0.800	1.2E-06	1.5E+09	4.5E+03	00:05
0.900	9.7E-07	1.2E+09	3.6E+03	00:06
1.000	7.9E-07	9.8E+08	2.9E+03	00:07
2.000	2.1E-07	2.6E+08	7.8E+02	00:14
4.000	5.6E-08	7.0E+07	2.1E+02	00:28
6.000	2.7E-08	3.3E+07	1.0E+02	00:42
8.000	1.6E-08	2.0E+07	5.9E+01	00:56

10.000	1.1E-08	1.3E+07	4.0E+01	01:10
20.000	3.3E-09	4.1E+06	1.2E+01	02:20
40.000	1.0E-09	1.3E+06	3.9E+00	04:41
60.000	5.5E-10	6.8E+05	2.0E+00	07:02
80.000	3.5E-10	4.3E+05	1.3E+00	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:46:15 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Adult Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)

0012B Adult Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.44 m/s  
 Stability Class : C  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.25 km  
 Maximum TEDE : 9.85E-06 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	0.0E+00	2.7E-15	0.0E+00	<00:01
0.100	3.9E-07	4.9E+08	1.2E+03	<00:01
0.200	8.8E-06	1.1E+10	3.2E+04	00:01
0.300	9.3E-06	1.2E+10	3.5E+04	00:02
0.400	7.2E-06	9.0E+09	2.7E+04	00:02
0.500	5.4E-06	6.7E+09	2.0E+04	00:03
0.600	4.1E-06	5.1E+09	1.5E+04	00:04
0.700	3.2E-06	4.0E+09	1.2E+04	00:04
0.800	2.6E-06	3.2E+09	9.5E+03	00:05
0.900	2.1E-06	2.6E+09	7.8E+03	00:06
1.000	1.7E-06	2.2E+09	6.5E+03	00:06
2.000	5.1E-07	6.4E+08	1.9E+03	00:13
4.000	1.6E-07	2.0E+08	5.9E+02	00:27
6.000	8.3E-08	1.0E+08	3.1E+02	00:41
8.000	5.3E-08	6.6E+07	2.0E+02	00:54

10.000	3.9E-08	4.8E+07	1.4E+02	01:08
20.000	1.5E-08	1.9E+07	5.6E+01	02:16
40.000	6.3E-09	7.9E+06	2.4E+01	04:33
60.000	3.9E-09	4.9E+06	1.5E+01	06:50
80.000	2.8E-09	3.5E+06	1.1E+01	09:06

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:46:35 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Adult Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)

0012B Adult Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.57 m/s  
 Stability Class : D  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.39 km  
 Maximum TEDE : 7.83E-06 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	2.2E-09	2.8E+06	4.2E+00	<00:01
0.200	2.6E-06	3.2E+09	9.0E+03	00:01
0.300	6.9E-06	8.5E+09	2.5E+04	00:01
0.400	7.8E-06	9.7E+09	2.9E+04	00:02
0.500	7.3E-06	9.0E+09	2.7E+04	00:03
0.600	6.4E-06	7.9E+09	2.4E+04	00:03
0.700	5.5E-06	6.8E+09	2.0E+04	00:04
0.800	4.7E-06	5.9E+09	1.8E+04	00:05
0.900	4.1E-06	5.1E+09	1.5E+04	00:05
1.000	3.6E-06	4.5E+09	1.3E+04	00:06
2.000	1.4E-06	1.7E+09	5.1E+03	00:12
4.000	5.1E-07	6.3E+08	1.9E+03	00:25
6.000	2.9E-07	3.6E+08	1.1E+03	00:38
8.000	2.0E-07	2.4E+08	7.3E+02	00:51

10.000	1.5E-07	1.8E+08	5.4E+02	01:04
20.000	5.9E-08	7.4E+07	2.2E+02	02:09
40.000	2.5E-08	3.1E+07	9.3E+01	04:19
60.000	1.5E-08	1.9E+07	5.7E+01	06:29
80.000	1.1E-08	1.3E+07	4.0E+01	08:39

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:46:55 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Adult Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)

0012B Adult Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.15 m/s  
 Stability Class : E  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.77 km  
 Maximum TEDE : 4.43E-06 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	4.3E-07	2.1E-14	<00:01
0.200	1.6E-09	1.9E+06	3.0E+00	00:01
0.300	2.9E-07	3.6E+08	9.1E+02	00:01
0.400	1.6E-06	1.9E+09	5.5E+03	00:02
0.500	3.0E-06	3.7E+09	1.1E+04	00:02
0.600	4.0E-06	4.9E+09	1.5E+04	00:03
0.700	4.4E-06	5.4E+09	1.6E+04	00:03
0.800	4.4E-06	5.5E+09	1.6E+04	00:04
0.900	4.3E-06	5.3E+09	1.6E+04	00:04
1.000	4.1E-06	5.0E+09	1.5E+04	00:05
2.000	2.0E-06	2.5E+09	7.5E+03	00:10
4.000	8.5E-07	1.1E+09	3.2E+03	00:21
6.000	5.2E-07	6.4E+08	1.9E+03	00:31
8.000	3.7E-07	4.6E+08	1.4E+03	00:42

10.000	3.0E-07	3.7E+08	1.1E+03	00:52
20.000	1.4E-07	1.8E+08	5.4E+02	01:45
40.000	7.2E-08	9.0E+07	2.7E+02	03:31
60.000	4.7E-08	5.8E+07	1.7E+02	05:17
80.000	3.4E-08	4.3E+07	1.3E+02	07:02

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:47:20 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Adult Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)

0012B Adult Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.88 m/s  
 Stability Class : F  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 1.7 km  
 Maximum TEDE : 2.41E-06 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	0.0E+00	0.0E+00	<00:01
0.200	0.0E+00	4.4E-06	3.0E-13	<00:01
0.300	1.2E-12	1.5E+03	1.1E-03	00:01
0.400	1.2E-09	1.5E+06	2.3E+00	00:01
0.500	2.8E-08	3.5E+07	7.6E+01	00:02
0.600	1.5E-07	1.9E+08	4.8E+02	00:02
0.700	4.2E-07	5.2E+08	1.4E+03	00:03
0.800	7.8E-07	9.7E+08	2.7E+03	00:03
0.900	1.2E-06	1.4E+09	4.1E+03	00:03
1.000	1.5E-06	1.9E+09	5.5E+03	00:04
2.000	2.3E-06	2.9E+09	8.7E+03	00:08
4.000	1.4E-06	1.7E+09	5.2E+03	00:17
6.000	9.4E-07	1.2E+09	3.5E+03	00:25
8.000	7.0E-07	8.7E+08	2.6E+03	00:34

10.000	5.7E-07	7.0E+08	2.1E+03	00:43
20.000	2.8E-07	3.5E+08	1.0E+03	01:26
40.000	1.3E-07	1.7E+08	5.0E+02	02:52
60.000	8.1E-08	1.0E+08	3.0E+02	04:18
80.000	5.8E-08	7.2E+07	2.2E+02	05:44

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:49:57 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Child Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)

0012B Child Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : A  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.099 km  
 Maximum TEDE : 1.52E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	1.1E-08	1.1E+07	2.6E+01	<00:01
0.100	1.5E-05	1.6E+10	4.8E+04	<00:01
0.200	8.0E-06	8.4E+09	2.5E+04	00:01
0.300	4.1E-06	4.3E+09	1.3E+04	00:02
0.400	2.4E-06	2.5E+09	7.6E+03	00:02
0.500	1.6E-06	1.7E+09	5.0E+03	00:03
0.600	1.1E-06	1.2E+09	3.5E+03	00:04
0.700	8.3E-07	8.7E+08	2.6E+03	00:04
0.800	6.4E-07	6.7E+08	2.0E+03	00:05
0.900	5.1E-07	5.4E+08	1.6E+03	00:06
1.000	4.2E-07	4.4E+08	1.3E+03	00:07
2.000	1.1E-07	1.1E+08	3.4E+02	00:14
4.000	2.9E-08	3.1E+07	9.3E+01	00:28
6.000	1.4E-08	1.5E+07	4.4E+01	00:42
8.000	8.3E-09	8.7E+06	2.6E+01	00:56

10.000	5.6E-09	5.9E+06	1.8E+01	01:10
20.000	1.7E-09	1.8E+06	5.4E+00	02:20
40.000	5.5E-10	5.8E+05	1.7E+00	04:41
60.000	2.9E-10	3.0E+05	9.1E-01	07:02
80.000	1.8E-10	1.9E+05	5.8E-01	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:50:42 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Child Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)  
 0012B Child Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : B  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.17 km  
 Maximum TEDE : 1.26E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	3.2E-16	3.3E-01	2.4E-07	<00:01
0.100	6.2E-06	6.5E+09	1.9E+04	<00:01
0.200	1.2E-05	1.2E+10	3.7E+04	00:01
0.300	7.7E-06	8.1E+09	2.4E+04	00:02
0.400	4.9E-06	5.2E+09	1.6E+04	00:02
0.500	3.4E-06	3.5E+09	1.1E+04	00:03
0.600	2.4E-06	2.6E+09	7.7E+03	00:04
0.700	1.8E-06	1.9E+09	5.8E+03	00:04
0.800	1.4E-06	1.5E+09	4.5E+03	00:05
0.900	1.1E-06	1.2E+09	3.6E+03	00:06
1.000	9.3E-07	9.8E+08	2.9E+03	00:07
2.000	2.5E-07	2.6E+08	7.8E+02	00:14
4.000	6.7E-08	7.0E+07	2.1E+02	00:28
6.000	3.2E-08	3.3E+07	1.0E+02	00:42
8.000	1.9E-08	2.0E+07	5.9E+01	00:56

10.000	1.3E-08	1.3E+07	4.0E+01	01:10
20.000	3.9E-09	4.1E+06	1.2E+01	02:20
40.000	1.2E-09	1.3E+06	3.9E+00	04:41
60.000	6.5E-10	6.8E+05	2.0E+00	07:02
80.000	4.1E-10	4.3E+05	1.3E+00	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:50:58 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Child Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)  
 0012B Child Mixture  
 Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.44 m/s  
 Stability Class : C  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.25 km  
 Maximum TEDE : 1.16E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	2.3E-16	0.0E+00	<00:01
0.100	4.2E-07	4.4E+08	1.2E+03	<00:01
0.200	1.0E-05	1.1E+10	3.2E+04	00:01
0.300	1.1E-05	1.2E+10	3.5E+04	00:02
0.400	8.5E-06	9.0E+09	2.7E+04	00:02
0.500	6.4E-06	6.7E+09	2.0E+04	00:03
0.600	4.9E-06	5.1E+09	1.5E+04	00:04
0.700	3.8E-06	4.0E+09	1.2E+04	00:04
0.800	3.0E-06	3.2E+09	9.5E+03	00:05
0.900	2.5E-06	2.6E+09	7.8E+03	00:06
1.000	2.1E-06	2.2E+09	6.5E+03	00:06
2.000	6.1E-07	6.4E+08	1.9E+03	00:13
4.000	1.9E-07	2.0E+08	5.9E+02	00:27
6.000	9.7E-08	1.0E+08	3.1E+02	00:41
8.000	6.3E-08	6.6E+07	2.0E+02	00:54

10.000	4.5E-08	4.8E+07	1.4E+02	01:08
20.000	1.8E-08	1.9E+07	5.6E+01	02:16
40.000	7.5E-09	7.9E+06	2.4E+01	04:33
60.000	4.7E-09	4.9E+06	1.5E+01	06:50
80.000	3.4E-09	3.5E+06	1.1E+01	09:06

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:51:14 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Child Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)  
 0012B Child Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.57 m/s  
 Stability Class : D  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.39 km  
 Maximum TEDE : 9.23E-06 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL TIME (hour:min)
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	1.9E-09	2.0E+06	4.2E+00	<00:01
0.200	2.9E-06	3.1E+09	9.0E+03	00:01
0.300	8.0E-06	8.5E+09	2.5E+04	00:01
0.400	9.2E-06	9.7E+09	2.9E+04	00:02
0.500	8.6E-06	9.0E+09	2.7E+04	00:03
0.600	7.5E-06	7.9E+09	2.4E+04	00:03
0.700	6.5E-06	6.8E+09	2.0E+04	00:04
0.800	5.6E-06	5.9E+09	1.8E+04	00:05
0.900	4.8E-06	5.1E+09	1.5E+04	00:05
1.000	4.2E-06	4.5E+09	1.3E+04	00:06
2.000	1.6E-06	1.7E+09	5.1E+03	00:12
4.000	6.0E-07	6.3E+08	1.9E+03	00:25
6.000	3.4E-07	3.6E+08	1.1E+03	00:38
8.000	2.3E-07	2.4E+08	7.3E+02	00:51

10.000	1.7E-07	1.8E+08	5.4E+02	01:04
20.000	7.0E-08	7.4E+07	2.2E+02	02:09
40.000	3.0E-08	3.1E+07	9.3E+01	04:19
60.000	1.8E-08	1.9E+07	5.7E+01	06:29
80.000	1.3E-08	1.3E+07	4.0E+01	08:39

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:51:30 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Child Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)

0012B Child Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.15 m/s  
 Stability Class : E  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.77 km  
 Maximum TEDE : 5.22E-06 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	8.8E-08	2.1E-14	<00:01
0.200	1.3E-09	1.4E+06	3.0E+00	00:01
0.300	3.1E-07	3.3E+08	9.1E+02	00:01
0.400	1.8E-06	1.9E+09	5.5E+03	00:02
0.500	3.5E-06	3.7E+09	1.1E+04	00:02
0.600	4.6E-06	4.9E+09	1.5E+04	00:03
0.700	5.1E-06	5.4E+09	1.6E+04	00:03
0.800	5.2E-06	5.5E+09	1.6E+04	00:04
0.900	5.1E-06	5.3E+09	1.6E+04	00:04
1.000	4.8E-06	5.0E+09	1.5E+04	00:05
2.000	2.4E-06	2.5E+09	7.5E+03	00:10
4.000	1.0E-06	1.1E+09	3.2E+03	00:21
6.000	6.1E-07	6.4E+08	1.9E+03	00:31
8.000	4.4E-07	4.6E+08	1.4E+03	00:42

10.000	3.5E-07	3.7E+08	1.1E+03	00:52
20.000	1.7E-07	1.8E+08	5.4E+02	01:45
40.000	8.5E-08	9.0E+07	2.7E+02	03:31
60.000	5.5E-08	5.8E+07	1.7E+02	05:17
80.000	4.1E-08	4.3E+07	1.3E+02	07:02

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:51:45 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Child Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)

0012B Child Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.88 m/s  
 Stability Class : F  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 1.7 km  
 Maximum TEDE : 2.83E-06 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	0.0E+00	0.0E+00	<00:01
0.200	0.0E+00	1.0E-06	3.0E-13	<00:01
0.300	7.5E-13	7.9E+02	1.1E-03	00:01
0.400	1.0E-09	1.1E+06	2.3E+00	00:01
0.500	2.8E-08	3.0E+07	7.6E+01	00:02
0.600	1.7E-07	1.7E+08	4.8E+02	00:02
0.700	4.7E-07	4.9E+08	1.4E+03	00:03
0.800	8.9E-07	9.3E+08	2.7E+03	00:03
0.900	1.3E-06	1.4E+09	4.1E+03	00:03
1.000	1.8E-06	1.8E+09	5.5E+03	00:04
2.000	2.7E-06	2.9E+09	8.7E+03	00:08
4.000	1.7E-06	1.7E+09	5.2E+03	00:17
6.000	1.1E-06	1.2E+09	3.5E+03	00:25
8.000	8.3E-07	8.7E+08	2.6E+03	00:34

10.000	6.7E-07	7.1E+08	2.1E+03	00:43
20.000	3.3E-07	3.5E+08	1.0E+03	01:26
40.000	1.6E-07	1.7E+08	5.0E+02	02:52
60.000	9.6E-08	1.0E+08	3.0E+02	04:18
80.000	6.8E-08	7.2E+07	2.2E+02	05:44

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:52:37 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Infant Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)  
 0012B Infant Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : A  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.099 km  
 Maximum TEDE : 1.12E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	6.6E-09	9.5E+06	2.6E+01	<00:01
0.100	1.1E-05	1.6E+10	4.8E+04	<00:01
0.200	5.9E-06	8.4E+09	2.5E+04	00:01
0.300	3.0E-06	4.3E+09	1.3E+04	00:02
0.400	1.8E-06	2.5E+09	7.6E+03	00:02
0.500	1.2E-06	1.7E+09	5.0E+03	00:03
0.600	8.2E-07	1.2E+09	3.5E+03	00:04
0.700	6.1E-07	8.7E+08	2.6E+03	00:04
0.800	4.7E-07	6.7E+08	2.0E+03	00:05
0.900	3.8E-07	5.4E+08	1.6E+03	00:06
1.000	3.1E-07	4.4E+08	1.3E+03	00:07
2.000	8.0E-08	1.1E+08	3.4E+02	00:14
4.000	2.2E-08	3.1E+07	9.3E+01	00:28
6.000	1.0E-08	1.5E+07	4.4E+01	00:42
8.000	6.1E-09	8.7E+06	2.6E+01	00:56

10.000	4.1E-09	5.9E+06	1.8E+01	01:10
20.000	1.3E-09	1.8E+06	5.4E+00	02:20
40.000	4.0E-10	5.8E+05	1.7E+00	04:41
60.000	2.1E-10	3.0E+05	9.1E-01	07:02
80.000	1.3E-10	1.9E+05	5.8E-01	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:53:04 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Infant Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)

0012B Infant Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : B  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.17 km  
 Maximum TEDE : 9.28E-06 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	9.0E-17	1.3E-01	2.4E-07	<00:01
0.100	4.5E-06	6.5E+09	1.9E+04	<00:01
0.200	8.7E-06	1.2E+10	3.7E+04	00:01
0.300	5.7E-06	8.1E+09	2.4E+04	00:02
0.400	3.6E-06	5.2E+09	1.6E+04	00:02
0.500	2.5E-06	3.5E+09	1.1E+04	00:03
0.600	1.8E-06	2.6E+09	7.7E+03	00:04
0.700	1.3E-06	1.9E+09	5.8E+03	00:04
0.800	1.0E-06	1.5E+09	4.5E+03	00:05
0.900	8.4E-07	1.2E+09	3.6E+03	00:06
1.000	6.9E-07	9.8E+08	2.9E+03	00:07
2.000	1.8E-07	2.6E+08	7.8E+02	00:14
4.000	4.9E-08	7.0E+07	2.1E+02	00:28
6.000	2.3E-08	3.3E+07	1.0E+02	00:42
8.000	1.4E-08	2.0E+07	5.9E+01	00:56

10.000	9.3E-09	1.3E+07	4.0E+01	01:10
20.000	2.8E-09	4.1E+06	1.2E+01	02:20
40.000	9.1E-10	1.3E+06	3.9E+00	04:41
60.000	4.8E-10	6.8E+05	2.0E+00	07:02
80.000	3.0E-10	4.3E+05	1.3E+00	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:53:20 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Infant Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)

0012B Infant Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.44 m/s  
 Stability Class : C  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.25 km  
 Maximum TEDE : 8.55E-06 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	2.9E-07	4.1E+08	1.2E+03	<00:01
0.200	7.6E-06	1.1E+10	3.2E+04	00:01
0.300	8.1E-06	1.2E+10	3.5E+04	00:02
0.400	6.3E-06	9.0E+09	2.7E+04	00:02
0.500	4.7E-06	6.7E+09	2.0E+04	00:03
0.600	3.6E-06	5.1E+09	1.5E+04	00:04
0.700	2.8E-06	4.0E+09	1.2E+04	00:04
0.800	2.2E-06	3.2E+09	9.5E+03	00:05
0.900	1.8E-06	2.6E+09	7.8E+03	00:06
1.000	1.5E-06	2.2E+09	6.5E+03	00:06
2.000	4.5E-07	6.4E+08	1.9E+03	00:13
4.000	1.4E-07	2.0E+08	5.9E+02	00:27
6.000	7.2E-08	1.0E+08	3.1E+02	00:41
8.000	4.6E-08	6.6E+07	2.0E+02	00:54

10.000	3.4E-08	4.8E+07	1.4E+02	01:08
20.000	1.3E-08	1.9E+07	5.6E+01	02:16
40.000	5.5E-09	7.9E+06	2.4E+01	04:33
60.000	3.4E-09	4.9E+06	1.5E+01	06:50
80.000	2.5E-09	3.5E+06	1.1E+01	09:06

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:54:44 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Infant Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)  
 0012B Infant Mixture  
 Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.57 m/s  
 Stability Class : D  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.40 km  
 Maximum TEDE : 6.79E-06 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	1.1E-09	1.5E+06	4.2E+00	<00:01
0.200	2.1E-06	3.0E+09	9.0E+03	00:01
0.300	5.9E-06	8.4E+09	2.5E+04	00:01
0.400	6.8E-06	9.7E+09	2.9E+04	00:02
0.500	6.3E-06	9.0E+09	2.7E+04	00:03
0.600	5.5E-06	7.9E+09	2.4E+04	00:03
0.700	4.8E-06	6.8E+09	2.0E+04	00:04
0.800	4.1E-06	5.9E+09	1.8E+04	00:05
0.900	3.6E-06	5.1E+09	1.5E+04	00:05
1.000	3.1E-06	4.5E+09	1.3E+04	00:06
2.000	1.2E-06	1.7E+09	5.1E+03	00:12
4.000	4.4E-07	6.3E+08	1.9E+03	00:25
6.000	2.5E-07	3.6E+08	1.1E+03	00:38
8.000	1.7E-07	2.4E+08	7.3E+02	00:51

10.000	1.3E-07	1.8E+08	5.4E+02	01:04
20.000	5.2E-08	7.4E+07	2.2E+02	02:09
40.000	2.2E-08	3.1E+07	9.3E+01	04:19
60.000	1.3E-08	1.9E+07	5.7E+01	06:29
80.000	9.3E-09	1.3E+07	4.0E+01	08:39

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:55:00 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Infant Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)

0012B Infant Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.15 m/s  
 Stability Class : E  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.77 km  
 Maximum TEDE : 3.84E-06 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	1.8E-08	2.1E-14	<00:01
0.200	7.7E-10	1.1E+06	3.0E+00	00:01
0.300	2.2E-07	3.1E+08	9.1E+02	00:01
0.400	1.3E-06	1.8E+09	5.5E+03	00:02
0.500	2.6E-06	3.7E+09	1.1E+04	00:02
0.600	3.4E-06	4.9E+09	1.5E+04	00:03
0.700	3.8E-06	5.4E+09	1.6E+04	00:03
0.800	3.8E-06	5.5E+09	1.6E+04	00:04
0.900	3.7E-06	5.3E+09	1.6E+04	00:04
1.000	3.5E-06	5.0E+09	1.5E+04	00:05
2.000	1.8E-06	2.5E+09	7.5E+03	00:10
4.000	7.4E-07	1.1E+09	3.2E+03	00:21
6.000	4.5E-07	6.4E+08	1.9E+03	00:31
8.000	3.3E-07	4.7E+08	1.4E+03	00:42

10.000	2.6E-07	3.7E+08	1.1E+03	00:52
20.000	1.3E-07	1.8E+08	5.4E+02	01:45
40.000	6.3E-08	9.0E+07	2.7E+02	03:31
60.000	4.1E-08	5.8E+07	1.7E+02	05:17
80.000	3.0E-08	4.3E+07	1.3E+02	07:02

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 8:55:18 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\GENERAL  
 PLUME MIXTURE FILES\0012B Bulk Splitter Leak\0012B Infant Mixture.mix  
 (Mixture Scale Factor = 1.0000E+00)

0012B Infant Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.88 m/s  
 Stability Class : F  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 1.7 km  
 Maximum TEDE : 2.08E-06 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	0.0E+00	0.0E+00	<00:01
0.200	0.0E+00	2.4E-07	3.0E-13	<00:01
0.300	3.2E-13	4.6E+02	1.1E-03	00:01
0.400	5.9E-10	8.5E+05	2.3E+00	00:01
0.500	1.9E-08	2.6E+07	7.6E+01	00:02
0.600	1.2E-07	1.6E+08	4.8E+02	00:02
0.700	3.3E-07	4.7E+08	1.4E+03	00:03
0.800	6.4E-07	9.1E+08	2.7E+03	00:03
0.900	9.7E-07	1.4E+09	4.1E+03	00:03
1.000	1.3E-06	1.8E+09	5.5E+03	00:04
2.000	2.0E-06	2.9E+09	8.7E+03	00:08
4.000	1.2E-06	1.7E+09	5.2E+03	00:17
6.000	8.2E-07	1.2E+09	3.5E+03	00:25
8.000	6.1E-07	8.7E+08	2.6E+03	00:34

10.000	4.9E-07	7.1E+08	2.1E+03	00:43
20.000	2.4E-07	3.5E+08	1.0E+03	01:26
40.000	1.2E-07	1.7E+08	5.0E+02	02:52
60.000	7.1E-08	1.0E+08	3.0E+02	04:18
80.000	5.0E-08	7.2E+07	2.2E+02	05:44

**SEQUENCE 0014B**

Bulk Tritium Container Heated for Prolonged Period + Leak

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Adult Mixture.mix

0014B Adult Mixture 100% T2

Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	: HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.0000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.0000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.0000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.0000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.0000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.0000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.0000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.0000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.0000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.0000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.0000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.0000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.0000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.0000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.0000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.0000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	0.0000E+00
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.0000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.0000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.0000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.0000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.0000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.0000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.0000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.0000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.0000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.0000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.0000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.0000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.0000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.0000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.0000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.0000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.0000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.0000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.0000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.0000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 1.0000E+15
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Child Mixture.mix

0014B Child Mixture 100% T2

Mixture Scale Factor : 1.0000E+00

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Nuclide [01] :	HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.8000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.8000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.8000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.8000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.8000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.8000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.8000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.8000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.8000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.8000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.8000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.8000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.8000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.8000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.8000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.8000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.8000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.8000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.8000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.8000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.8000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.8000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.8000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.8000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	0.0000E+00
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.5000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.5000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.5000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.5000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.5000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.5000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.5000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.5000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.5000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.5000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.5000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.5000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.5000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.5000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.5000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.5000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.5000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.5000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.5000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.5000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 1.0000E+15
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Infant Mixture.mix

0014B Infant Mixture 100% T2

Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	: HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	8.0000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	8.0000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	8.0000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	8.0000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	8.0000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	8.0000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	8.0000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	8.0000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	8.0000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	8.0000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	8.0000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	8.0000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	8.0000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	8.0000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	8.0000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	8.0000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	8.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	8.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	8.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	8.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	8.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	8.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	8.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	8.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	0.0000E+00
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	5.3000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	5.3000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	5.3000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	5.3000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	5.3000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	5.3000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	5.3000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) :	5.3000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Ovaries	Inhalation	(Sv/Bq) :	5.3000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Adrenals	Inhalation	(Sv/Bq) :	5.3000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Breast	Inhalation	(Sv/Bq) :	5.3000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) :	5.3000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thymus	Inhalation	(Sv/Bq) :	5.3000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) :	5.3000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Esophagus	Inhalation	(Sv/Bq) :	5.3000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) :	5.3000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	5.3000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	5.3000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	5.3000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	5.3000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	5.3000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	5.3000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	5.3000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	5.3000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	1.0000E+15
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:22:36 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Adult Mixture 100% T2 gas.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Adult Mixture 100% T2  
 Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : A  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.099 km  
 Maximum TEDE : 6.21E-08 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	5.8E-11	1.1E+08	1.9E+02	<00:01
0.100	6.2E-08	1.2E+11	3.5E+05	<00:01
0.200	3.2E-08	6.0E+10	1.8E+05	00:01
0.300	1.7E-08	3.1E+10	9.2E+04	00:02
0.400	9.8E-09	1.8E+10	5.5E+04	00:02
0.500	6.4E-09	1.2E+10	3.6E+04	00:03
0.600	4.5E-09	8.4E+09	2.5E+04	00:04
0.700	3.4E-09	6.3E+09	1.9E+04	00:04
0.800	2.6E-09	4.8E+09	1.5E+04	00:05
0.900	2.1E-09	3.9E+09	1.2E+04	00:06
1.000	1.7E-09	3.1E+09	9.4E+03	00:07
2.000	4.4E-10	8.2E+08	2.5E+03	00:14
4.000	1.2E-10	2.2E+08	6.7E+02	00:28
6.000	5.7E-11	1.1E+08	3.2E+02	00:42
8.000	3.4E-11	6.3E+07	1.9E+02	00:56

10.000	2.3E-11	4.2E+07	1.3E+02	01:10
20.000	6.9E-12	1.3E+07	3.9E+01	02:20
40.000	2.2E-12	4.2E+06	1.2E+01	04:41
60.000	1.2E-12	2.2E+06	6.5E+00	07:02
80.000	7.4E-13	1.4E+06	4.2E+00	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:23:34 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Adult Mixture 100% T2 gas.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Adult Mixture 100% T2  
 Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : B  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.16 km  
 Maximum TEDE : 5.13E-08 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	3.6E-18	6.7E+00	1.7E-06	<00:01
0.100	2.6E-08	4.8E+10	1.4E+05	<00:01
0.200	4.8E-08	8.9E+10	2.7E+05	00:01
0.300	3.1E-08	5.8E+10	1.7E+05	00:02
0.400	2.0E-08	3.7E+10	1.1E+05	00:02
0.500	1.4E-08	2.6E+10	7.7E+04	00:03
0.600	9.9E-09	1.8E+10	5.5E+04	00:04
0.700	7.4E-09	1.4E+10	4.2E+04	00:04
0.800	5.8E-09	1.1E+10	3.2E+04	00:05
0.900	4.6E-09	8.6E+09	2.6E+04	00:06
1.000	3.8E-09	7.1E+09	2.1E+04	00:07
2.000	1.0E-09	1.9E+09	5.6E+03	00:14
4.000	2.7E-10	5.0E+08	1.5E+03	00:28
6.000	1.3E-10	2.4E+08	7.2E+02	00:42
8.000	7.7E-11	1.4E+08	4.3E+02	00:56

10.000	5.2E-11	9.6E+07	2.9E+02	01:10
20.000	1.6E-11	2.9E+07	8.8E+01	02:20
40.000	5.0E-12	9.4E+06	2.8E+01	04:41
60.000	2.6E-12	4.9E+06	1.5E+01	07:02
80.000	1.7E-12	3.1E+06	9.4E+00	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:23:53 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Adult Mixture 100% T2 gas.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Adult Mixture 100% T2

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.44 m/s  
 Stability Class : C  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.25 km  
 Maximum TEDE : 4.73E-08 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	1.9E-14	0.0E+00	<00:01
0.100	1.9E-09	3.5E+09	8.7E+03	<00:01
0.200	4.2E-08	7.8E+10	2.3E+05	00:01
0.300	4.5E-08	8.4E+10	2.5E+05	00:02
0.400	3.5E-08	6.5E+10	1.9E+05	00:02
0.500	2.6E-08	4.8E+10	1.5E+05	00:03
0.600	2.0E-08	3.7E+10	1.1E+05	00:04
0.700	1.5E-08	2.9E+10	8.6E+04	00:04
0.800	1.2E-08	2.3E+10	6.9E+04	00:05
0.900	1.0E-08	1.9E+10	5.6E+04	00:06
1.000	8.4E-09	1.6E+10	4.7E+04	00:06
2.000	2.5E-09	4.6E+09	1.4E+04	00:13
4.000	7.6E-10	1.4E+09	4.2E+03	00:27
6.000	4.0E-10	7.4E+08	2.2E+03	00:41
8.000	2.6E-10	4.8E+08	1.4E+03	00:54

10.000	1.8E-10	3.4E+08	1.0E+03	01:08
20.000	7.2E-11	1.3E+08	4.0E+02	02:16
40.000	3.0E-11	5.7E+07	1.7E+02	04:33
60.000	1.9E-11	3.5E+07	1.1E+02	06:50
80.000	1.4E-11	2.5E+07	7.6E+01	09:06

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:24:09 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Adult Mixture 100% T2 gas.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Adult Mixture 100% T2  
 Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.57 m/s  
 Stability Class : D  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.39 km  
 Maximum TEDE : 3.76E-08 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	1.1E-11	2.0E+07	3.0E+01	<00:01
0.200	1.2E-08	2.3E+10	6.5E+04	00:01
0.300	3.3E-08	6.1E+10	1.8E+05	00:01
0.400	3.8E-08	7.0E+10	2.1E+05	00:02
0.500	3.5E-08	6.5E+10	1.9E+05	00:03
0.600	3.1E-08	5.7E+10	1.7E+05	00:03
0.700	2.6E-08	4.9E+10	1.5E+05	00:04
0.800	2.3E-08	4.2E+10	1.3E+05	00:05
0.900	2.0E-08	3.7E+10	1.1E+05	00:05
1.000	1.7E-08	3.2E+10	9.6E+04	00:06
2.000	6.6E-09	1.2E+10	3.7E+04	00:12
4.000	2.4E-09	4.6E+09	1.4E+04	00:25
6.000	1.4E-09	2.6E+09	7.8E+03	00:38
8.000	9.4E-10	1.8E+09	5.3E+03	00:51

10.000	7.0E-10	1.3E+09	3.9E+03	01:04
20.000	2.8E-10	5.3E+08	1.6E+03	02:09
40.000	1.2E-10	2.2E+08	6.7E+02	04:19
60.000	7.3E-11	1.4E+08	4.1E+02	06:29
80.000	5.1E-11	9.6E+07	2.9E+02	08:39

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:24:32 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Adult Mixture 100% T2 gas.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Adult Mixture 100% T2  
 Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.15 m/s  
 Stability Class : E  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.77 km  
 Maximum TEDE : 2.13E-08 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	3.1E-06	1.5E-13	<00:01
0.200	7.5E-12	1.4E+07	2.2E+01	00:01
0.300	1.4E-09	2.6E+09	6.6E+03	00:01
0.400	7.5E-09	1.4E+10	3.9E+04	00:02
0.500	1.4E-08	2.7E+10	7.9E+04	00:02
0.600	1.9E-08	3.5E+10	1.0E+05	00:03
0.700	2.1E-08	3.9E+10	1.2E+05	00:03
0.800	2.1E-08	4.0E+10	1.2E+05	00:04
0.900	2.1E-08	3.8E+10	1.1E+05	00:04
1.000	2.0E-08	3.6E+10	1.1E+05	00:05
2.000	9.7E-09	1.8E+10	5.4E+04	00:10
4.000	4.1E-09	7.6E+09	2.3E+04	00:21
6.000	2.5E-09	4.6E+09	1.4E+04	00:31
8.000	1.8E-09	3.4E+09	1.0E+04	00:42

10.000	1.4E-09	2.6E+09	7.9E+03	00:52
20.000	7.0E-10	1.3E+09	3.9E+03	01:45
40.000	3.5E-10	6.5E+08	1.9E+03	03:31
60.000	2.2E-10	4.2E+08	1.3E+03	05:17
80.000	1.7E-10	3.1E+08	9.3E+02	07:02

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:24:51 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Adult Mixture 100% T2 gas.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Adult Mixture 100% T2

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.88 m/s  
 Stability Class : F  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 1.7 km  
 Maximum TEDE : 1.15E-08 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	0.0E+00	0.0E+00	<00:01
0.200	0.0E+00	3.2E-05	2.2E-12	<00:01
0.300	5.8E-15	1.1E+04	7.9E-03	00:01
0.400	5.6E-12	1.1E+07	1.7E+01	00:01
0.500	1.3E-10	2.5E+08	5.5E+02	00:02
0.600	7.4E-10	1.4E+09	3.5E+03	00:02
0.700	2.0E-09	3.7E+09	1.0E+04	00:03
0.800	3.7E-09	7.0E+09	2.0E+04	00:03
0.900	5.6E-09	1.0E+10	3.0E+04	00:03
1.000	7.3E-09	1.4E+10	3.9E+04	00:04
2.000	1.1E-08	2.1E+10	6.2E+04	00:08
4.000	6.7E-09	1.3E+10	3.8E+04	00:17
6.000	4.5E-09	8.4E+09	2.5E+04	00:25
8.000	3.4E-09	6.3E+09	1.9E+04	00:34

10.000	2.7E-09	5.1E+09	1.5E+04	00:43
20.000	1.3E-09	2.5E+09	7.5E+03	01:26
40.000	6.4E-10	1.2E+09	3.6E+03	02:52
60.000	3.9E-10	7.3E+08	2.2E+03	04:18
80.000	2.8E-10	5.2E+08	1.6E+03	05:44

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:25:53 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Child Mixture 100% T2.mix (Mixture  
 Scale Factor = 1.0000E+00)

0014B Child Mixture 100% T2

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : A  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.099 km  
 Maximum TEDE : 7.22E-08 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	5.2E-11	8.3E+07	1.9E+02	<00:01
0.100	7.2E-08	1.2E+11	3.5E+05	<00:01
0.200	3.8E-08	6.0E+10	1.8E+05	00:01
0.300	1.9E-08	3.1E+10	9.2E+04	00:02
0.400	1.1E-08	1.8E+10	5.5E+04	00:02
0.500	7.5E-09	1.2E+10	3.6E+04	00:03
0.600	5.3E-09	8.4E+09	2.5E+04	00:04
0.700	3.9E-09	6.3E+09	1.9E+04	00:04
0.800	3.0E-09	4.8E+09	1.5E+04	00:05
0.900	2.4E-09	3.9E+09	1.2E+04	00:06
1.000	2.0E-09	3.1E+09	9.4E+03	00:07
2.000	5.2E-10	8.2E+08	2.5E+03	00:14
4.000	1.4E-10	2.2E+08	6.7E+02	00:28
6.000	6.6E-11	1.1E+08	3.2E+02	00:42
8.000	3.9E-11	6.3E+07	1.9E+02	00:56

10.000	2.6E-11	4.2E+07	1.3E+02	01:10
20.000	8.1E-12	1.3E+07	3.9E+01	02:20
40.000	2.6E-12	4.2E+06	1.2E+01	04:41
60.000	1.4E-12	2.2E+06	6.5E+00	07:02
80.000	8.7E-13	1.4E+06	4.2E+00	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:26:17 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Child Mixture 100% T2.mix (Mixture  
 Scale Factor = 1.0000E+00)

0014B Child Mixture 100% T2

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : B  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.17 km  
 Maximum TEDE : 5.97E-08 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	1.5E-18	2.4E+00	1.7E-06	<00:01
0.100	2.9E-08	4.7E+10	1.4E+05	<00:01
0.200	5.6E-08	8.9E+10	2.7E+05	00:01
0.300	3.6E-08	5.8E+10	1.7E+05	00:02
0.400	2.3E-08	3.7E+10	1.1E+05	00:02
0.500	1.6E-08	2.6E+10	7.7E+04	00:03
0.600	1.2E-08	1.8E+10	5.5E+04	00:04
0.700	8.7E-09	1.4E+10	4.2E+04	00:04
0.800	6.8E-09	1.1E+10	3.2E+04	00:05
0.900	5.4E-09	8.6E+09	2.6E+04	00:06
1.000	4.4E-09	7.1E+09	2.1E+04	00:07
2.000	1.2E-09	1.9E+09	5.6E+03	00:14
4.000	3.2E-10	5.0E+08	1.5E+03	00:28
6.000	1.5E-10	2.4E+08	7.2E+02	00:42
8.000	8.9E-11	1.4E+08	4.3E+02	00:56

10.000	6.0E-11	9.6E+07	2.9E+02	01:10
20.000	1.8E-11	2.9E+07	8.8E+01	02:20
40.000	5.9E-12	9.4E+06	2.8E+01	04:41
60.000	3.1E-12	4.9E+06	1.5E+01	07:02
80.000	2.0E-12	3.1E+06	9.4E+00	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:26:31 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Child Mixture 100% T2.mix (Mixture  
 Scale Factor = 1.0000E+00)

0014B Child Mixture 100% T2

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.44 m/s  
 Stability Class : C  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.25 km  
 Maximum TEDE : 5.50E-08 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	0.0E+00	1.9E-15	0.0E+00	<00:01
0.100	2.0E-09	3.2E+09	8.7E+03	<00:01
0.200	4.9E-08	7.8E+10	2.3E+05	00:01
0.300	5.2E-08	8.4E+10	2.5E+05	00:02
0.400	4.0E-08	6.5E+10	1.9E+05	00:02
0.500	3.0E-08	4.8E+10	1.5E+05	00:03
0.600	2.3E-08	3.7E+10	1.1E+05	00:04
0.700	1.8E-08	2.9E+10	8.6E+04	00:04
0.800	1.4E-08	2.3E+10	6.9E+04	00:05
0.900	1.2E-08	1.9E+10	5.6E+04	00:06
1.000	9.8E-09	1.6E+10	4.7E+04	00:06
2.000	2.9E-09	4.6E+09	1.4E+04	00:13
4.000	8.8E-10	1.4E+09	4.2E+03	00:27
6.000	4.6E-10	7.4E+08	2.2E+03	00:41
8.000	3.0E-10	4.8E+08	1.4E+03	00:54

10.000	2.2E-10	3.4E+08	1.0E+03	01:08
20.000	8.4E-11	1.3E+08	4.0E+02	02:16
40.000	3.5E-11	5.7E+07	1.7E+02	04:33
60.000	2.2E-11	3.5E+07	1.1E+02	06:50
80.000	1.6E-11	2.5E+07	7.6E+01	09:06

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:26:49 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Child Mixture 100% T2.mix (Mixture  
 Scale Factor = 1.0000E+00)

0014B Child Mixture 100% T2

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.57 m/s  
 Stability Class : D  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.39 km  
 Maximum TEDE : 4.38E-08 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	8.9E-12	1.4E+07	3.0E+01	<00:01
0.200	1.4E-08	2.2E+10	6.5E+04	00:01
0.300	3.8E-08	6.1E+10	1.8E+05	00:01
0.400	4.4E-08	7.0E+10	2.1E+05	00:02
0.500	4.1E-08	6.5E+10	1.9E+05	00:03
0.600	3.6E-08	5.7E+10	1.7E+05	00:03
0.700	3.1E-08	4.9E+10	1.5E+05	00:04
0.800	2.6E-08	4.2E+10	1.3E+05	00:05
0.900	2.3E-08	3.7E+10	1.1E+05	00:05
1.000	2.0E-08	3.2E+10	9.6E+04	00:06
2.000	7.7E-09	1.2E+10	3.7E+04	00:12
4.000	2.9E-09	4.6E+09	1.4E+04	00:25
6.000	1.6E-09	2.6E+09	7.8E+03	00:38
8.000	1.1E-09	1.8E+09	5.3E+03	00:51

10.000	8.2E-10	1.3E+09	3.9E+03	01:04
20.000	3.3E-10	5.3E+08	1.6E+03	02:09
40.000	1.4E-10	2.2E+08	6.7E+02	04:19
60.000	8.5E-11	1.4E+08	4.1E+02	06:29
80.000	6.0E-11	9.6E+07	2.9E+02	08:39

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:27:03 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Child Mixture 100% T2.mix (Mixture  
 Scale Factor = 1.0000E+00)

0014B Child Mixture 100% T2

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.15 m/s  
 Stability Class : E  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.77 km  
 Maximum TEDE : 2.47E-08 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	6.4E-07	1.5E-13	<00:01
0.200	6.3E-12	1.0E+07	2.2E+01	00:01
0.300	1.5E-09	2.4E+09	6.6E+03	00:01
0.400	8.4E-09	1.3E+10	3.9E+04	00:02
0.500	1.7E-08	2.7E+10	7.9E+04	00:02
0.600	2.2E-08	3.5E+10	1.0E+05	00:03
0.700	2.4E-08	3.9E+10	1.2E+05	00:03
0.800	2.5E-08	3.9E+10	1.2E+05	00:04
0.900	2.4E-08	3.8E+10	1.1E+05	00:04
1.000	2.3E-08	3.6E+10	1.1E+05	00:05
2.000	1.1E-08	1.8E+10	5.4E+04	00:10
4.000	4.7E-09	7.6E+09	2.3E+04	00:21
6.000	2.9E-09	4.6E+09	1.4E+04	00:31
8.000	2.1E-09	3.4E+09	1.0E+04	00:42

10.000	1.7E-09	2.6E+09	7.9E+03	00:52
20.000	8.1E-10	1.3E+09	3.9E+03	01:45
40.000	4.0E-10	6.5E+08	1.9E+03	03:31
60.000	2.6E-10	4.2E+08	1.3E+03	05:17
80.000	1.9E-10	3.1E+08	9.3E+02	07:02

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:27:16 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Child Mixture 100% T2.mix (Mixture  
 Scale Factor = 1.0000E+00)

0014B Child Mixture 100% T2

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.88 m/s  
 Stability Class : F  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 1.7 km  
 Maximum TEDE : 1.34E-08 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	0.0E+00	0.0E+00	<00:01
0.200	0.0E+00	7.3E-06	2.2E-12	<00:01
0.300	3.6E-15	5.7E+03	7.9E-03	00:01
0.400	4.8E-12	7.7E+06	1.7E+01	00:01
0.500	1.3E-10	2.1E+08	5.5E+02	00:02
0.600	7.8E-10	1.3E+09	3.5E+03	00:02
0.700	2.2E-09	3.5E+09	1.0E+04	00:03
0.800	4.2E-09	6.7E+09	2.0E+04	00:03
0.900	6.3E-09	1.0E+10	3.0E+04	00:03
1.000	8.3E-09	1.3E+10	3.9E+04	00:04
2.000	1.3E-08	2.1E+10	6.2E+04	00:08
4.000	7.9E-09	1.3E+10	3.8E+04	00:17
6.000	5.3E-09	8.4E+09	2.5E+04	00:25
8.000	3.9E-09	6.3E+09	1.9E+04	00:34

10.000	3.2E-09	5.1E+09	1.5E+04	00:43
20.000	1.6E-09	2.5E+09	7.5E+03	01:26
40.000	7.5E-10	1.2E+09	3.6E+03	02:52
60.000	4.6E-10	7.3E+08	2.2E+03	04:18
80.000	3.2E-10	5.2E+08	1.6E+03	05:44

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:28:04 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Infant Mixture 100% T2.mix (Mixture  
 Scale Factor = 1.0000E+00)

0014B Infant Mixture 100% T2

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : A  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.099 km  
 Maximum TEDE : 5.35E-08 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	3.2E-11	6.8E+07	1.9E+02	<00:01
0.100	5.4E-08	1.2E+11	3.5E+05	<00:01
0.200	2.8E-08	6.0E+10	1.8E+05	00:01
0.300	1.4E-08	3.1E+10	9.2E+04	00:02
0.400	8.5E-09	1.8E+10	5.5E+04	00:02
0.500	5.6E-09	1.2E+10	3.6E+04	00:03
0.600	3.9E-09	8.4E+09	2.5E+04	00:04
0.700	2.9E-09	6.3E+09	1.9E+04	00:04
0.800	2.3E-09	4.8E+09	1.5E+04	00:05
0.900	1.8E-09	3.9E+09	1.2E+04	00:06
1.000	1.5E-09	3.1E+09	9.4E+03	00:07
2.000	3.8E-10	8.2E+08	2.5E+03	00:14
4.000	1.0E-10	2.2E+08	6.7E+02	00:28
6.000	4.9E-11	1.1E+08	3.2E+02	00:42
8.000	2.9E-11	6.3E+07	1.9E+02	00:56

10.000	2.0E-11	4.2E+07	1.3E+02	01:10
20.000	6.0E-12	1.3E+07	3.9E+01	02:20
40.000	1.9E-12	4.2E+06	1.2E+01	04:41
60.000	1.0E-12	2.2E+06	6.5E+00	07:02
80.000	6.4E-13	1.4E+06	4.2E+00	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:28:21 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Infant Mixture 100% T2.mix (Mixture  
 Scale Factor = 1.0000E+00)

0014B Infant Mixture 100% T2

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : B  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.17 km  
 Maximum TEDE : 4.43E-08 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	0.0E+00	9.3E-01	1.7E-06	<00:01
0.100	2.2E-08	4.6E+10	1.4E+05	<00:01
0.200	4.1E-08	8.9E+10	2.7E+05	00:01
0.300	2.7E-08	5.8E+10	1.7E+05	00:02
0.400	1.7E-08	3.7E+10	1.1E+05	00:02
0.500	1.2E-08	2.6E+10	7.7E+04	00:03
0.600	8.6E-09	1.8E+10	5.5E+04	00:04
0.700	6.4E-09	1.4E+10	4.2E+04	00:04
0.800	5.0E-09	1.1E+10	3.2E+04	00:05
0.900	4.0E-09	8.6E+09	2.6E+04	00:06
1.000	3.3E-09	7.1E+09	2.1E+04	00:07
2.000	8.7E-10	1.9E+09	5.6E+03	00:14
4.000	2.3E-10	5.0E+08	1.5E+03	00:28
6.000	1.1E-10	2.4E+08	7.2E+02	00:42
8.000	6.6E-11	1.4E+08	4.3E+02	00:56

10.000	4.5E-11	9.6E+07	2.9E+02	01:10
20.000	1.4E-11	2.9E+07	8.8E+01	02:20
40.000	4.4E-12	9.4E+06	2.8E+01	04:41
60.000	2.3E-12	4.9E+06	1.5E+01	07:02
80.000	1.5E-12	3.1E+06	9.4E+00	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:28:35 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Infant Mixture 100% T2.mix (Mixture  
 Scale Factor = 1.0000E+00)

0014B Infant Mixture 100% T2

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.44 m/s  
 Stability Class : C  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.25 km  
 Maximum TEDE : 4.08E-08 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	0.0E+00	1.7E-16	0.0E+00	<00:01
0.100	1.4E-09	3.0E+09	8.7E+03	<00:01
0.200	3.6E-08	7.8E+10	2.3E+05	00:01
0.300	3.9E-08	8.4E+10	2.5E+05	00:02
0.400	3.0E-08	6.5E+10	1.9E+05	00:02
0.500	2.2E-08	4.8E+10	1.5E+05	00:03
0.600	1.7E-08	3.7E+10	1.1E+05	00:04
0.700	1.3E-08	2.9E+10	8.6E+04	00:04
0.800	1.1E-08	2.3E+10	6.9E+04	00:05
0.900	8.7E-09	1.9E+10	5.6E+04	00:06
1.000	7.2E-09	1.6E+10	4.7E+04	00:06
2.000	2.1E-09	4.6E+09	1.4E+04	00:13
4.000	6.6E-10	1.4E+09	4.2E+03	00:27
6.000	3.4E-10	7.4E+08	2.2E+03	00:41
8.000	2.2E-10	4.8E+08	1.4E+03	00:54

10.000	1.6E-10	3.4E+08	1.0E+03	01:08
20.000	6.2E-11	1.3E+08	4.0E+02	02:16
40.000	2.6E-11	5.7E+07	1.7E+02	04:33
60.000	1.6E-11	3.5E+07	1.1E+02	06:50
80.000	1.2E-11	2.5E+07	7.6E+01	09:06

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:28:49 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Infant Mixture 100% T2.mix (Mixture  
 Scale Factor = 1.0000E+00)

0014B Infant Mixture 100% T2

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.57 m/s  
 Stability Class : D  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.40 km  
 Maximum TEDE : 3.24E-08 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	5.2E-12	1.1E+07	3.0E+01	<00:01
0.200	1.0E-08	2.2E+10	6.5E+04	00:01
0.300	2.8E-08	6.1E+10	1.8E+05	00:01
0.400	3.2E-08	7.0E+10	2.1E+05	00:02
0.500	3.0E-08	6.5E+10	1.9E+05	00:03
0.600	2.6E-08	5.7E+10	1.7E+05	00:03
0.700	2.3E-08	4.9E+10	1.5E+05	00:04
0.800	2.0E-08	4.2E+10	1.3E+05	00:05
0.900	1.7E-08	3.7E+10	1.1E+05	00:05
1.000	1.5E-08	3.2E+10	9.6E+04	00:06
2.000	5.7E-09	1.2E+10	3.7E+04	00:12
4.000	2.1E-09	4.6E+09	1.4E+04	00:25
6.000	1.2E-09	2.6E+09	7.8E+03	00:38
8.000	8.1E-10	1.8E+09	5.3E+03	00:51

10.000	6.0E-10	1.3E+09	3.9E+03	01:04
20.000	2.5E-10	5.3E+08	1.6E+03	02:09
40.000	1.0E-10	2.2E+08	6.7E+02	04:19
60.000	6.3E-11	1.4E+08	4.1E+02	06:29
80.000	4.5E-11	9.6E+07	2.9E+02	08:39

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:29:05 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Infant Mixture 100% T2.mix (Mixture  
 Scale Factor = 1.0000E+00)

0014B Infant Mixture 100% T2

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.15 m/s  
 Stability Class : E  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.77 km  
 Maximum TEDE : 1.83E-08 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	1.3E-07	1.5E-13	<00:01
0.200	3.7E-12	8.0E+06	2.2E+01	00:01
0.300	1.0E-09	2.2E+09	6.6E+03	00:01
0.400	6.1E-09	1.3E+10	3.9E+04	00:02
0.500	1.2E-08	2.6E+10	7.9E+04	00:02
0.600	1.6E-08	3.5E+10	1.0E+05	00:03
0.700	1.8E-08	3.9E+10	1.2E+05	00:03
0.800	1.8E-08	3.9E+10	1.2E+05	00:04
0.900	1.8E-08	3.8E+10	1.1E+05	00:04
1.000	1.7E-08	3.6E+10	1.1E+05	00:05
2.000	8.4E-09	1.8E+10	5.4E+04	00:10
4.000	3.5E-09	7.6E+09	2.3E+04	00:21
6.000	2.2E-09	4.6E+09	1.4E+04	00:31
8.000	1.6E-09	3.4E+09	1.0E+04	00:42

10.000	1.2E-09	2.6E+09	7.9E+03	00:52
20.000	6.0E-10	1.3E+09	3.9E+03	01:45
40.000	3.0E-10	6.5E+08	1.9E+03	03:31
60.000	1.9E-10	4.2E+08	1.3E+03	05:17
80.000	1.4E-10	3.1E+08	9.3E+02	07:02

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 12:29:19 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack\0014B Infant Mixture 100% T2.mix (Mixture  
 Scale Factor = 1.0000E+00)

0014B Infant Mixture 100% T2

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.88 m/s  
 Stability Class : F  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 1.7 km  
 Maximum TEDE : 9.94E-09 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	0.0E+00	0.0E+00	<00:01
0.200	0.0E+00	1.7E-06	2.2E-12	<00:01
0.300	1.5E-15	3.3E+03	7.9E-03	00:01
0.400	2.8E-12	6.1E+06	1.7E+01	00:01
0.500	8.8E-11	1.9E+08	5.5E+02	00:02
0.600	5.5E-10	1.2E+09	3.5E+03	00:02
0.700	1.6E-09	3.4E+09	1.0E+04	00:03
0.800	3.0E-09	6.6E+09	2.0E+04	00:03
0.900	4.6E-09	1.0E+10	3.0E+04	00:03
1.000	6.1E-09	1.3E+10	3.9E+04	00:04
2.000	9.6E-09	2.1E+10	6.2E+04	00:08
4.000	5.8E-09	1.3E+10	3.8E+04	00:17
6.000	3.9E-09	8.4E+09	2.5E+04	00:25
8.000	2.9E-09	6.3E+09	1.9E+04	00:34

10.000	2.4E-09	5.1E+09	1.5E+04	00:43
20.000	1.2E-09	2.5E+09	7.5E+03	01:26
40.000	5.6E-10	1.2E+09	3.6E+03	02:52
60.000	3.4E-10	7.3E+08	2.2E+03	04:18
80.000	2.4E-10	5.2E+08	1.6E+03	05:44

## HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Adult Mixture.mix

0014B Adult Mixture 25% HTO

Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	:	HTO	V	1.2350E+01	y
Halflife				(Years):	1.2350E+01
Inhalation		50-yr CEDE		(Sv/Bq):	3.0000E-11
Submersion				(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine				(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation			(Sv/Bq):	3.0000E-11
Skin	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation			(Sv/Bq):	3.0000E-11
Lung	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation			(Sv/Bq):	3.0000E-11
Thyroid	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation			(Sv/Bq):	3.0000E-11
Surface Bone	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation			(Sv/Bq):	3.0000E-11
Red Marrow	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation			(Sv/Bq):	3.0000E-11
Liver	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation			(Sv/Bq):	3.0000E-11
Spleen	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation			(Sv/Bq):	3.0000E-11
Ovaries	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation			(Sv/Bq):	3.0000E-11
Adrenals	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation			(Sv/Bq):	3.0000E-11
Breast	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation			(Sv/Bq):	3.0000E-11
ULI Wall	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation			(Sv/Bq):	3.0000E-11
Thymus	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation			(Sv/Bq):	3.0000E-11
Bladder Wall	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation			(Sv/Bq):	3.0000E-11
Esophagus	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation			(Sv/Bq):	3.0000E-11
LLI Wall	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	2.5000E+14
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.0000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.0000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.0000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.0000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.0000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.0000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.0000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.0000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.0000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.0000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.0000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.0000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.0000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.0000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.0000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.0000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.0000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.0000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.0000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.0000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 7.5000E+14
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Child Mixture.mix

0014B Child Mixture 25% HTO

Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	:	HTO	V	1.2350E+01	y
Halflife				(Years):	1.2350E+01
Inhalation		50-yr CEDE		(Sv/Bq):	3.8000E-11
Submersion				(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine				(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation			(Sv/Bq):	3.8000E-11
Skin	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation			(Sv/Bq):	3.8000E-11
Lung	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation			(Sv/Bq):	3.8000E-11
Thyroid	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation			(Sv/Bq):	3.8000E-11
Surface Bone	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation			(Sv/Bq):	3.8000E-11
Red Marrow	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation			(Sv/Bq):	3.8000E-11
Liver	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation			(Sv/Bq):	3.8000E-11
Spleen	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation			(Sv/Bq):	3.8000E-11
Ovaries	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation			(Sv/Bq):	3.8000E-11
Adrenals	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation			(Sv/Bq):	3.8000E-11
Breast	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation			(Sv/Bq):	3.8000E-11
ULI Wall	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation			(Sv/Bq):	3.8000E-11
Thymus	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation			(Sv/Bq):	3.8000E-11
Bladder Wall	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation			(Sv/Bq):	3.8000E-11
Esophagus	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation			(Sv/Bq):	3.8000E-11
LLI Wall	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.8000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.8000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.8000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.8000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.8000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.8000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.8000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.8000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	2.5000E+14
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.5000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.5000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.5000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.5000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.5000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.5000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.5000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.5000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.5000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.5000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.5000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.5000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.5000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.5000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.5000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.5000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.5000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.5000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.5000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.5000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 7.5000E+14
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Infant Mixture.mix

0014B Infant Mixture 25% HTO

Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	:	HTO	V	1.2350E+01	y
Halflife				(Years):	1.2350E+01
Inhalation		50-yr CEDE		(Sv/Bq):	8.0000E-11
Submersion				(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine				(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation			(Sv/Bq):	8.0000E-11
Skin	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation			(Sv/Bq):	8.0000E-11
Lung	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation			(Sv/Bq):	8.0000E-11
Thyroid	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation			(Sv/Bq):	8.0000E-11
Surface Bone	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation			(Sv/Bq):	8.0000E-11
Red Marrow	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation			(Sv/Bq):	8.0000E-11
Liver	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation			(Sv/Bq):	8.0000E-11
Spleen	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation			(Sv/Bq):	8.0000E-11
Ovaries	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation			(Sv/Bq):	8.0000E-11
Adrenals	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation			(Sv/Bq):	8.0000E-11
Breast	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation			(Sv/Bq):	8.0000E-11
ULI Wall	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation			(Sv/Bq):	8.0000E-11
Thymus	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation			(Sv/Bq):	8.0000E-11
Bladder Wall	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation			(Sv/Bq):	8.0000E-11
Esophagus	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground			Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation			(Sv/Bq):	8.0000E-11
LLI Wall	Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	8.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	8.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	8.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	8.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	8.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	8.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	8.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	8.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	2.5000E+14
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	5.3000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	5.3000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	5.3000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	5.3000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	5.3000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	5.3000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	5.3000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) :	5.3000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Ovaries	Inhalation	(Sv/Bq) :	5.3000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Adrenals	Inhalation	(Sv/Bq) :	5.3000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Breast	Inhalation	(Sv/Bq) :	5.3000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) :	5.3000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thymus	Inhalation	(Sv/Bq) :	5.3000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) :	5.3000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Esophagus	Inhalation	(Sv/Bq) :	5.3000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) :	5.3000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	5.3000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	5.3000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	5.3000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	5.3000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	5.3000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	5.3000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	5.3000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	5.3000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	7.5000E+14
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 10:55:45 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Adult Mixture 25% Oxide.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Adult Mixture 25% HTO  
 Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : A  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.099 km  
 Maximum TEDE : 2.33E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	2.2E-07	1.1E+08	1.9E+02	<00:01
0.100	2.3E-04	1.2E+11	3.5E+05	<00:01
0.200	1.2E-04	6.0E+10	1.8E+05	00:01
0.300	6.2E-05	3.1E+10	9.2E+04	00:02
0.400	3.7E-05	1.8E+10	5.5E+04	00:02
0.500	2.4E-05	1.2E+10	3.6E+04	00:03
0.600	1.7E-05	8.4E+09	2.5E+04	00:04
0.700	1.3E-05	6.3E+09	1.9E+04	00:04
0.800	9.8E-06	4.8E+09	1.5E+04	00:05
0.900	7.8E-06	3.9E+09	1.2E+04	00:06
1.000	6.3E-06	3.1E+09	9.4E+03	00:07
2.000	1.7E-06	8.2E+08	2.5E+03	00:14
4.000	4.5E-07	2.2E+08	6.7E+02	00:28
6.000	2.1E-07	1.1E+08	3.2E+02	00:42
8.000	1.3E-07	6.3E+07	1.9E+02	00:56

10.000	8.5E-08	4.2E+07	1.3E+02	01:10
20.000	2.6E-08	1.3E+07	3.9E+01	02:20
40.000	8.4E-09	4.2E+06	1.2E+01	04:41
60.000	4.4E-09	2.2E+06	6.5E+00	07:02
80.000	2.8E-09	1.4E+06	4.2E+00	09:23

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 10:56:39 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Adult Mixture 25% Oxide.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Adult Mixture 25% HTO

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : B  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.16 km  
 Maximum TEDE : 1.92E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	1.3E-14	6.7E+00	1.7E-06	<00:01
0.100	9.6E-05	4.8E+10	1.4E+05	<00:01
0.200	1.8E-04	8.9E+10	2.7E+05	00:01
0.300	1.2E-04	5.8E+10	1.7E+05	00:02
0.400	7.5E-05	3.7E+10	1.1E+05	00:02
0.500	5.1E-05	2.6E+10	7.7E+04	00:03
0.600	3.7E-05	1.8E+10	5.5E+04	00:04
0.700	2.8E-05	1.4E+10	4.2E+04	00:04
0.800	2.2E-05	1.1E+10	3.2E+04	00:05
0.900	1.7E-05	8.6E+09	2.6E+04	00:06
1.000	1.4E-05	7.1E+09	2.1E+04	00:07
2.000	3.8E-06	1.9E+09	5.6E+03	00:14
4.000	1.0E-06	5.0E+08	1.5E+03	00:28
6.000	4.8E-07	2.4E+08	7.2E+02	00:42
8.000	2.9E-07	1.4E+08	4.3E+02	00:56

10.000	1.9E-07	9.6E+07	2.9E+02	01:10
20.000	5.9E-08	2.9E+07	8.8E+01	02:20
40.000	1.9E-08	9.4E+06	2.8E+01	04:41
60.000	9.9E-09	4.9E+06	1.5E+01	07:02
80.000	6.3E-09	3.1E+06	9.4E+00	09:23

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 10:57:10 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Adult Mixture 25% Oxide.mix  
 (Mixture Scale Factor = 1.0000E+00)  
 0014B Adult Mixture 25% HTO

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.44 m/s  
 Stability Class : C  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.25 km  
 Maximum TEDE : 1.77E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	1.9E-14	0.0E+00	<00:01
0.100	7.1E-06	3.5E+09	8.7E+03	<00:01
0.200	1.6E-04	7.8E+10	2.3E+05	00:01
0.300	1.7E-04	8.4E+10	2.5E+05	00:02
0.400	1.3E-04	6.5E+10	1.9E+05	00:02
0.500	9.7E-05	4.8E+10	1.5E+05	00:03
0.600	7.4E-05	3.7E+10	1.1E+05	00:04
0.700	5.8E-05	2.9E+10	8.6E+04	00:04
0.800	4.6E-05	2.3E+10	6.9E+04	00:05
0.900	3.8E-05	1.9E+10	5.6E+04	00:06
1.000	3.1E-05	1.6E+10	4.7E+04	00:06
2.000	9.3E-06	4.6E+09	1.4E+04	00:13
4.000	2.8E-06	1.4E+09	4.2E+03	00:27
6.000	1.5E-06	7.4E+08	2.2E+03	00:41
8.000	9.6E-07	4.8E+08	1.4E+03	00:54

10.000	6.9E-07	3.4E+08	1.0E+03	01:08
20.000	2.7E-07	1.3E+08	4.0E+02	02:16
40.000	1.1E-07	5.7E+07	1.7E+02	04:33
60.000	7.1E-08	3.5E+07	1.1E+02	06:50
80.000	5.1E-08	2.5E+07	7.6E+01	09:06

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 10:57:28 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Adult Mixture 25% Oxide.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Adult Mixture 25% HTO

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.57 m/s  
 Stability Class : D  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.39 km  
 Maximum TEDE : 1.41E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	4.0E-08	2.0E+07	3.0E+01	<00:01
0.200	4.6E-05	2.3E+10	6.5E+04	00:01
0.300	1.2E-04	6.1E+10	1.8E+05	00:01
0.400	1.4E-04	7.0E+10	2.1E+05	00:02
0.500	1.3E-04	6.5E+10	1.9E+05	00:03
0.600	1.1E-04	5.7E+10	1.7E+05	00:03
0.700	9.9E-05	4.9E+10	1.5E+05	00:04
0.800	8.5E-05	4.2E+10	1.3E+05	00:05
0.900	7.4E-05	3.7E+10	1.1E+05	00:05
1.000	6.5E-05	3.2E+10	9.6E+04	00:06
2.000	2.5E-05	1.2E+10	3.7E+04	00:12
4.000	9.2E-06	4.6E+09	1.4E+04	00:25
6.000	5.2E-06	2.6E+09	7.8E+03	00:38
8.000	3.5E-06	1.8E+09	5.3E+03	00:51

10.000	2.6E-06	1.3E+09	3.9E+03	01:04
20.000	1.1E-06	5.3E+08	1.6E+03	02:09
40.000	4.5E-07	2.2E+08	6.7E+02	04:19
60.000	2.7E-07	1.4E+08	4.1E+02	06:29
80.000	1.9E-07	9.6E+07	2.9E+02	08:39

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 10:57:45 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Adult Mixture 25% Oxide.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Adult Mixture 25% HTO

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.15 m/s  
 Stability Class : E  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.77 km  
 Maximum TEDE : 7.97E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	3.1E-06	1.5E-13	<00:01
0.200	2.8E-08	1.4E+07	2.2E+01	00:01
0.300	5.2E-06	2.6E+09	6.6E+03	00:01
0.400	2.8E-05	1.4E+10	3.9E+04	00:02
0.500	5.4E-05	2.7E+10	7.9E+04	00:02
0.600	7.1E-05	3.5E+10	1.0E+05	00:03
0.700	7.9E-05	3.9E+10	1.2E+05	00:03
0.800	8.0E-05	4.0E+10	1.2E+05	00:04
0.900	7.7E-05	3.8E+10	1.1E+05	00:04
1.000	7.3E-05	3.6E+10	1.1E+05	00:05
2.000	3.6E-05	1.8E+10	5.4E+04	00:10
4.000	1.5E-05	7.6E+09	2.3E+04	00:21
6.000	9.3E-06	4.6E+09	1.4E+04	00:31
8.000	6.7E-06	3.4E+09	1.0E+04	00:42

10.000	5.3E-06	2.6E+09	7.9E+03	00:52
20.000	2.6E-06	1.3E+09	3.9E+03	01:45
40.000	1.3E-06	6.5E+08	1.9E+03	03:31
60.000	8.4E-07	4.2E+08	1.3E+03	05:17
80.000	6.2E-07	3.1E+08	9.3E+02	07:02

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 10:57:59 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Adult Mixture 25% Oxide.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Adult Mixture 25% HTO

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.88 m/s  
 Stability Class : F  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 1.7 km  
 Maximum TEDE : 4.33E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	0.0E+00	0.0E+00	<00:01
0.200	0.0E+00	3.2E-05	2.2E-12	<00:01
0.300	2.2E-11	1.1E+04	7.9E-03	00:01
0.400	2.1E-08	1.1E+07	1.7E+01	00:01
0.500	5.0E-07	2.5E+08	5.5E+02	00:02
0.600	2.8E-06	1.4E+09	3.5E+03	00:02
0.700	7.5E-06	3.7E+09	1.0E+04	00:03
0.800	1.4E-05	7.0E+09	2.0E+04	00:03
0.900	2.1E-05	1.0E+10	3.0E+04	00:03
1.000	2.7E-05	1.4E+10	3.9E+04	00:04
2.000	4.2E-05	2.1E+10	6.2E+04	00:08
4.000	2.5E-05	1.3E+10	3.8E+04	00:17
6.000	1.7E-05	8.4E+09	2.5E+04	00:25
8.000	1.3E-05	6.3E+09	1.9E+04	00:34

10.000	1.0E-05	5.1E+09	1.5E+04	00:43
20.000	5.1E-06	2.5E+09	7.5E+03	01:26
40.000	2.4E-06	1.2E+09	3.6E+03	02:52
60.000	1.5E-06	7.3E+08	2.2E+03	04:18
80.000	1.0E-06	5.2E+08	1.6E+03	05:44

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 10:59:04 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Child Mixture 25% HTO.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Child Mixture 25% HTO

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : A  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.099 km  
 Maximum TEDE : 2.75E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	2.0E-07	8.3E+07	1.9E+02	<00:01
0.100	2.7E-04	1.2E+11	3.5E+05	<00:01
0.200	1.4E-04	6.0E+10	1.8E+05	00:01
0.300	7.3E-05	3.1E+10	9.2E+04	00:02
0.400	4.3E-05	1.8E+10	5.5E+04	00:02
0.500	2.8E-05	1.2E+10	3.6E+04	00:03
0.600	2.0E-05	8.4E+09	2.5E+04	00:04
0.700	1.5E-05	6.3E+09	1.9E+04	00:04
0.800	1.2E-05	4.8E+09	1.5E+04	00:05
0.900	9.2E-06	3.9E+09	1.2E+04	00:06
1.000	7.5E-06	3.1E+09	9.4E+03	00:07
2.000	2.0E-06	8.2E+08	2.5E+03	00:14
4.000	5.3E-07	2.2E+08	6.7E+02	00:28
6.000	2.5E-07	1.1E+08	3.2E+02	00:42
8.000	1.5E-07	6.3E+07	1.9E+02	00:56

10.000	1.0E-07	4.2E+07	1.3E+02	01:10
20.000	3.1E-08	1.3E+07	3.9E+01	02:20
40.000	9.9E-09	4.2E+06	1.2E+01	04:41
60.000	5.2E-09	2.2E+06	6.5E+00	07:02
80.000	3.3E-09	1.4E+06	4.2E+00	09:23

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 10:59:28 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Child Mixture 25% HTO.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Child Mixture 25% HTO  
 Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : B  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.17 km  
 Maximum TEDE : 2.27E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	5.7E-15	2.4E+00	1.7E-06	<00:01
0.100	1.1E-04	4.7E+10	1.4E+05	<00:01
0.200	2.1E-04	8.9E+10	2.7E+05	00:01
0.300	1.4E-04	5.8E+10	1.7E+05	00:02
0.400	8.9E-05	3.7E+10	1.1E+05	00:02
0.500	6.1E-05	2.6E+10	7.7E+04	00:03
0.600	4.4E-05	1.8E+10	5.5E+04	00:04
0.700	3.3E-05	1.4E+10	4.2E+04	00:04
0.800	2.6E-05	1.1E+10	3.2E+04	00:05
0.900	2.1E-05	8.6E+09	2.6E+04	00:06
1.000	1.7E-05	7.1E+09	2.1E+04	00:07
2.000	4.5E-06	1.9E+09	5.6E+03	00:14
4.000	1.2E-06	5.0E+08	1.5E+03	00:28
6.000	5.7E-07	2.4E+08	7.2E+02	00:42
8.000	3.4E-07	1.4E+08	4.3E+02	00:56

10.000	2.3E-07	9.6E+07	2.9E+02	01:10
20.000	7.0E-08	2.9E+07	8.8E+01	02:20
40.000	2.2E-08	9.4E+06	2.8E+01	04:41
60.000	1.2E-08	4.9E+06	1.5E+01	07:02
80.000	7.4E-09	3.1E+06	9.4E+00	09:23

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 10:59:52 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Child Mixture 25% HTO.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Child Mixture 25% HTO

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.44 m/s  
 Stability Class : C  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.25 km  
 Maximum TEDE : 2.09E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	0.0E+00	1.9E-15	0.0E+00	<00:01
0.100	7.6E-06	3.2E+09	8.7E+03	<00:01
0.200	1.9E-04	7.8E+10	2.3E+05	00:01
0.300	2.0E-04	8.4E+10	2.5E+05	00:02
0.400	1.5E-04	6.5E+10	1.9E+05	00:02
0.500	1.1E-04	4.8E+10	1.5E+05	00:03
0.600	8.7E-05	3.7E+10	1.1E+05	00:04
0.700	6.8E-05	2.9E+10	8.6E+04	00:04
0.800	5.5E-05	2.3E+10	6.9E+04	00:05
0.900	4.5E-05	1.9E+10	5.6E+04	00:06
1.000	3.7E-05	1.6E+10	4.7E+04	00:06
2.000	1.1E-05	4.6E+09	1.4E+04	00:13
4.000	3.4E-06	1.4E+09	4.2E+03	00:27
6.000	1.8E-06	7.4E+08	2.2E+03	00:41
8.000	1.1E-06	4.8E+08	1.4E+03	00:54

10.000	8.2E-07	3.4E+08	1.0E+03	01:08
20.000	3.2E-07	1.3E+08	4.0E+02	02:16
40.000	1.3E-07	5.7E+07	1.7E+02	04:33
60.000	8.4E-08	3.5E+07	1.1E+02	06:50
80.000	6.0E-08	2.5E+07	7.6E+01	09:06

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 11:00:11 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Child Mixture 25% HTO.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Child Mixture 25% HTO  
 Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.57 m/s  
 Stability Class : D  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.39 km  
 Maximum TEDE : 1.66E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	3.4E-08	1.4E+07	3.0E+01	<00:01
0.200	5.3E-05	2.2E+10	6.5E+04	00:01
0.300	1.4E-04	6.1E+10	1.8E+05	00:01
0.400	1.7E-04	7.0E+10	2.1E+05	00:02
0.500	1.5E-04	6.5E+10	1.9E+05	00:03
0.600	1.4E-04	5.7E+10	1.7E+05	00:03
0.700	1.2E-04	4.9E+10	1.5E+05	00:04
0.800	1.0E-04	4.2E+10	1.3E+05	00:05
0.900	8.7E-05	3.7E+10	1.1E+05	00:05
1.000	7.6E-05	3.2E+10	9.6E+04	00:06
2.000	2.9E-05	1.2E+10	3.7E+04	00:12
4.000	1.1E-05	4.6E+09	1.4E+04	00:25
6.000	6.1E-06	2.6E+09	7.8E+03	00:38
8.000	4.2E-06	1.8E+09	5.3E+03	00:51

10.000	3.1E-06	1.3E+09	3.9E+03	01:04
20.000	1.3E-06	5.3E+08	1.6E+03	02:09
40.000	5.3E-07	2.2E+08	6.7E+02	04:19
60.000	3.2E-07	1.4E+08	4.1E+02	06:29
80.000	2.3E-07	9.6E+07	2.9E+02	08:39

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 11:00:26 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Child Mixture 25% HTO.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Child Mixture 25% HTO  
 Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.15 m/s  
 Stability Class : E  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.77 km  
 Maximum TEDE : 9.40E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	6.4E-07	1.5E-13	<00:01
0.200	2.4E-08	1.0E+07	2.2E+01	00:01
0.300	5.6E-06	2.4E+09	6.6E+03	00:01
0.400	3.2E-05	1.3E+10	3.9E+04	00:02
0.500	6.3E-05	2.7E+10	7.9E+04	00:02
0.600	8.4E-05	3.5E+10	1.0E+05	00:03
0.700	9.2E-05	3.9E+10	1.2E+05	00:03
0.800	9.4E-05	3.9E+10	1.2E+05	00:04
0.900	9.1E-05	3.8E+10	1.1E+05	00:04
1.000	8.6E-05	3.6E+10	1.1E+05	00:05
2.000	4.3E-05	1.8E+10	5.4E+04	00:10
4.000	1.8E-05	7.6E+09	2.3E+04	00:21
6.000	1.1E-05	4.6E+09	1.4E+04	00:31
8.000	8.0E-06	3.4E+09	1.0E+04	00:42

10.000	6.3E-06	2.6E+09	7.9E+03	00:52
20.000	3.1E-06	1.3E+09	3.9E+03	01:45
40.000	1.5E-06	6.5E+08	1.9E+03	03:31
60.000	9.9E-07	4.2E+08	1.3E+03	05:17
80.000	7.3E-07	3.1E+08	9.3E+02	07:02

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 11:00:39 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Child Mixture 25% HTO.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Child Mixture 25% HTO

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.88 m/s  
 Stability Class : F  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 1.7 km  
 Maximum TEDE : 5.10E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	0.0E+00	0.0E+00	<00:01
0.200	0.0E+00	7.3E-06	2.2E-12	<00:01
0.300	1.4E-11	5.7E+03	7.9E-03	00:01
0.400	1.8E-08	7.7E+06	1.7E+01	00:01
0.500	5.1E-07	2.1E+08	5.5E+02	00:02
0.600	3.0E-06	1.3E+09	3.5E+03	00:02
0.700	8.4E-06	3.5E+09	1.0E+04	00:03
0.800	1.6E-05	6.7E+09	2.0E+04	00:03
0.900	2.4E-05	1.0E+10	3.0E+04	00:03
1.000	3.2E-05	1.3E+10	3.9E+04	00:04
2.000	4.9E-05	2.1E+10	6.2E+04	00:08
4.000	3.0E-05	1.3E+10	3.8E+04	00:17
6.000	2.0E-05	8.4E+09	2.5E+04	00:25
8.000	1.5E-05	6.3E+09	1.9E+04	00:34

10.000	1.2E-05	5.1E+09	1.5E+04	00:43
20.000	6.0E-06	2.5E+09	7.5E+03	01:26
40.000	2.8E-06	1.2E+09	3.6E+03	02:52
60.000	1.7E-06	7.3E+08	2.2E+03	04:18
80.000	1.2E-06	5.2E+08	1.6E+03	05:44

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 11:04:48 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Infant Mixture 25% HTO.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Infant Mixture 25% HTO

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : A  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.099 km  
 Maximum TEDE : 2.02E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	1.2E-07	6.8E+07	1.9E+02	<00:01
0.100	2.0E-04	1.2E+11	3.5E+05	<00:01
0.200	1.1E-04	6.0E+10	1.8E+05	00:01
0.300	5.4E-05	3.1E+10	9.2E+04	00:02
0.400	3.2E-05	1.8E+10	5.5E+04	00:02
0.500	2.1E-05	1.2E+10	3.6E+04	00:03
0.600	1.5E-05	8.4E+09	2.5E+04	00:04
0.700	1.1E-05	6.3E+09	1.9E+04	00:04
0.800	8.5E-06	4.8E+09	1.5E+04	00:05
0.900	6.8E-06	3.9E+09	1.2E+04	00:06
1.000	5.5E-06	3.1E+09	9.4E+03	00:07
2.000	1.4E-06	8.2E+08	2.5E+03	00:14
4.000	3.9E-07	2.2E+08	6.7E+02	00:28
6.000	1.8E-07	1.1E+08	3.2E+02	00:42
8.000	1.1E-07	6.3E+07	1.9E+02	00:56

10.000	7.4E-08	4.2E+07	1.3E+02	01:10
20.000	2.3E-08	1.3E+07	3.9E+01	02:20
40.000	7.3E-09	4.2E+06	1.2E+01	04:41
60.000	3.8E-09	2.2E+06	6.5E+00	07:02
80.000	2.4E-09	1.4E+06	4.2E+00	09:23

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 11:05:10 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Infant Mixture 25% HTO.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Infant Mixture 25% HTO

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : B  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.17 km  
 Maximum TEDE : 1.67E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	1.6E-15	9.3E-01	1.7E-06	<00:01
0.100	8.1E-05	4.6E+10	1.4E+05	<00:01
0.200	1.6E-04	8.9E+10	2.7E+05	00:01
0.300	1.0E-04	5.8E+10	1.7E+05	00:02
0.400	6.6E-05	3.7E+10	1.1E+05	00:02
0.500	4.5E-05	2.6E+10	7.7E+04	00:03
0.600	3.2E-05	1.8E+10	5.5E+04	00:04
0.700	2.4E-05	1.4E+10	4.2E+04	00:04
0.800	1.9E-05	1.1E+10	3.2E+04	00:05
0.900	1.5E-05	8.6E+09	2.6E+04	00:06
1.000	1.2E-05	7.1E+09	2.1E+04	00:07
2.000	3.3E-06	1.9E+09	5.6E+03	00:14
4.000	8.8E-07	5.0E+08	1.5E+03	00:28
6.000	4.2E-07	2.4E+08	7.2E+02	00:42
8.000	2.5E-07	1.4E+08	4.3E+02	00:56

10.000	1.7E-07	9.6E+07	2.9E+02	01:10
20.000	5.1E-08	2.9E+07	8.8E+01	02:20
40.000	1.6E-08	9.4E+06	2.8E+01	04:41
60.000	8.6E-09	4.9E+06	1.5E+01	07:02
80.000	5.5E-09	3.1E+06	9.4E+00	09:23

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 11:05:25 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Infant Mixture 25% HTO.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Infant Mixture 25% HTO

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.44 m/s  
 Stability Class : C  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.25 km  
 Maximum TEDE : 1.54E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	1.7E-16	0.0E+00	<00:01
0.100	5.2E-06	3.0E+09	8.7E+03	<00:01
0.200	1.4E-04	7.8E+10	2.3E+05	00:01
0.300	1.5E-04	8.4E+10	2.5E+05	00:02
0.400	1.1E-04	6.5E+10	1.9E+05	00:02
0.500	8.5E-05	4.8E+10	1.5E+05	00:03
0.600	6.4E-05	3.7E+10	1.1E+05	00:04
0.700	5.0E-05	2.9E+10	8.6E+04	00:04
0.800	4.0E-05	2.3E+10	6.9E+04	00:05
0.900	3.3E-05	1.9E+10	5.6E+04	00:06
1.000	2.7E-05	1.6E+10	4.7E+04	00:06
2.000	8.0E-06	4.6E+09	1.4E+04	00:13
4.000	2.5E-06	1.4E+09	4.2E+03	00:27
6.000	1.3E-06	7.4E+08	2.2E+03	00:41
8.000	8.4E-07	4.8E+08	1.4E+03	00:54

10.000	6.0E-07	3.4E+08	1.0E+03	01:08
20.000	2.3E-07	1.3E+08	4.0E+02	02:16
40.000	9.9E-08	5.7E+07	1.7E+02	04:33
60.000	6.2E-08	3.5E+07	1.1E+02	06:50
80.000	4.4E-08	2.5E+07	7.6E+01	09:06

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 11:05:40 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Infant Mixture 25% HTO.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Infant Mixture 25% HTO

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.57 m/s  
 Stability Class : D  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.40 km  
 Maximum TEDE : 1.22E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	1.9E-08	1.1E+07	3.0E+01	<00:01
0.200	3.8E-05	2.2E+10	6.5E+04	00:01
0.300	1.1E-04	6.1E+10	1.8E+05	00:01
0.400	1.2E-04	7.0E+10	2.1E+05	00:02
0.500	1.1E-04	6.5E+10	1.9E+05	00:03
0.600	1.0E-04	5.7E+10	1.7E+05	00:03
0.700	8.6E-05	4.9E+10	1.5E+05	00:04
0.800	7.4E-05	4.2E+10	1.3E+05	00:05
0.900	6.4E-05	3.7E+10	1.1E+05	00:05
1.000	5.6E-05	3.2E+10	9.6E+04	00:06
2.000	2.2E-05	1.2E+10	3.7E+04	00:12
4.000	8.0E-06	4.6E+09	1.4E+04	00:25
6.000	4.5E-06	2.6E+09	7.8E+03	00:38
8.000	3.1E-06	1.8E+09	5.3E+03	00:51

10.000	2.3E-06	1.3E+09	3.9E+03	01:04
20.000	9.3E-07	5.3E+08	1.6E+03	02:09
40.000	3.9E-07	2.2E+08	6.7E+02	04:19
60.000	2.4E-07	1.4E+08	4.1E+02	06:29
80.000	1.7E-07	9.6E+07	2.9E+02	08:39

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 11:05:57 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Infant Mixture 25% HTO.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Infant Mixture 25% HTO

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.15 m/s  
 Stability Class : E  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.77 km  
 Maximum TEDE : 6.91E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	1.3E-07	1.5E-13	<00:01
0.200	1.4E-08	8.0E+06	2.2E+01	00:01
0.300	3.9E-06	2.2E+09	6.6E+03	00:01
0.400	2.3E-05	1.3E+10	3.9E+04	00:02
0.500	4.6E-05	2.6E+10	7.9E+04	00:02
0.600	6.1E-05	3.5E+10	1.0E+05	00:03
0.700	6.8E-05	3.9E+10	1.2E+05	00:03
0.800	6.9E-05	3.9E+10	1.2E+05	00:04
0.900	6.7E-05	3.8E+10	1.1E+05	00:04
1.000	6.4E-05	3.6E+10	1.1E+05	00:05
2.000	3.2E-05	1.8E+10	5.4E+04	00:10
4.000	1.3E-05	7.6E+09	2.3E+04	00:21
6.000	8.1E-06	4.6E+09	1.4E+04	00:31
8.000	5.9E-06	3.4E+09	1.0E+04	00:42

10.000	4.6E-06	2.6E+09	7.9E+03	00:52
20.000	2.3E-06	1.3E+09	3.9E+03	01:45
40.000	1.1E-06	6.5E+08	1.9E+03	03:31
60.000	7.3E-07	4.2E+08	1.3E+03	05:17
80.000	5.4E-07	3.1E+08	9.3E+02	07:02

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 11:06:14 AM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0014B Bulk  
 Splitter Complete Loss to Stack DONE\0014B Infant Mixture 25% HTO.mix  
 (Mixture Scale Factor = 1.0000E+00)

0014B Infant Mixture 25% HTO

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.88 m/s  
 Stability Class : F  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 1.7 km  
 Maximum TEDE : 3.75E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	0.0E+00	0.0E+00	<00:01
0.200	0.0E+00	1.7E-06	2.2E-12	<00:01
0.300	5.8E-12	3.3E+03	7.9E-03	00:01
0.400	1.1E-08	6.1E+06	1.7E+01	00:01
0.500	3.3E-07	1.9E+08	5.5E+02	00:02
0.600	2.1E-06	1.2E+09	3.5E+03	00:02
0.700	6.0E-06	3.4E+09	1.0E+04	00:03
0.800	1.2E-05	6.6E+09	2.0E+04	00:03
0.900	1.8E-05	1.0E+10	3.0E+04	00:03
1.000	2.3E-05	1.3E+10	3.9E+04	00:04
2.000	3.6E-05	2.1E+10	6.2E+04	00:08
4.000	2.2E-05	1.3E+10	3.8E+04	00:17
6.000	1.5E-05	8.4E+09	2.5E+04	00:25
8.000	1.1E-05	6.3E+09	1.9E+04	00:34

10.000	8.9E-06	5.1E+09	1.5E+04	00:43
20.000	4.4E-06	2.5E+09	7.5E+03	01:26
40.000	2.1E-06	1.2E+09	3.6E+03	02:52
60.000	1.3E-06	7.3E+08	2.2E+03	04:18
80.000	9.1E-07	5.2E+08	1.6E+03	05:44

**SEQUENCE 0018A**

Bin of Lights Dropped – Dose to Worker

Second	Volume formula	Radius of cloud (m)	Volume of cloud (m3)	Concentration of tritium in cloud (GBq/m3)	Respired air (m3)	Intake (Bq)	Dose Coefficient (Sv/Bq)	Dose (Sv)		SUM DOSE	1.18E-04	Sv
1	$2/3*\pi*(r^3)$	0.5	0.262	171,884	2.66E-04	4.57E+10	2.00E-15	9.14E-05				
2	$2/3*\pi*(r^3)$	1.0	2.094	21,485	2.66E-04	5.72E+09	2.00E-15	1.14E-05				
3	$2/3*\pi*(r^3)$	1.5	7.069	6,366	2.66E-04	1.69E+09	2.00E-15	3.39E-06				
4	$2/3*\pi*(r^3)$	2.0	16.756	2,686	2.66E-04	7.14E+08	2.00E-15	1.43E-06				
5	$2/3*\pi*(r^3)$	2.5	32.726	1,375	2.66E-04	3.66E+08	2.00E-15	7.32E-07				
6	$\pi*r^2*h*2$	3.0	47.123	955	2.66E-04	2.54E+08	2.00E-15	5.08E-07				
7	$\pi*r^2*h*2$	3.5	54.976	819	2.66E-04	2.18E+08	2.00E-15	4.35E-07				
8	$\pi*r^2*h*2$	4.0	62.830	716	2.66E-04	1.91E+08	2.00E-15	3.81E-07				
9	$\pi*r^2*h*2$	4.5	70.684	637	2.66E-04	1.69E+08	2.00E-15	3.39E-07				
10	$\pi*r^2*h*2$	5.0	78.538	573	2.66E-04	1.52E+08	2.00E-15	3.05E-07				
11	$\pi*r^2*h*2$	5.5	86.391	521	2.66E-04	1.39E+08	2.00E-15	2.77E-07				
12	$\pi*r^2*h*2$	6.0	94.245	477	2.66E-04	1.27E+08	2.00E-15	2.54E-07				
13	$\pi*r^2*h*2$	6.5	102.099	441	2.66E-04	1.17E+08	2.00E-15	2.34E-07				
14	$\pi*r^2*h*2$	7.0	109.953	409	2.66E-04	1.09E+08	2.00E-15	2.18E-07				
15	$\pi*r^2*h*2$	7.5	117.806	382	2.66E-04	1.02E+08	2.00E-15	2.03E-07				
16	$\pi*r^2*h*2$	8.0	125.660	358	2.66E-04	9.53E+07	2.00E-15	1.91E-07				
17	$\pi*r^2*h*2$	8.5	133.514	337	2.66E-04	8.97E+07	2.00E-15	1.79E-07				
18	$\pi*r^2*h*2$	9.0	141.368	318	2.66E-04	8.47E+07	2.00E-15	1.69E-07				
19	$\pi*r^2*h*2$	9.5	149.221	302	2.66E-04	8.02E+07	2.00E-15	1.60E-07				
20	$\pi*r^2*h*2$	10.0	157.075	286	2.66E-04	7.62E+07	2.00E-15	1.52E-07				
21	$\pi*r^2*h*2$	10.5	164.929	273	2.66E-04	7.26E+07	2.00E-15	1.45E-07				
22	Max volume reached	11.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
23	Max volume reached	11.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
24	Max volume reached	12.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
25	Max volume reached	12.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
26	Max volume reached	13.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
27	Max volume reached	13.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
28	Max volume reached	14.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
29	Max volume reached	14.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
30	Max volume reached	15.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
31	Max volume reached	15.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
32	Max volume reached	16.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
33	Max volume reached	16.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
34	Max volume reached	17.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
35	Max volume reached	17.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
36	Max volume reached	18.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
37	Max volume reached	18.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
38	Max volume reached	19.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
39	Max volume reached	19.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
40	Max volume reached	20.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
41	Max volume reached	20.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
42	Max volume reached	21.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
43	Max volume reached	21.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
44	Max volume reached	22.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
45	Max volume reached	22.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
46	Max volume reached	23.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
47	Max volume reached	23.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
48	Max volume reached	24.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
49	Max volume reached	24.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
50	Max volume reached	25.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
51	Max volume reached	25.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
52	Max volume reached	26.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
53	Max volume reached	26.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
54	Max volume reached	27.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
55	Max volume reached	27.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
56	Max volume reached	28.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
57	Max volume reached	28.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
58	Max volume reached	29.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
59	Max volume reached	29.5	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				
60	Max volume reached	30.0	170.000	265	2.66E-04	7.04E+07	2.00E-15	1.41E-07				

Respired air is an average per second based on 8400 m3/year (N288.1)

SUM DOSE	1.18E-04	Sv
	0.12	mSv

**SEQUENCE 0018B**

Bin of Lights Dropped – Dose to Public

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Adult Mixture.mix

0018B Adult Mixture

Mixture Scale Factor : 1.0000E+00

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Nuclide [01] :	HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.0000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.0000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.0000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.0000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.0000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.0000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.0000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.0000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.0000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.0000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.0000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.0000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.0000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.0000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.0000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.0000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	4.5000E+12
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.0000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.0000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.0000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.0000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.0000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.0000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.0000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.0000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.0000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.0000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.0000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.0000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.0000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.0000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.0000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.0000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.0000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.0000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.0000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.0000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 4.0500E+13
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Child Mixture.mix

0018B Child Mixture

Mixture Scale Factor : 1.0000E+00

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Nuclide [01] :	HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.8000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.8000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.8000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.8000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.8000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.8000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.8000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.8000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.8000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.8000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.8000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.8000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.8000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.8000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.8000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.8000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.8000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.8000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.8000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.8000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.8000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.8000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.8000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.8000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	4.5000E+12
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.5000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.5000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.5000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.5000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.5000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.5000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.5000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.5000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.5000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.5000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.5000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.5000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.5000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.5000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.5000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.5000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.5000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.5000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.5000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.5000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 4.0500E+13
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Infant Mixture.mix

0018B Infant Mixture

Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	: HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	8.0000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	8.0000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	8.0000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	8.0000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	8.0000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	8.0000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	8.0000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	8.0000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	8.0000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	8.0000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	8.0000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	8.0000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	8.0000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	8.0000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	8.0000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	8.0000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	8.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	8.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	8.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	8.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	8.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	8.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	8.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	8.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	4.5000E+12
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	5.3000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	5.3000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	5.3000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	5.3000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	5.3000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	5.3000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	5.3000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) :	5.3000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Ovaries	Inhalation	(Sv/Bq) :	5.3000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Adrenals	Inhalation	(Sv/Bq) :	5.3000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Breast	Inhalation	(Sv/Bq) :	5.3000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) :	5.3000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thymus	Inhalation	(Sv/Bq) :	5.3000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) :	5.3000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Esophagus	Inhalation	(Sv/Bq) :	5.3000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) :	5.3000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	5.3000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	5.3000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	5.3000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	5.3000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	5.3000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	5.3000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	5.3000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	5.3000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	4.0500E+13
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:34:10 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Adult Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Adult Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.97 m/s  
 Stability Class : A  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 1.01E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : < 10 m

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	1.4E-04	1.8E+11	5.5E+05	<00:01
0.100	1.3E-05	1.6E+10	4.9E+04	<00:01
0.200	3.3E-06	4.1E+09	1.2E+04	00:01
0.300	1.5E-06	1.8E+09	5.5E+03	00:02
0.400	8.3E-07	1.0E+09	3.1E+03	00:03
0.500	5.3E-07	6.6E+08	2.0E+03	00:04
0.600	3.7E-07	4.6E+08	1.4E+03	00:05
0.700	2.7E-07	3.4E+08	1.0E+03	00:05
0.800	2.1E-07	2.6E+08	7.9E+02	00:06
0.900	1.7E-07	2.1E+08	6.2E+02	00:07
1.000	1.4E-07	1.7E+08	5.1E+02	00:08
2.000	3.5E-08	4.4E+07	1.3E+02	00:16
4.000	9.5E-09	1.2E+07	3.5E+01	00:33
6.000	4.5E-09	5.6E+06	1.7E+01	00:50
8.000	2.7E-09	3.3E+06	1.0E+01	01:07

10.000	1.8E-09	2.3E+06	6.8E+00	01:24
20.000	5.5E-10	6.9E+05	2.1E+00	02:49
40.000	1.8E-10	2.2E+05	6.6E-01	05:39
60.000	9.4E-11	1.2E+05	3.5E-01	08:28
80.000	6.0E-11	7.4E+04	2.2E-01	11:18

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:34:48 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Adult Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Adult Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.97 m/s  
 Stability Class : B  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 1.42E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.014 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	3.1E-04	3.8E+11	1.3E+06	<00:01
0.100	3.0E-05	3.7E+10	1.1E+05	<00:01
0.200	7.5E-06	9.3E+09	2.8E+04	00:01
0.300	3.3E-06	4.1E+09	1.2E+04	00:02
0.400	1.9E-06	2.3E+09	7.0E+03	00:03
0.500	1.2E-06	1.5E+09	4.5E+03	00:04
0.600	8.4E-07	1.0E+09	3.1E+03	00:05
0.700	6.2E-07	7.7E+08	2.3E+03	00:05
0.800	4.8E-07	5.9E+08	1.8E+03	00:06
0.900	3.8E-07	4.7E+08	1.4E+03	00:07
1.000	3.1E-07	3.8E+08	1.1E+03	00:08
2.000	7.9E-08	9.9E+07	3.0E+02	00:16
4.000	2.1E-08	2.6E+07	7.9E+01	00:33
6.000	1.0E-08	1.3E+07	3.8E+01	00:50
8.000	6.0E-09	7.5E+06	2.2E+01	01:07

10.000	4.0E-09	5.0E+06	1.5E+01	01:24
20.000	1.2E-09	1.5E+06	4.6E+00	02:49
40.000	4.0E-10	4.9E+05	1.5E+00	05:39
60.000	2.1E-10	2.6E+05	7.8E-01	08:28
80.000	1.3E-10	1.6E+05	4.9E-01	11:18

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:35:04 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Adult Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Adult Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.87 m/s  
 Stability Class : C  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.013 km  
 Maximum TEDE : 1.48E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.022 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	6.3E-04	7.8E+11	2.9E+06	<00:01
0.100	6.7E-05	8.3E+10	2.5E+05	<00:01
0.200	1.7E-05	2.1E+10	6.4E+04	00:01
0.300	7.7E-06	9.5E+09	2.9E+04	00:02
0.400	4.4E-06	5.4E+09	1.6E+04	00:03
0.500	2.8E-06	3.5E+09	1.1E+04	00:04
0.600	2.0E-06	2.5E+09	7.4E+03	00:05
0.700	1.5E-06	1.8E+09	5.5E+03	00:06
0.800	1.1E-06	1.4E+09	4.2E+03	00:07
0.900	9.1E-07	1.1E+09	3.4E+03	00:08
1.000	7.5E-07	9.3E+08	2.8E+03	00:08
2.000	2.1E-07	2.6E+08	7.7E+02	00:17
4.000	6.3E-08	7.8E+07	2.3E+02	00:35
6.000	3.3E-08	4.1E+07	1.2E+02	00:53
8.000	2.1E-08	2.6E+07	7.9E+01	01:11

10.000	1.5E-08	1.9E+07	5.7E+01	01:28
20.000	5.9E-09	7.3E+06	2.2E+01	02:57
40.000	2.5E-09	3.1E+06	9.3E+00	05:55
60.000	1.5E-09	1.9E+06	5.8E+00	08:53
80.000	1.1E-09	1.4E+06	4.1E+00	11:51

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:35:17 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Adult Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Adult Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.73 m/s  
 Stability Class : D  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.017 km  
 Maximum TEDE : 1.63E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.032 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	1.1E-03	1.3E+12	5.8E+06	<00:01
0.100	1.4E-04	1.7E+11	5.3E+05	<00:01
0.200	3.7E-05	4.6E+10	1.4E+05	00:01
0.300	1.7E-05	2.1E+10	6.5E+04	00:02
0.400	1.0E-05	1.3E+10	3.8E+04	00:03
0.500	6.8E-06	8.5E+09	2.5E+04	00:04
0.600	4.9E-06	6.1E+09	1.8E+04	00:05
0.700	3.8E-06	4.7E+09	1.4E+04	00:06
0.800	3.0E-06	3.7E+09	1.1E+04	00:07
0.900	2.4E-06	3.0E+09	9.1E+03	00:08
1.000	2.0E-06	2.5E+09	7.6E+03	00:09
2.000	6.6E-07	8.1E+08	2.4E+03	00:19
4.000	2.3E-07	2.8E+08	8.4E+02	00:38
6.000	1.2E-07	1.5E+08	4.6E+02	00:57
8.000	8.3E-08	1.0E+08	3.1E+02	01:17

10.000	6.1E-08	7.6E+07	2.3E+02	01:36
20.000	2.4E-08	3.0E+07	9.0E+01	03:12
40.000	9.8E-09	1.2E+07	3.7E+01	06:25
60.000	5.9E-09	7.3E+06	2.2E+01	09:38
80.000	4.1E-09	5.1E+06	1.5E+01	12:51

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:35:49 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Adult Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Adult Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.25 m/s  
 Stability Class : E  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.035 km  
 Maximum TEDE : 1.40E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.055 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	1.3E-03	1.6E+12	2.0E+07	<00:01
0.100	4.0E-04	5.0E+11	1.7E+06	00:01
0.200	1.1E-04	1.4E+11	4.2E+05	00:02
0.300	5.0E-05	6.2E+10	1.9E+05	00:04
0.400	2.8E-05	3.5E+10	1.1E+05	00:05
0.500	1.9E-05	2.3E+10	7.0E+04	00:06
0.600	1.3E-05	1.6E+10	4.9E+04	00:07
0.700	9.8E-06	1.2E+10	3.7E+04	00:09
0.800	7.7E-06	9.6E+09	2.9E+04	00:10
0.900	6.2E-06	7.7E+09	2.3E+04	00:11
1.000	5.1E-06	6.4E+09	1.9E+04	00:13
2.000	1.5E-06	1.9E+09	5.8E+03	00:26
4.000	5.3E-07	6.5E+08	2.0E+03	00:53
6.000	3.0E-07	3.7E+08	1.1E+03	01:19
8.000	2.1E-07	2.6E+08	7.7E+02	01:46

10.000	1.6E-07	2.0E+08	5.9E+02	02:13
20.000	6.4E-08	7.9E+07	2.4E+02	04:26
40.000	2.3E-08	2.9E+07	8.7E+01	08:52
60.000	1.2E-08	1.4E+07	4.3E+01	13:18
80.000	7.1E-09	8.8E+06	2.6E+01	17:44

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:36:04 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Adult Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Adult Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 0.91 m/s  
 Stability Class : F  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 1.77E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.089 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	2.9E-04	1.6E+11	6.9E+07	<00:01
0.100	8.8E-04	1.1E+12	5.2E+06	00:01
0.200	2.9E-04	3.5E+11	1.2E+06	00:03
0.300	1.3E-04	1.6E+11	5.2E+05	00:05
0.400	7.4E-05	9.1E+10	2.8E+05	00:07
0.500	4.7E-05	5.8E+10	1.8E+05	00:09
0.600	3.3E-05	4.1E+10	1.2E+05	00:11
0.700	2.4E-05	3.0E+10	9.1E+04	00:12
0.800	1.9E-05	2.3E+10	7.0E+04	00:14
0.900	1.5E-05	1.8E+10	5.6E+04	00:16
1.000	1.2E-05	1.5E+10	4.5E+04	00:18
2.000	3.3E-06	4.1E+09	1.2E+04	00:36
4.000	9.8E-07	1.2E+09	3.6E+03	01:13
6.000	5.0E-07	6.2E+08	1.9E+03	01:50
8.000	3.2E-07	4.0E+08	1.2E+03	02:26

10.000	2.3E-07	2.9E+08	8.8E+02	03:03
20.000	6.1E-08	7.6E+07	2.3E+02	06:07
40.000	1.0E-08	1.3E+07	3.9E+01	12:14
60.000	2.5E-09	3.1E+06	9.3E+00	18:21
80.000	9.2E-10	1.1E+06	3.4E+00	>24:00

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:36:59 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Child Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Child Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.97 m/s  
 Stability Class : A  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 1.39E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.012 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	1.7E-04	1.8E+11	5.5E+05	<00:01
0.100	1.6E-05	1.6E+10	4.9E+04	<00:01
0.200	3.9E-06	4.1E+09	1.2E+04	00:01
0.300	1.7E-06	1.8E+09	5.5E+03	00:02
0.400	9.8E-07	1.0E+09	3.1E+03	00:03
0.500	6.3E-07	6.6E+08	2.0E+03	00:04
0.600	4.4E-07	4.6E+08	1.4E+03	00:05
0.700	3.2E-07	3.4E+08	1.0E+03	00:05
0.800	2.5E-07	2.6E+08	7.9E+02	00:06
0.900	2.0E-07	2.1E+08	6.2E+02	00:07
1.000	1.6E-07	1.7E+08	5.1E+02	00:08
2.000	4.2E-08	4.4E+07	1.3E+02	00:16
4.000	1.1E-08	1.2E+07	3.5E+01	00:33
6.000	5.3E-09	5.6E+06	1.7E+01	00:50
8.000	3.2E-09	3.3E+06	1.0E+01	01:07

10.000	2.1E-09	2.3E+06	6.8E+00	01:24
20.000	6.5E-10	6.9E+05	2.1E+00	02:49
40.000	2.1E-10	2.2E+05	6.6E-01	05:39
60.000	1.1E-10	1.2E+05	3.5E-01	08:28
80.000	7.1E-11	7.4E+04	2.2E-01	11:18

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:37:19 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Child Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Child Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.97 m/s  
 Stability Class : B  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 2.56E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.018 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	3.8E-04	4.0E+11	1.3E+06	<00:01
0.100	3.5E-05	3.7E+10	1.1E+05	<00:01
0.200	8.8E-06	9.3E+09	2.8E+04	00:01
0.300	3.9E-06	4.1E+09	1.2E+04	00:02
0.400	2.2E-06	2.3E+09	7.0E+03	00:03
0.500	1.4E-06	1.5E+09	4.5E+03	00:04
0.600	9.9E-07	1.0E+09	3.1E+03	00:05
0.700	7.3E-07	7.7E+08	2.3E+03	00:05
0.800	5.6E-07	5.9E+08	1.8E+03	00:06
0.900	4.5E-07	4.7E+08	1.4E+03	00:07
1.000	3.6E-07	3.8E+08	1.1E+03	00:08
2.000	9.4E-08	9.9E+07	3.0E+02	00:16
4.000	2.5E-08	2.6E+07	7.9E+01	00:33
6.000	1.2E-08	1.3E+07	3.8E+01	00:50
8.000	7.1E-09	7.5E+06	2.2E+01	01:07

10.000	4.8E-09	5.0E+06	1.5E+01	01:24
20.000	1.5E-09	1.5E+06	4.6E+00	02:49
40.000	4.7E-10	4.9E+05	1.5E+00	05:39
60.000	2.5E-10	2.6E+05	7.8E-01	08:28
80.000	1.6E-10	1.6E+05	4.9E-01	11:18

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:37:37 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Child Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Child Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.87 m/s  
 Stability Class : C  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 3.82E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.027 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	8.3E-04	8.7E+11	2.9E+06	<00:01
0.100	8.0E-05	8.4E+10	2.5E+05	<00:01
0.200	2.0E-05	2.1E+10	6.4E+04	00:01
0.300	9.1E-06	9.5E+09	2.9E+04	00:02
0.400	5.2E-06	5.4E+09	1.6E+04	00:03
0.500	3.3E-06	3.5E+09	1.1E+04	00:04
0.600	2.3E-06	2.5E+09	7.4E+03	00:05
0.700	1.7E-06	1.8E+09	5.5E+03	00:06
0.800	1.3E-06	1.4E+09	4.2E+03	00:07
0.900	1.1E-06	1.1E+09	3.4E+03	00:08
1.000	8.8E-07	9.3E+08	2.8E+03	00:08
2.000	2.5E-07	2.6E+08	7.7E+02	00:17
4.000	7.4E-08	7.8E+07	2.3E+02	00:35
6.000	3.9E-08	4.1E+07	1.2E+02	00:53
8.000	2.5E-08	2.6E+07	7.9E+01	01:11

10.000	1.8E-08	1.9E+07	5.7E+01	01:28
20.000	7.0E-09	7.3E+06	2.2E+01	02:57
40.000	2.9E-09	3.1E+06	9.3E+00	05:55
60.000	1.8E-09	1.9E+06	5.8E+00	08:53
80.000	1.3E-09	1.4E+06	4.1E+00	11:51

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:37:52 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Child Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Child Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.73 m/s  
 Stability Class : D  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.012 km  
 Maximum TEDE : 4.38E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.038 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	1.6E-03	1.6E+12	5.8E+06	<00:01
0.100	1.7E-04	1.7E+11	5.3E+05	<00:01
0.200	4.4E-05	4.6E+10	1.4E+05	00:01
0.300	2.0E-05	2.2E+10	6.5E+04	00:02
0.400	1.2E-05	1.3E+10	3.8E+04	00:03
0.500	8.1E-06	8.5E+09	2.5E+04	00:04
0.600	5.8E-06	6.1E+09	1.8E+04	00:05
0.700	4.4E-06	4.7E+09	1.4E+04	00:06
0.800	3.5E-06	3.7E+09	1.1E+04	00:07
0.900	2.9E-06	3.0E+09	9.1E+03	00:08
1.000	2.4E-06	2.5E+09	7.6E+03	00:09
2.000	7.7E-07	8.1E+08	2.4E+03	00:19
4.000	2.7E-07	2.8E+08	8.4E+02	00:38
6.000	1.5E-07	1.5E+08	4.6E+02	00:57
8.000	9.8E-08	1.0E+08	3.1E+02	01:17

10.000	7.3E-08	7.6E+07	2.3E+02	01:36
20.000	2.8E-08	3.0E+07	9.0E+01	03:12
40.000	1.2E-08	1.2E+07	3.7E+01	06:25
60.000	6.9E-09	7.3E+06	2.2E+01	09:38
80.000	4.8E-09	5.1E+06	1.5E+01	12:51

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:38:05 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Child Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Child Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.25 m/s  
 Stability Class : E  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.023 km  
 Maximum TEDE : 3.84E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.070 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	3.4E-03	3.6E+12	2.0E+07	<00:01
0.100	5.1E-04	5.3E+11	1.7E+06	00:01
0.200	1.3E-04	1.4E+11	4.2E+05	00:02
0.300	5.9E-05	6.2E+10	1.9E+05	00:04
0.400	3.4E-05	3.6E+10	1.1E+05	00:05
0.500	2.2E-05	2.3E+10	7.0E+04	00:06
0.600	1.6E-05	1.6E+10	4.9E+04	00:07
0.700	1.2E-05	1.2E+10	3.7E+04	00:09
0.800	9.1E-06	9.6E+09	2.9E+04	00:10
0.900	7.3E-06	7.7E+09	2.3E+04	00:11
1.000	6.1E-06	6.4E+09	1.9E+04	00:13
2.000	1.8E-06	1.9E+09	5.8E+03	00:26
4.000	6.2E-07	6.5E+08	2.0E+03	00:53
6.000	3.5E-07	3.7E+08	1.1E+03	01:19
8.000	2.4E-07	2.6E+08	7.7E+02	01:46

10.000	1.9E-07	2.0E+08	5.9E+02	02:13
20.000	7.5E-08	7.9E+07	2.4E+02	04:26
40.000	2.8E-08	2.9E+07	8.7E+01	08:52
60.000	1.4E-08	1.4E+07	4.3E+01	13:18
80.000	8.3E-09	8.8E+06	2.6E+01	17:44

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:38:24 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Child Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Child Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 0.91 m/s  
 Stability Class : F  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.042 km  
 Maximum TEDE : 3.46E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.12 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	2.6E-03	2.5E+12	6.9E+07	<00:01
0.100	1.3E-03	1.4E+12	5.2E+06	00:01
0.200	3.6E-04	3.8E+11	1.2E+06	00:03
0.300	1.6E-04	1.7E+11	5.2E+05	00:05
0.400	8.9E-05	9.3E+10	2.8E+05	00:07
0.500	5.6E-05	5.9E+10	1.8E+05	00:09
0.600	3.9E-05	4.1E+10	1.2E+05	00:11
0.700	2.9E-05	3.0E+10	9.1E+04	00:12
0.800	2.2E-05	2.3E+10	7.0E+04	00:14
0.900	1.8E-05	1.8E+10	5.6E+04	00:16
1.000	1.4E-05	1.5E+10	4.5E+04	00:18
2.000	3.9E-06	4.1E+09	1.2E+04	00:36
4.000	1.2E-06	1.2E+09	3.6E+03	01:13
6.000	5.9E-07	6.2E+08	1.9E+03	01:50
8.000	3.8E-07	4.0E+08	1.2E+03	02:26

10.000	2.8E-07	2.9E+08	8.8E+02	03:03
20.000	7.2E-08	7.6E+07	2.3E+02	06:07
40.000	1.2E-08	1.3E+07	3.9E+01	12:14
60.000	3.0E-09	3.1E+06	9.3E+00	18:21
80.000	1.1E-09	1.1E+06	3.4E+00	>24:00

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:39:27 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Infant Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Infant Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.97 m/s  
 Stability Class : A  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 1.13E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.011 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	1.3E-04	1.8E+11	5.5E+05	<00:01
0.100	1.1E-05	1.6E+10	4.9E+04	<00:01
0.200	2.9E-06	4.1E+09	1.2E+04	00:01
0.300	1.3E-06	1.8E+09	5.5E+03	00:02
0.400	7.2E-07	1.0E+09	3.1E+03	00:03
0.500	4.6E-07	6.6E+08	2.0E+03	00:04
0.600	3.2E-07	4.6E+08	1.4E+03	00:05
0.700	2.4E-07	3.4E+08	1.0E+03	00:05
0.800	1.8E-07	2.6E+08	7.9E+02	00:06
0.900	1.5E-07	2.1E+08	6.2E+02	00:07
1.000	1.2E-07	1.7E+08	5.1E+02	00:08
2.000	3.1E-08	4.4E+07	1.3E+02	00:16
4.000	8.3E-09	1.2E+07	3.5E+01	00:33
6.000	3.9E-09	5.6E+06	1.7E+01	00:50
8.000	2.3E-09	3.3E+06	1.0E+01	01:07

10.000	1.6E-09	2.3E+06	6.8E+00	01:24
20.000	4.8E-10	6.9E+05	2.1E+00	02:49
40.000	1.5E-10	2.2E+05	6.6E-01	05:39
60.000	8.2E-11	1.2E+05	3.5E-01	08:28
80.000	5.2E-11	7.4E+04	2.2E-01	11:18

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:39:51 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Infant Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Infant Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.97 m/s  
 Stability Class : B  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 2.44E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.016 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	2.9E-04	4.1E+11	1.3E+06	<00:01
0.100	2.6E-05	3.7E+10	1.1E+05	<00:01
0.200	6.5E-06	9.3E+09	2.8E+04	00:01
0.300	2.9E-06	4.1E+09	1.2E+04	00:02
0.400	1.6E-06	2.3E+09	7.0E+03	00:03
0.500	1.0E-06	1.5E+09	4.5E+03	00:04
0.600	7.3E-07	1.0E+09	3.1E+03	00:05
0.700	5.4E-07	7.7E+08	2.3E+03	00:05
0.800	4.1E-07	5.9E+08	1.8E+03	00:06
0.900	3.3E-07	4.7E+08	1.4E+03	00:07
1.000	2.7E-07	3.8E+08	1.1E+03	00:08
2.000	6.9E-08	9.9E+07	3.0E+02	00:16
4.000	1.9E-08	2.6E+07	7.9E+01	00:33
6.000	8.8E-09	1.3E+07	3.8E+01	00:50
8.000	5.2E-09	7.5E+06	2.2E+01	01:07

10.000	3.5E-09	5.0E+06	1.5E+01	01:24
20.000	1.1E-09	1.5E+06	4.6E+00	02:49
40.000	3.4E-10	4.9E+05	1.5E+00	05:39
60.000	1.8E-10	2.6E+05	7.8E-01	08:28
80.000	1.2E-10	1.6E+05	4.9E-01	11:18

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:40:22 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Infant Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Infant Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.87 m/s  
 Stability Class : C  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 5.02E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.024 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	6.5E-04	9.3E+11	2.9E+06	<00:01
0.100	5.9E-05	8.5E+10	2.5E+05	<00:01
0.200	1.5E-05	2.1E+10	6.4E+04	00:01
0.300	6.7E-06	9.5E+09	2.9E+04	00:02
0.400	3.8E-06	5.4E+09	1.6E+04	00:03
0.500	2.5E-06	3.5E+09	1.1E+04	00:04
0.600	1.7E-06	2.5E+09	7.4E+03	00:05
0.700	1.3E-06	1.8E+09	5.5E+03	00:06
0.800	9.9E-07	1.4E+09	4.2E+03	00:07
0.900	7.9E-07	1.1E+09	3.4E+03	00:08
1.000	6.5E-07	9.3E+08	2.8E+03	00:08
2.000	1.8E-07	2.6E+08	7.7E+02	00:17
4.000	5.5E-08	7.8E+07	2.3E+02	00:35
6.000	2.8E-08	4.1E+07	1.2E+02	00:53
8.000	1.8E-08	2.6E+07	7.9E+01	01:11

10.000	1.3E-08	1.9E+07	5.7E+01	01:28
20.000	5.1E-09	7.3E+06	2.2E+01	02:57
40.000	2.2E-09	3.1E+06	9.3E+00	05:55
60.000	1.3E-09	1.9E+06	5.8E+00	08:53
80.000	9.7E-10	1.4E+06	4.1E+00	11:51

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:40:35 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Infant Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Infant Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.73 m/s  
 Stability Class : D  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 8.61E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.034 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	1.3E-03	1.8E+12	5.8E+06	<00:01
0.100	1.2E-04	1.8E+11	5.3E+05	<00:01
0.200	3.2E-05	4.6E+10	1.4E+05	00:01
0.300	1.5E-05	2.2E+10	6.5E+04	00:02
0.400	8.9E-06	1.3E+10	3.8E+04	00:03
0.500	5.9E-06	8.5E+09	2.5E+04	00:04
0.600	4.3E-06	6.1E+09	1.8E+04	00:05
0.700	3.3E-06	4.7E+09	1.4E+04	00:06
0.800	2.6E-06	3.7E+09	1.1E+04	00:07
0.900	2.1E-06	3.0E+09	9.1E+03	00:08
1.000	1.8E-06	2.5E+09	7.6E+03	00:09
2.000	5.7E-07	8.1E+08	2.4E+03	00:19
4.000	2.0E-07	2.8E+08	8.4E+02	00:38
6.000	1.1E-07	1.5E+08	4.6E+02	00:57
8.000	7.2E-08	1.0E+08	3.1E+02	01:17

10.000	5.3E-08	7.6E+07	2.3E+02	01:36
20.000	2.1E-08	3.0E+07	9.0E+01	03:12
40.000	8.5E-09	1.2E+07	3.7E+01	06:25
60.000	5.1E-09	7.3E+06	2.2E+01	09:38
80.000	3.6E-09	5.1E+06	1.5E+01	12:51

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:40:53 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Infant Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Infant Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.25 m/s  
 Stability Class : E  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.011 km  
 Maximum TEDE : 0.012 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.062 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	4.0E-03	5.7E+12	2.0E+07	<00:01
0.100	3.9E-04	5.6E+11	1.7E+06	00:01
0.200	9.8E-05	1.4E+11	4.2E+05	00:02
0.300	4.4E-05	6.3E+10	1.9E+05	00:04
0.400	2.5E-05	3.6E+10	1.1E+05	00:05
0.500	1.6E-05	2.3E+10	7.0E+04	00:06
0.600	1.1E-05	1.6E+10	4.9E+04	00:07
0.700	8.6E-06	1.2E+10	3.7E+04	00:09
0.800	6.7E-06	9.6E+09	2.9E+04	00:10
0.900	5.4E-06	7.7E+09	2.3E+04	00:11
1.000	4.5E-06	6.4E+09	1.9E+04	00:13
2.000	1.3E-06	1.9E+09	5.8E+03	00:26
4.000	4.6E-07	6.5E+08	2.0E+03	00:53
6.000	2.6E-07	3.7E+08	1.1E+03	01:19
8.000	1.8E-07	2.6E+08	7.7E+02	01:46

10.000	1.4E-07	2.0E+08	5.9E+02	02:13
20.000	5.5E-08	7.9E+07	2.4E+02	04:26
40.000	2.0E-08	2.9E+07	8.7E+01	08:52
60.000	1.0E-08	1.4E+07	4.3E+01	13:18
80.000	6.1E-09	8.8E+06	2.6E+01	17:44

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 12:41:09 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0018B  
 Dropped Light Sources DONE\0018B Infant Mixture 45,000 GBq.mix (Mixture  
 Scale Factor = 1.0000E+00)

0018B Infant Mixture

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 0.91 m/s  
 Stability Class : F  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.021 km  
 Maximum TEDE : 0.011 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.11 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	9.3E-03	1.3E+13	6.9E+07	<00:01
0.100	1.2E-03	1.6E+12	5.2E+06	00:01
0.200	2.8E-04	3.9E+11	1.2E+06	00:03
0.300	1.2E-04	1.7E+11	5.2E+05	00:05
0.400	6.6E-05	9.4E+10	2.8E+05	00:07
0.500	4.2E-05	6.0E+10	1.8E+05	00:09
0.600	2.9E-05	4.1E+10	1.2E+05	00:11
0.700	2.1E-05	3.0E+10	9.1E+04	00:12
0.800	1.6E-05	2.3E+10	7.0E+04	00:14
0.900	1.3E-05	1.8E+10	5.6E+04	00:16
1.000	1.1E-05	1.5E+10	4.5E+04	00:18
2.000	2.9E-06	4.1E+09	1.2E+04	00:36
4.000	8.5E-07	1.2E+09	3.6E+03	01:13
6.000	4.4E-07	6.2E+08	1.9E+03	01:50
8.000	2.8E-07	4.0E+08	1.2E+03	02:26

10.000	2.0E-07	2.9E+08	8.8E+02	03:03
20.000	5.3E-08	7.6E+07	2.3E+02	06:07
40.000	9.1E-09	1.3E+07	3.9E+01	12:14
60.000	2.2E-09	3.1E+06	9.3E+00	18:21
80.000	8.0E-10	1.1E+06	3.4E+00	>24:00

**SEQUENCE 0033A**

Aircraft Crash

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Adult Mixture.mix

0033A Adult Mixture

Mixture Scale Factor : 1.0000E+00

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Nuclide [01] :	HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.0000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.0000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.0000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.0000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.0000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.0000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.0000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.0000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.0000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.0000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.0000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.0000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.0000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.0000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.0000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.0000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	6.0000E+15
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.0000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.0000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.0000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.0000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.0000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.0000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.0000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.0000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.0000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.0000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.0000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.0000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.0000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.0000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.0000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.0000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.0000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.0000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.0000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.0000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 0.0000E+00
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Child Mixture.mix

0033A Child Mixture

Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	: HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.8000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.8000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.8000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.8000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.8000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.8000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.8000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.8000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.8000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.8000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.8000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.8000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.8000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.8000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.8000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.8000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.8000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.8000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.8000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.8000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.8000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.8000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.8000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.8000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	6.0000E+15
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.5000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.5000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.5000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.5000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.5000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.5000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.5000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.5000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.5000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.5000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.5000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.5000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.5000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.5000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.5000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.5000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.5000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.5000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.5000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.5000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 0.0000E+00
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

## HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Infant Mixture.mix

0033A Infant Mixture

Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	: HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	8.0000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	8.0000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	8.0000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	8.0000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	8.0000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	8.0000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	8.0000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	8.0000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	8.0000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	8.0000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	8.0000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	8.0000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	8.0000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	8.0000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	8.0000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	8.0000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	8.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	8.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	8.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	8.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	8.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	8.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	8.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	8.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	6.0000E+15
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	5.3000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	5.3000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	5.3000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	5.3000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	5.3000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	5.3000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	5.3000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 5.3000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 5.3000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 5.3000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 5.3000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 5.3000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 5.3000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 5.3000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 5.3000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 5.3000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 5.3000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 5.3000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 5.3000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 5.3000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 5.3000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 5.3000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 5.3000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 5.3000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 0.0000E+00
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:46:50 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Adult Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Adult Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : A  
Receptor Height : 1.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.66E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 2.37E-04 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.8E-04	2.2E+10	6.6E+04	<00:01
0.100	7.1E-05	8.8E+09	2.6E+04	<00:01
0.200	3.8E-05	4.8E+09	1.4E+04	00:01
0.300	3.2E-05	4.0E+09	1.2E+04	00:01
0.400	2.9E-05	3.7E+09	1.1E+04	00:02
0.500	2.7E-05	3.4E+09	1.0E+04	00:02
0.600	2.5E-05	3.2E+09	9.5E+03	00:03
0.700	2.4E-05	3.0E+09	8.9E+03	00:03
0.800	2.2E-05	2.8E+09	8.4E+03	00:04
0.900	2.1E-05	2.6E+09	7.9E+03	00:05
1.000	2.0E-05	2.5E+09	7.4E+03	00:05
2.000	1.2E-05	1.5E+09	4.5E+03	00:11
4.000	5.5E-06	6.8E+08	2.1E+03	00:22
6.000	3.1E-06	3.9E+08	1.2E+03	00:33
8.000	2.0E-06	2.5E+08	7.6E+02	00:44
10.000	1.4E-06	1.8E+08	5.4E+02	00:55
20.000	4.9E-07	6.0E+07	1.8E+02	01:50
40.000	1.6E-07	2.0E+07	6.1E+01	03:41
60.000	8.7E-08	1.1E+07	3.2E+01	05:32
80.000	5.6E-08	6.9E+06	2.1E+01	07:23

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:47:23 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Adult Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Adult Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : B  
Receptor Height : 1.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.66E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 2.39E-04 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.8E-04	2.2E+10	6.7E+04	<00:01
0.100	7.3E-05	9.1E+09	2.7E+04	<00:01
0.200	4.0E-05	5.0E+09	1.5E+04	00:01
0.300	3.4E-05	4.3E+09	1.3E+04	00:01
0.400	3.2E-05	4.0E+09	1.2E+04	00:02
0.500	3.0E-05	3.7E+09	1.1E+04	00:02
0.600	2.8E-05	3.5E+09	1.1E+04	00:03
0.700	2.7E-05	3.3E+09	1.0E+04	00:03
0.800	2.6E-05	3.2E+09	9.5E+03	00:04
0.900	2.4E-05	3.0E+09	9.1E+03	00:05
1.000	2.3E-05	2.9E+09	8.7E+03	00:05
2.000	1.6E-05	2.0E+09	6.0E+03	00:11
4.000	9.1E-06	1.1E+09	3.4E+03	00:22
6.000	5.8E-06	7.1E+08	2.1E+03	00:33
8.000	4.0E-06	4.9E+08	1.5E+03	00:44
10.000	2.9E-06	3.6E+08	1.1E+03	00:55
20.000	1.0E-06	1.3E+08	3.9E+02	01:50
40.000	3.6E-07	4.5E+07	1.3E+02	03:41
60.000	1.9E-07	2.4E+07	7.2E+01	05:32
80.000	1.2E-07	1.5E+07	4.6E+01	07:23

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:47:43 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Adult Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Adult Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : C  
Receptor Height : 1.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.66E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 2.27E-04 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.7E-04	2.1E+10	6.3E+04	<00:01
0.100	6.7E-05	8.4E+09	2.5E+04	<00:01
0.200	3.9E-05	4.8E+09	1.5E+04	<00:01
0.300	3.5E-05	4.3E+09	1.3E+04	00:01
0.400	3.2E-05	4.0E+09	1.2E+04	00:01
0.500	3.1E-05	3.8E+09	1.1E+04	00:02
0.600	2.9E-05	3.6E+09	1.1E+04	00:02
0.700	2.8E-05	3.4E+09	1.0E+04	00:03
0.800	2.6E-05	3.3E+09	9.8E+03	00:03
0.900	2.5E-05	3.1E+09	9.4E+03	00:04
1.000	2.4E-05	3.0E+09	9.0E+03	00:04
2.000	1.8E-05	2.2E+09	6.6E+03	00:09
4.000	1.2E-05	1.5E+09	4.5E+03	00:19
6.000	9.4E-06	1.2E+09	3.5E+03	00:29
8.000	7.6E-06	9.5E+08	2.8E+03	00:38
10.000	6.4E-06	8.0E+08	2.4E+03	00:48
20.000	3.5E-06	4.4E+08	1.3E+03	01:37
40.000	1.8E-06	2.3E+08	6.8E+02	03:14
60.000	1.2E-06	1.5E+08	4.5E+02	04:51
80.000	9.0E-07	1.1E+08	3.4E+02	06:28

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:47:59 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Adult Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Adult Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : D  
Receptor Height : 1.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.66E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 2.05E-04 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.5E-04	1.8E+10	5.5E+04	<00:01
0.100	5.8E-05	7.1E+09	2.1E+04	<00:01
0.200	3.6E-05	4.4E+09	1.3E+04	<00:01
0.300	3.3E-05	4.1E+09	1.2E+04	00:01
0.400	3.1E-05	3.9E+09	1.2E+04	00:01
0.500	3.0E-05	3.7E+09	1.1E+04	00:01
0.600	2.8E-05	3.5E+09	1.1E+04	00:02
0.700	2.7E-05	3.4E+09	1.0E+04	00:02
0.800	2.6E-05	3.2E+09	9.6E+03	00:03
0.900	2.5E-05	3.1E+09	9.3E+03	00:03
1.000	2.4E-05	3.0E+09	8.9E+03	00:03
2.000	1.8E-05	2.2E+09	6.5E+03	00:07
4.000	1.2E-05	1.5E+09	4.4E+03	00:15
6.000	9.2E-06	1.1E+09	3.4E+03	00:23
8.000	7.7E-06	9.6E+08	2.9E+03	00:31
10.000	6.7E-06	8.4E+08	2.5E+03	00:38
20.000	4.4E-06	5.5E+08	1.6E+03	01:17
40.000	2.9E-06	3.6E+08	1.1E+03	02:35
60.000	2.3E-06	2.8E+08	8.5E+02	03:53
80.000	1.9E-06	2.3E+08	7.0E+02	05:10

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:48:15 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Adult Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Adult Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : E  
Receptor Height : 1.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.66E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 1.36E-04 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	8.1E-05	1.0E+10	3.0E+04	<00:01
0.100	3.5E-05	4.3E+09	1.3E+04	<00:01
0.200	2.8E-05	3.5E+09	1.0E+04	<00:01
0.300	2.7E-05	3.3E+09	9.9E+03	<00:01
0.400	2.5E-05	3.1E+09	9.4E+03	<00:01
0.500	2.4E-05	3.0E+09	9.0E+03	<00:01
0.600	2.3E-05	2.9E+09	8.6E+03	<00:01
0.700	2.2E-05	2.8E+09	8.3E+03	00:01
0.800	2.1E-05	2.7E+09	8.0E+03	00:01
0.900	2.1E-05	2.6E+09	7.7E+03	00:01
1.000	2.0E-05	2.5E+09	7.4E+03	00:01
2.000	1.5E-05	1.8E+09	5.5E+03	00:03
4.000	1.0E-05	1.3E+09	3.8E+03	00:06
6.000	7.8E-06	9.6E+08	2.9E+03	00:09
8.000	6.4E-06	7.9E+08	2.4E+03	00:12
10.000	5.5E-06	6.8E+08	2.0E+03	00:15
20.000	3.2E-06	3.9E+08	1.2E+03	00:31
40.000	1.8E-06	2.2E+08	6.6E+02	01:03
60.000	1.3E-06	1.6E+08	4.7E+02	01:35
80.000	1.0E-06	1.3E+08	3.8E+02	02:07

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:48:59 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Adult Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Adult Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : F  
Receptor Height : 1.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.66E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 9.23E-05 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	5.0E-05	6.2E+09	1.9E+04	<00:01
0.100	2.7E-05	3.3E+09	9.9E+03	<00:01
0.200	2.3E-05	2.9E+09	8.7E+03	<00:01
0.300	2.2E-05	2.7E+09	8.1E+03	<00:01
0.400	2.0E-05	2.5E+09	7.6E+03	<00:01
0.500	1.9E-05	2.4E+09	7.2E+03	<00:01
0.600	1.8E-05	2.3E+09	6.9E+03	<00:01
0.700	1.8E-05	2.2E+09	6.6E+03	<00:01
0.800	1.7E-05	2.1E+09	6.3E+03	<00:01
0.900	1.6E-05	2.0E+09	6.1E+03	<00:01
1.000	1.6E-05	2.0E+09	5.9E+03	<00:01
2.000	1.2E-05	1.5E+09	4.4E+03	00:01
4.000	7.8E-06	9.7E+08	2.9E+03	00:02
6.000	5.9E-06	7.3E+08	2.2E+03	00:03
8.000	4.8E-06	6.0E+08	1.8E+03	00:05
10.000	4.1E-06	5.1E+08	1.5E+03	00:06
20.000	2.1E-06	2.6E+08	7.8E+02	00:13
40.000	1.1E-06	1.4E+08	4.1E+02	00:26
60.000	8.2E-07	1.0E+08	3.1E+02	00:39
80.000	6.9E-07	8.6E+07	2.6E+02	00:52

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:49:49 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Child Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Child Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : A  
Receptor Height : 1.0 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.48E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 2.80E-04 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	2.1E-04	2.2E+10	6.6E+04	<00:01
0.100	8.3E-05	8.8E+09	2.6E+04	<00:01
0.200	4.5E-05	4.8E+09	1.4E+04	00:01
0.300	3.8E-05	4.0E+09	1.2E+04	00:01
0.400	3.5E-05	3.7E+09	1.1E+04	00:02
0.500	3.2E-05	3.4E+09	1.0E+04	00:02
0.600	3.0E-05	3.2E+09	9.5E+03	00:03
0.700	2.8E-05	3.0E+09	8.9E+03	00:03
0.800	2.6E-05	2.8E+09	8.4E+03	00:04
0.900	2.5E-05	2.6E+09	7.9E+03	00:05
1.000	2.4E-05	2.5E+09	7.4E+03	00:05
2.000	1.4E-05	1.5E+09	4.5E+03	00:11
4.000	6.5E-06	6.8E+08	2.1E+03	00:22
6.000	3.7E-06	3.9E+08	1.2E+03	00:33
8.000	2.4E-06	2.5E+08	7.6E+02	00:44
10.000	1.7E-06	1.8E+08	5.4E+02	00:55
20.000	5.7E-07	6.0E+07	1.8E+02	01:50
40.000	1.9E-07	2.0E+07	6.1E+01	03:41
60.000	1.0E-07	1.1E+07	3.2E+01	05:32
80.000	6.6E-08	6.9E+06	2.1E+01	07:23

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:50:14 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Child Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Child Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : B  
Receptor Height : 1.0 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.48E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 2.82E-04 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	2.1E-04	2.2E+10	6.7E+04	<00:01
0.100	8.7E-05	9.1E+09	2.7E+04	<00:01
0.200	4.8E-05	5.0E+09	1.5E+04	00:01
0.300	4.1E-05	4.3E+09	1.3E+04	00:01
0.400	3.8E-05	4.0E+09	1.2E+04	00:02
0.500	3.5E-05	3.7E+09	1.1E+04	00:02
0.600	3.3E-05	3.5E+09	1.1E+04	00:03
0.700	3.2E-05	3.3E+09	1.0E+04	00:03
0.800	3.0E-05	3.2E+09	9.5E+03	00:04
0.900	2.9E-05	3.0E+09	9.1E+03	00:05
1.000	2.7E-05	2.9E+09	8.7E+03	00:05
2.000	1.9E-05	2.0E+09	6.0E+03	00:11
4.000	1.1E-05	1.1E+09	3.4E+03	00:22
6.000	6.8E-06	7.1E+08	2.1E+03	00:33
8.000	4.7E-06	4.9E+08	1.5E+03	00:44
10.000	3.4E-06	3.6E+08	1.1E+03	00:55
20.000	1.2E-06	1.3E+08	3.9E+02	01:50
40.000	4.3E-07	4.5E+07	1.3E+02	03:41
60.000	2.3E-07	2.4E+07	7.2E+01	05:32
80.000	1.5E-07	1.5E+07	4.6E+01	07:23

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:50:39 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Child Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Child Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : C  
Receptor Height : 1.0 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.48E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 2.68E-04 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	2.0E-04	2.1E+10	6.3E+04	<00:01
0.100	8.0E-05	8.4E+09	2.5E+04	<00:01
0.200	4.6E-05	4.8E+09	1.5E+04	<00:01
0.300	4.1E-05	4.3E+09	1.3E+04	00:01
0.400	3.8E-05	4.0E+09	1.2E+04	00:01
0.500	3.6E-05	3.8E+09	1.1E+04	00:02
0.600	3.4E-05	3.6E+09	1.1E+04	00:02
0.700	3.3E-05	3.4E+09	1.0E+04	00:03
0.800	3.1E-05	3.3E+09	9.8E+03	00:03
0.900	3.0E-05	3.1E+09	9.4E+03	00:04
1.000	2.9E-05	3.0E+09	9.0E+03	00:04
2.000	2.1E-05	2.2E+09	6.6E+03	00:09
4.000	1.4E-05	1.5E+09	4.5E+03	00:19
6.000	1.1E-05	1.2E+09	3.5E+03	00:29
8.000	9.0E-06	9.5E+08	2.8E+03	00:38
10.000	7.6E-06	8.0E+08	2.4E+03	00:48
20.000	4.2E-06	4.4E+08	1.3E+03	01:37
40.000	2.1E-06	2.3E+08	6.8E+02	03:14
60.000	1.4E-06	1.5E+08	4.5E+02	04:51
80.000	1.1E-06	1.1E+08	3.4E+02	06:28

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:50:55 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Child Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Child Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : D  
Receptor Height : 1.0 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.48E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 2.43E-04 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.7E-04	1.8E+10	5.5E+04	<00:01
0.100	6.8E-05	7.1E+09	2.1E+04	<00:01
0.200	4.2E-05	4.4E+09	1.3E+04	<00:01
0.300	3.9E-05	4.1E+09	1.2E+04	00:01
0.400	3.7E-05	3.9E+09	1.2E+04	00:01
0.500	3.5E-05	3.7E+09	1.1E+04	00:01
0.600	3.3E-05	3.5E+09	1.1E+04	00:02
0.700	3.2E-05	3.4E+09	1.0E+04	00:02
0.800	3.1E-05	3.2E+09	9.6E+03	00:03
0.900	2.9E-05	3.1E+09	9.3E+03	00:03
1.000	2.8E-05	3.0E+09	8.9E+03	00:03
2.000	2.1E-05	2.2E+09	6.5E+03	00:07
4.000	1.4E-05	1.5E+09	4.4E+03	00:15
6.000	1.1E-05	1.1E+09	3.4E+03	00:23
8.000	9.1E-06	9.6E+08	2.9E+03	00:31
10.000	8.0E-06	8.4E+08	2.5E+03	00:38
20.000	5.2E-06	5.5E+08	1.6E+03	01:17
40.000	3.4E-06	3.6E+08	1.1E+03	02:35
60.000	2.7E-06	2.8E+08	8.5E+02	03:53
80.000	2.2E-06	2.3E+08	7.0E+02	05:10

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:51:15 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Child Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Child Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : E  
Receptor Height : 1.0 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.48E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 1.60E-04 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	9.6E-05	1.0E+10	3.0E+04	<00:01
0.100	4.1E-05	4.3E+09	1.3E+04	<00:01
0.200	3.3E-05	3.5E+09	1.0E+04	<00:01
0.300	3.1E-05	3.3E+09	9.9E+03	<00:01
0.400	3.0E-05	3.1E+09	9.4E+03	<00:01
0.500	2.8E-05	3.0E+09	9.0E+03	<00:01
0.600	2.7E-05	2.9E+09	8.6E+03	<00:01
0.700	2.6E-05	2.8E+09	8.3E+03	00:01
0.800	2.5E-05	2.7E+09	8.0E+03	00:01
0.900	2.4E-05	2.6E+09	7.7E+03	00:01
1.000	2.3E-05	2.5E+09	7.4E+03	00:01
2.000	1.8E-05	1.8E+09	5.5E+03	00:03
4.000	1.2E-05	1.3E+09	3.8E+03	00:06
6.000	9.2E-06	9.6E+08	2.9E+03	00:09
8.000	7.6E-06	7.9E+08	2.4E+03	00:12
10.000	6.5E-06	6.8E+08	2.0E+03	00:15
20.000	3.8E-06	3.9E+08	1.2E+03	00:31
40.000	2.1E-06	2.2E+08	6.6E+02	01:03
60.000	1.5E-06	1.6E+08	4.7E+02	01:35
80.000	1.2E-06	1.3E+08	3.8E+02	02:07

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:51:29 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Child Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Child Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : F  
Receptor Height : 1.0 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 2.48E-04 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 1.09E-04 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	5.9E-05	6.2E+09	1.9E+04	<00:01
0.100	3.1E-05	3.3E+09	9.9E+03	<00:01
0.200	2.8E-05	2.9E+09	8.7E+03	<00:01
0.300	2.6E-05	2.7E+09	8.1E+03	<00:01
0.400	2.4E-05	2.5E+09	7.6E+03	<00:01
0.500	2.3E-05	2.4E+09	7.2E+03	<00:01
0.600	2.2E-05	2.3E+09	6.9E+03	<00:01
0.700	2.1E-05	2.2E+09	6.6E+03	<00:01
0.800	2.0E-05	2.1E+09	6.3E+03	<00:01
0.900	1.9E-05	2.0E+09	6.1E+03	<00:01
1.000	1.9E-05	2.0E+09	5.9E+03	<00:01
2.000	1.4E-05	1.5E+09	4.4E+03	00:01
4.000	9.3E-06	9.7E+08	2.9E+03	00:02
6.000	7.0E-06	7.3E+08	2.2E+03	00:03
8.000	5.7E-06	6.0E+08	1.8E+03	00:05
10.000	4.8E-06	5.1E+08	1.5E+03	00:06
20.000	2.5E-06	2.6E+08	7.8E+02	00:13
40.000	1.3E-06	1.4E+08	4.1E+02	00:26
60.000	9.7E-07	1.0E+08	3.1E+02	00:39
80.000	8.1E-07	8.6E+07	2.6E+02	00:52

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:52:06 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Infant Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Infant Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : A  
Receptor Height : 0.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 8.68E-05 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 2.06E-04 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.5E-04	2.2E+10	6.6E+04	<00:01
0.100	6.2E-05	8.8E+09	2.6E+04	<00:01
0.200	3.3E-05	4.8E+09	1.4E+04	00:01
0.300	2.8E-05	4.0E+09	1.2E+04	00:01
0.400	2.6E-05	3.7E+09	1.1E+04	00:02
0.500	2.4E-05	3.4E+09	1.0E+04	00:02
0.600	2.2E-05	3.2E+09	9.5E+03	00:03
0.700	2.1E-05	3.0E+09	8.9E+03	00:03
0.800	2.0E-05	2.8E+09	8.4E+03	00:04
0.900	1.8E-05	2.6E+09	7.9E+03	00:05
1.000	1.7E-05	2.5E+09	7.4E+03	00:05
2.000	1.0E-05	1.5E+09	4.5E+03	00:11
4.000	4.8E-06	6.8E+08	2.1E+03	00:22
6.000	2.7E-06	3.9E+08	1.2E+03	00:33
8.000	1.8E-06	2.5E+08	7.6E+02	00:44
10.000	1.3E-06	1.8E+08	5.4E+02	00:55
20.000	4.2E-07	6.0E+07	1.8E+02	01:50
40.000	1.4E-07	2.0E+07	6.1E+01	03:41
60.000	7.5E-08	1.1E+07	3.2E+01	05:32
80.000	4.8E-08	6.9E+06	2.1E+01	07:23

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:52:25 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Infant Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Infant Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

#### UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : B  
Receptor Height : 0.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 8.68E-05 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 2.08E-04 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.6E-04	2.2E+10	6.7E+04	<00:01
0.100	6.4E-05	9.1E+09	2.7E+04	<00:01
0.200	3.5E-05	5.0E+09	1.5E+04	00:01
0.300	3.0E-05	4.3E+09	1.3E+04	00:01
0.400	2.8E-05	4.0E+09	1.2E+04	00:02
0.500	2.6E-05	3.7E+09	1.1E+04	00:02
0.600	2.5E-05	3.5E+09	1.1E+04	00:03
0.700	2.3E-05	3.3E+09	1.0E+04	00:03
0.800	2.2E-05	3.2E+09	9.5E+03	00:04
0.900	2.1E-05	3.0E+09	9.1E+03	00:05
1.000	2.0E-05	2.9E+09	8.7E+03	00:05
2.000	1.4E-05	2.0E+09	6.0E+03	00:11
4.000	7.9E-06	1.1E+09	3.4E+03	00:22
6.000	5.0E-06	7.1E+08	2.1E+03	00:33
8.000	3.5E-06	4.9E+08	1.5E+03	00:44
10.000	2.5E-06	3.6E+08	1.1E+03	00:55
20.000	9.1E-07	1.3E+08	3.9E+02	01:50
40.000	3.1E-07	4.5E+07	1.3E+02	03:41
60.000	1.7E-07	2.4E+07	7.2E+01	05:32
80.000	1.1E-07	1.5E+07	4.6E+01	07:23

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:52:43 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Infant Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Infant Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : C  
Receptor Height : 0.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 8.68E-05 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 1.97E-04 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.5E-04	2.1E+10	6.3E+04	<00:01
0.100	5.9E-05	8.4E+09	2.5E+04	<00:01
0.200	3.4E-05	4.8E+09	1.5E+04	<00:01
0.300	3.0E-05	4.3E+09	1.3E+04	00:01
0.400	2.8E-05	4.0E+09	1.2E+04	00:01
0.500	2.7E-05	3.8E+09	1.1E+04	00:02
0.600	2.5E-05	3.6E+09	1.1E+04	00:02
0.700	2.4E-05	3.4E+09	1.0E+04	00:03
0.800	2.3E-05	3.3E+09	9.8E+03	00:03
0.900	2.2E-05	3.1E+09	9.4E+03	00:04
1.000	2.1E-05	3.0E+09	9.0E+03	00:04
2.000	1.5E-05	2.2E+09	6.6E+03	00:09
4.000	1.1E-05	1.5E+09	4.5E+03	00:19
6.000	8.1E-06	1.2E+09	3.5E+03	00:29
8.000	6.6E-06	9.5E+08	2.8E+03	00:38
10.000	5.6E-06	8.0E+08	2.4E+03	00:48
20.000	3.1E-06	4.4E+08	1.3E+03	01:37
40.000	1.6E-06	2.3E+08	6.8E+02	03:14
60.000	1.1E-06	1.5E+08	4.5E+02	04:51
80.000	7.8E-07	1.1E+08	3.4E+02	06:28

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:52:58 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Infant Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Infant Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : D  
Receptor Height : 0.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 8.68E-05 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 1.79E-04 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	1.3E-04	1.8E+10	5.5E+04	<00:01
0.100	5.0E-05	7.1E+09	2.1E+04	<00:01
0.200	3.1E-05	4.4E+09	1.3E+04	<00:01
0.300	2.9E-05	4.1E+09	1.2E+04	00:01
0.400	2.7E-05	3.9E+09	1.2E+04	00:01
0.500	2.6E-05	3.7E+09	1.1E+04	00:01
0.600	2.5E-05	3.5E+09	1.1E+04	00:02
0.700	2.3E-05	3.4E+09	1.0E+04	00:02
0.800	2.3E-05	3.2E+09	9.6E+03	00:03
0.900	2.2E-05	3.1E+09	9.3E+03	00:03
1.000	2.1E-05	3.0E+09	8.9E+03	00:03
2.000	1.5E-05	2.2E+09	6.5E+03	00:07
4.000	1.0E-05	1.5E+09	4.4E+03	00:15
6.000	8.0E-06	1.1E+09	3.4E+03	00:23
8.000	6.7E-06	9.6E+08	2.9E+03	00:31
10.000	5.9E-06	8.4E+08	2.5E+03	00:38
20.000	3.8E-06	5.5E+08	1.6E+03	01:17
40.000	2.5E-06	3.6E+08	1.1E+03	02:35
60.000	2.0E-06	2.8E+08	8.5E+02	03:53
80.000	1.6E-06	2.3E+08	7.0E+02	05:10

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:53:23 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Infant Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Infant Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : E  
Receptor Height : 0.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 8.68E-05 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 1.18E-04 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	7.1E-05	1.0E+10	3.0E+04	<00:01
0.100	3.0E-05	4.3E+09	1.3E+04	<00:01
0.200	2.4E-05	3.5E+09	1.0E+04	<00:01
0.300	2.3E-05	3.3E+09	9.9E+03	<00:01
0.400	2.2E-05	3.1E+09	9.4E+03	<00:01
0.500	2.1E-05	3.0E+09	9.0E+03	<00:01
0.600	2.0E-05	2.9E+09	8.6E+03	<00:01
0.700	1.9E-05	2.8E+09	8.3E+03	00:01
0.800	1.9E-05	2.7E+09	8.0E+03	00:01
0.900	1.8E-05	2.6E+09	7.7E+03	00:01
1.000	1.7E-05	2.5E+09	7.4E+03	00:01
2.000	1.3E-05	1.8E+09	5.5E+03	00:03
4.000	8.8E-06	1.3E+09	3.8E+03	00:06
6.000	6.8E-06	9.6E+08	2.9E+03	00:09
8.000	5.6E-06	7.9E+08	2.4E+03	00:12
10.000	4.8E-06	6.8E+08	2.0E+03	00:15
20.000	2.8E-06	3.9E+08	1.2E+03	00:31
40.000	1.6E-06	2.2E+08	6.6E+02	01:03
60.000	1.1E-06	1.6E+08	4.7E+02	01:35
80.000	8.8E-07	1.3E+08	3.8E+02	02:07

HotSpot Version 3.1.1 General Explosion  
Jun 28, 2023 2:53:38 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0033A  
Helicopter Crash\0033A Infant Mixture.mix (Mixture Scale Factor =  
1.0000E+00)

0033A Infant Mixture

Wind Speed (h=10 m) : 2.20 m/s  
Wind Direction : 150.0 degrees Wind from the SSE  
High Explosive : 3.96E+04 Pounds of TNT  
Debris Cloud Top : 1072 m  
Debris Cloud Top calculated using modified cloud height methodology

UNMITIGATED BLAST DAMAGE

IABTI safe distance : 3038 m (9967 ft)  
Onset of shattered glass due to blast (0.5 psi): 748 m - 952 m (2455  
ft - 3125 ft)  
Eardrum ruptures and incapacitation ( 5 psi) : 148 m - 235 m (487  
ft - 771 ft)  
Lung damage and complete incapacitation (10 psi) : 102 m - 156 m (335  
ft - 512 ft)  
Onset of lethality (25 psi) : 66 m - 103 m (216 ft  
- 337 ft)  
Fatalities in over 99% of population (100 psi) : 36 m - 61 m (117 ft  
- 200 ft)

Note: minimum range corresponds to side-on pressure and maximum range  
corresponds to reflected overpressure generated using  
Sandia National Laboratories BLAST model.

Stability Class : F  
Receptor Height : 0.5 m  
Inversion Layer Height : None  
Sample Time : 10.000 min  
Breathing Rate : 8.68E-05 m3/sec  
Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
Maximum TEDE : 8.03E-05 Sv  
Inner Contour Dose : 1.0 Sv  
Middle Contour Dose : 0.050 Sv  
Outer Contour Dose : 1.00E-03 Sv  
Exceeds Inner Dose Out To : Not Exceeded  
Exceeds Middle Dose Out To : Not Exceeded  
Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
time].

RESPIRABLE

DISTANCE	T E D E	TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec) /m3	(kBq/m2)	(hour:min)
0.030	4.3E-05	6.2E+09	1.9E+04	<00:01
0.100	2.3E-05	3.3E+09	9.9E+03	<00:01
0.200	2.0E-05	2.9E+09	8.7E+03	<00:01
0.300	1.9E-05	2.7E+09	8.1E+03	<00:01
0.400	1.8E-05	2.5E+09	7.6E+03	<00:01
0.500	1.7E-05	2.4E+09	7.2E+03	<00:01
0.600	1.6E-05	2.3E+09	6.9E+03	<00:01
0.700	1.5E-05	2.2E+09	6.6E+03	<00:01
0.800	1.5E-05	2.1E+09	6.3E+03	<00:01
0.900	1.4E-05	2.0E+09	6.1E+03	<00:01
1.000	1.4E-05	2.0E+09	5.9E+03	<00:01
2.000	1.0E-05	1.5E+09	4.4E+03	00:01
4.000	6.8E-06	9.7E+08	2.9E+03	00:02
6.000	5.1E-06	7.3E+08	2.2E+03	00:03
8.000	4.2E-06	6.0E+08	1.8E+03	00:05
10.000	3.5E-06	5.1E+08	1.5E+03	00:06
20.000	1.8E-06	2.6E+08	7.8E+02	00:13
40.000	9.7E-07	1.4E+08	4.1E+02	00:26
60.000	7.2E-07	1.0E+08	3.1E+02	00:39
80.000	6.0E-07	8.6E+07	2.6E+02	00:52

**SEQUENCE 0023A**

Lift Gate Failure

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\0023A Adult Mixture 25% Release 25%  
HTO.mix

0023A Adult Mixture 25% Release 25% HTO

Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	: HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.0000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.0000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.0000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.0000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.0000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.0000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.0000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.0000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.0000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.0000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.0000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.0000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.0000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.0000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.0000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.0000E-11

LLI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	5.6250E+12
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.0000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.0000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.0000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.0000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.0000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.0000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.0000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00

Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Spleen	Inhalation	(Sv/Bq) :	2.0000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Ovaries	Inhalation	(Sv/Bq) :	2.0000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Adrenals	Inhalation	(Sv/Bq) :	2.0000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Breast	Inhalation	(Sv/Bq) :	2.0000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) :	2.0000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thymus	Inhalation	(Sv/Bq) :	2.0000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) :	2.0000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Esophagus	Inhalation	(Sv/Bq) :	2.0000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) :	2.0000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	2.0000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	2.0000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	2.0000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	2.0000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	2.0000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	2.0000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	2.0000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	2.0000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	1.6875E+13
Airborne Fraction		:	1.0000E+00

Respirable Fraction	:	1.0000E+00
Respirable Deposition Velocity (cm/sec)	:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)	:	8.0000E+00

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Child Mixture 25% Release 25%  
HTO.mix

0023A Child Mixture 25% released, 25% HTO

Mixture Scale Factor : 1.0000E+00

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Nuclide [01] :	HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.8000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.8000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.8000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.8000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.8000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.8000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.8000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.8000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.8000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.8000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.8000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.8000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.8000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.8000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.8000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.8000E-11

LLI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.8000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.8000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.8000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.8000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.8000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.8000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.8000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.8000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	5.6250E+12
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.5000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.5000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.5000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.5000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.5000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.5000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.5000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00

Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Spleen	Inhalation	(Sv/Bq) :	2.5000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Ovaries	Inhalation	(Sv/Bq) :	2.5000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Adrenals	Inhalation	(Sv/Bq) :	2.5000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Breast	Inhalation	(Sv/Bq) :	2.5000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) :	2.5000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thymus	Inhalation	(Sv/Bq) :	2.5000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) :	2.5000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Esophagus	Inhalation	(Sv/Bq) :	2.5000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) :	2.5000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	2.5000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	2.5000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	2.5000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	2.5000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	2.5000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	2.5000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	2.5000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	2.5000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	1.6875E+13
Airborne Fraction		:	1.0000E+00

Respirable Fraction	:	1.0000E+00
Respirable Deposition Velocity (cm/sec)	:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)	:	8.0000E+00

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Infant Mixture 25% Release 25%  
HTO.mix

0023A Infant Mixture 25% Release 25% HTO

Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	:	HTO	V 1.2350E+01	y
Halflife			(Years):	1.2350E+01
Inhalation		50-yr CEDE	(Sv/Bq):	8.0000E-11
Submersion			(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine			(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation		(Sv/Bq):	8.0000E-11
Skin	Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground		Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation		(Sv/Bq):	8.0000E-11
Lung	Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground		Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation		(Sv/Bq):	8.0000E-11
Thyroid	Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground		Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation		(Sv/Bq):	8.0000E-11
Surface Bone	Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground		Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation		(Sv/Bq):	8.0000E-11
Red Marrow	Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground		Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation		(Sv/Bq):	8.0000E-11
Liver	Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground		Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation		(Sv/Bq):	8.0000E-11
Spleen	Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground		Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation		(Sv/Bq):	8.0000E-11
Ovaries	Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground		Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation		(Sv/Bq):	8.0000E-11
Adrenals	Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground		Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation		(Sv/Bq):	8.0000E-11
Breast	Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground		Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation		(Sv/Bq):	8.0000E-11
ULI Wall	Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground		Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation		(Sv/Bq):	8.0000E-11
Thymus	Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground		Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation		(Sv/Bq):	8.0000E-11
Bladder Wall	Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground		Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation		(Sv/Bq):	8.0000E-11
Esophagus	Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground		Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation		(Sv/Bq):	8.0000E-11

LLI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	8.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	8.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	8.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	8.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	8.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	8.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	8.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	8.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	5.6250E+12
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	5.3000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	5.3000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	5.3000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	5.3000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	5.3000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	5.3000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	5.3000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00

Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Spleen	Inhalation	(Sv/Bq) :	5.3000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Ovaries	Inhalation	(Sv/Bq) :	5.3000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Adrenals	Inhalation	(Sv/Bq) :	5.3000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Breast	Inhalation	(Sv/Bq) :	5.3000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) :	5.3000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thymus	Inhalation	(Sv/Bq) :	5.3000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) :	5.3000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Esophagus	Inhalation	(Sv/Bq) :	5.3000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) :	5.3000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	5.3000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	5.3000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	5.3000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	5.3000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	5.3000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	5.3000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	5.3000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	5.3000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	1.6875E+13
Airborne Fraction		:	1.0000E+00

Respirable Fraction	:	1.0000E+00
Respirable Deposition Velocity (cm/sec)	:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)	:	8.0000E+00

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:04:45 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Adult Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Adult Mixture 25% Release 25% HTO

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.97 m/s  
 Stability Class : A  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 1.26E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.012 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	1.8E-04	8.9E+10	2.7E+05	<00:01
0.100	1.6E-05	8.2E+09	2.5E+04	<00:01
0.200	4.1E-06	2.1E+09	6.2E+03	00:01
0.300	1.8E-06	9.1E+08	2.7E+03	00:02
0.400	1.0E-06	5.2E+08	1.5E+03	00:03
0.500	6.7E-07	3.3E+08	9.9E+02	00:04
0.600	4.6E-07	2.3E+08	6.9E+02	00:05
0.700	3.4E-07	1.7E+08	5.1E+02	00:05
0.800	2.6E-07	1.3E+08	3.9E+02	00:06
0.900	2.1E-07	1.0E+08	3.1E+02	00:07
1.000	1.7E-07	8.4E+07	2.5E+02	00:08
2.000	4.4E-08	2.2E+07	6.6E+01	00:16
4.000	1.2E-08	5.9E+06	1.8E+01	00:33
6.000	5.6E-09	2.8E+06	8.4E+00	00:50
8.000	3.4E-09	1.7E+06	5.0E+00	01:07

10.000	2.3E-09	1.1E+06	3.4E+00	01:24
20.000	6.9E-10	3.4E+05	1.0E+00	02:49
40.000	2.2E-10	1.1E+05	3.3E-01	05:39
60.000	1.2E-10	5.8E+04	1.7E-01	08:28
80.000	7.5E-11	3.7E+04	1.1E-01	11:18

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:05:28 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Adult Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Adult Mixture 25% Release 25% HTO

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.97 m/s  
 Stability Class : B  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 1.77E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.017 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	3.9E-04	1.9E+11	6.3E+05	<00:01
0.100	3.7E-05	1.8E+10	5.6E+04	<00:01
0.200	9.3E-06	4.6E+09	1.4E+04	00:01
0.300	4.2E-06	2.1E+09	6.2E+03	00:02
0.400	2.3E-06	1.2E+09	3.5E+03	00:03
0.500	1.5E-06	7.5E+08	2.2E+03	00:04
0.600	1.0E-06	5.2E+08	1.6E+03	00:05
0.700	7.7E-07	3.8E+08	1.2E+03	00:05
0.800	5.9E-07	2.9E+08	8.8E+02	00:06
0.900	4.7E-07	2.3E+08	7.0E+02	00:07
1.000	3.8E-07	1.9E+08	5.7E+02	00:08
2.000	9.9E-08	4.9E+07	1.5E+02	00:16
4.000	2.7E-08	1.3E+07	4.0E+01	00:33
6.000	1.3E-08	6.3E+06	1.9E+01	00:50
8.000	7.5E-09	3.7E+06	1.1E+01	01:07

10.000	5.1E-09	2.5E+06	7.5E+00	01:24
20.000	1.5E-09	7.6E+05	2.3E+00	02:49
40.000	5.0E-10	2.5E+05	7.4E-01	05:39
60.000	2.6E-10	1.3E+05	3.9E-01	08:28
80.000	1.7E-10	8.2E+04	2.5E-01	11:18

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:06:17 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Adult Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Adult Mixture 25% Release 25% HTO  
 Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.87 m/s  
 Stability Class : C  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.013 km  
 Maximum TEDE : 1.85E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.026 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	7.9E-04	3.9E+11	1.4E+06	<00:01
0.100	8.4E-05	4.2E+10	1.3E+05	<00:01
0.200	2.1E-05	1.1E+10	3.2E+04	00:01
0.300	9.6E-06	4.8E+09	1.4E+04	00:02
0.400	5.5E-06	2.7E+09	8.1E+03	00:03
0.500	3.5E-06	1.8E+09	5.3E+03	00:04
0.600	2.5E-06	1.2E+09	3.7E+03	00:05
0.700	1.8E-06	9.1E+08	2.7E+03	00:06
0.800	1.4E-06	7.1E+08	2.1E+03	00:07
0.900	1.1E-06	5.7E+08	1.7E+03	00:08
1.000	9.3E-07	4.6E+08	1.4E+03	00:08
2.000	2.6E-07	1.3E+08	3.9E+02	00:17
4.000	7.8E-08	3.9E+07	1.2E+02	00:35
6.000	4.1E-08	2.0E+07	6.1E+01	00:53
8.000	2.6E-08	1.3E+07	3.9E+01	01:11

10.000	1.9E-08	9.5E+06	2.8E+01	01:28
20.000	7.4E-09	3.7E+06	1.1E+01	02:57
40.000	3.1E-09	1.5E+06	4.6E+00	05:55
60.000	1.9E-09	9.6E+05	2.9E+00	08:53
80.000	1.4E-09	6.9E+05	2.1E+00	11:51

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:06:33 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Adult Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Adult Mixture 25% Release 25% HTO

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.73 m/s  
 Stability Class : D  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.017 km  
 Maximum TEDE : 2.03E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.037 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	1.3E-03	6.7E+11	2.9E+06	<00:01
0.100	1.7E-04	8.5E+10	2.6E+05	<00:01
0.200	4.6E-05	2.3E+10	6.9E+04	00:01
0.300	2.2E-05	1.1E+10	3.2E+04	00:02
0.400	1.3E-05	6.3E+09	1.9E+04	00:03
0.500	8.5E-06	4.2E+09	1.3E+04	00:04
0.600	6.2E-06	3.1E+09	9.2E+03	00:05
0.700	4.7E-06	2.3E+09	7.0E+03	00:06
0.800	3.7E-06	1.9E+09	5.6E+03	00:07
0.900	3.1E-06	1.5E+09	4.6E+03	00:08
1.000	2.6E-06	1.3E+09	3.8E+03	00:09
2.000	8.2E-07	4.1E+08	1.2E+03	00:19
4.000	2.8E-07	1.4E+08	4.2E+02	00:38
6.000	1.6E-07	7.7E+07	2.3E+02	00:57
8.000	1.0E-07	5.2E+07	1.6E+02	01:17

10.000	7.7E-08	3.8E+07	1.1E+02	01:36
20.000	3.0E-08	1.5E+07	4.5E+01	03:12
40.000	1.2E-08	6.1E+06	1.8E+01	06:25
60.000	7.3E-09	3.6E+06	1.1E+01	09:38
80.000	5.1E-09	2.5E+06	7.6E+00	12:51

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:07:46 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Adult Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Adult Mixture 25% Release 25% HTO

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.25 m/s  
 Stability Class : E  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.035 km  
 Maximum TEDE : 1.75E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.066 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	1.7E-03	8.1E+11	1.0E+07	<00:01
0.100	5.0E-04	2.5E+11	8.5E+05	00:01
0.200	1.4E-04	6.8E+10	2.1E+05	00:02
0.300	6.2E-05	3.1E+10	9.4E+04	00:04
0.400	3.6E-05	1.8E+10	5.4E+04	00:05
0.500	2.3E-05	1.2E+10	3.5E+04	00:06
0.600	1.6E-05	8.2E+09	2.5E+04	00:07
0.700	1.2E-05	6.1E+09	1.8E+04	00:09
0.800	9.6E-06	4.8E+09	1.4E+04	00:10
0.900	7.8E-06	3.9E+09	1.2E+04	00:11
1.000	6.4E-06	3.2E+09	9.6E+03	00:13
2.000	1.9E-06	9.6E+08	2.9E+03	00:26
4.000	6.6E-07	3.3E+08	9.8E+02	00:53
6.000	3.7E-07	1.9E+08	5.6E+02	01:19
8.000	2.6E-07	1.3E+08	3.8E+02	01:46

10.000	2.0E-07	9.8E+07	2.9E+02	02:13
20.000	7.9E-08	3.9E+07	1.2E+02	04:26
40.000	2.9E-08	1.5E+07	4.4E+01	08:52
60.000	1.4E-08	7.2E+06	2.1E+01	13:18
80.000	8.8E-09	4.4E+06	1.3E+01	17:44

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:08:00 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Adult Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Adult Mixture 25% Release 25% HTO

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 0.91 m/s  
 Stability Class : F  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 2.21E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.11 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	3.7E-04	7.9E+10	3.4E+07	<00:01
0.100	1.1E-03	5.4E+11	2.6E+06	00:01
0.200	3.6E-04	1.8E+11	6.0E+05	00:03
0.300	1.6E-04	8.1E+10	2.6E+05	00:05
0.400	9.2E-05	4.6E+10	1.4E+05	00:07
0.500	5.9E-05	2.9E+10	9.0E+04	00:09
0.600	4.1E-05	2.0E+10	6.2E+04	00:11
0.700	3.0E-05	1.5E+10	4.6E+04	00:12
0.800	2.3E-05	1.2E+10	3.5E+04	00:14
0.900	1.8E-05	9.2E+09	2.8E+04	00:16
1.000	1.5E-05	7.5E+09	2.3E+04	00:18
2.000	4.1E-06	2.0E+09	6.1E+03	00:36
4.000	1.2E-06	6.1E+08	1.8E+03	01:13
6.000	6.3E-07	3.1E+08	9.3E+02	01:50
8.000	4.0E-07	2.0E+08	6.0E+02	02:26

10.000	2.9E-07	1.5E+08	4.4E+02	03:03
20.000	7.6E-08	3.8E+07	1.1E+02	06:07
40.000	1.3E-08	6.5E+06	1.9E+01	12:14
60.000	3.1E-09	1.6E+06	4.7E+00	18:21
80.000	1.1E-09	5.7E+05	1.7E+00	>24:00

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:08:36 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Child Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Child Mixture 25% released, 25% HTO

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.97 m/s  
 Stability Class : A  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 1.74E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.013 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	2.1E-04	9.0E+10	2.7E+05	<00:01
0.100	1.9E-05	8.2E+09	2.5E+04	<00:01
0.200	4.9E-06	2.1E+09	6.2E+03	00:01
0.300	2.2E-06	9.1E+08	2.7E+03	00:02
0.400	1.2E-06	5.2E+08	1.5E+03	00:03
0.500	7.9E-07	3.3E+08	9.9E+02	00:04
0.600	5.5E-07	2.3E+08	6.9E+02	00:05
0.700	4.0E-07	1.7E+08	5.1E+02	00:05
0.800	3.1E-07	1.3E+08	3.9E+02	00:06
0.900	2.5E-07	1.0E+08	3.1E+02	00:07
1.000	2.0E-07	8.4E+07	2.5E+02	00:08
2.000	5.2E-08	2.2E+07	6.6E+01	00:16
4.000	1.4E-08	5.9E+06	1.8E+01	00:33
6.000	6.7E-09	2.8E+06	8.4E+00	00:50
8.000	4.0E-09	1.7E+06	5.0E+00	01:07

10.000	2.7E-09	1.1E+06	3.4E+00	01:24
20.000	8.2E-10	3.4E+05	1.0E+00	02:49
40.000	2.6E-10	1.1E+05	3.3E-01	05:39
60.000	1.4E-10	5.8E+04	1.7E-01	08:28
80.000	8.8E-11	3.7E+04	1.1E-01	11:18

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:08:56 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Child Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Child Mixture 25% released, 25% HTO

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.97 m/s  
 Stability Class : B  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 3.20E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.020 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	4.8E-04	2.0E+11	6.3E+05	<00:01
0.100	4.4E-05	1.9E+10	5.6E+04	<00:01
0.200	1.1E-05	4.6E+09	1.4E+04	00:01
0.300	4.9E-06	2.1E+09	6.2E+03	00:02
0.400	2.8E-06	1.2E+09	3.5E+03	00:03
0.500	1.8E-06	7.5E+08	2.2E+03	00:04
0.600	1.2E-06	5.2E+08	1.6E+03	00:05
0.700	9.1E-07	3.8E+08	1.2E+03	00:05
0.800	7.0E-07	2.9E+08	8.8E+02	00:06
0.900	5.6E-07	2.3E+08	7.0E+02	00:07
1.000	4.5E-07	1.9E+08	5.7E+02	00:08
2.000	1.2E-07	4.9E+07	1.5E+02	00:16
4.000	3.1E-08	1.3E+07	4.0E+01	00:33
6.000	1.5E-08	6.3E+06	1.9E+01	00:50
8.000	8.9E-09	3.7E+06	1.1E+01	01:07

10.000	6.0E-09	2.5E+06	7.5E+00	01:24
20.000	1.8E-09	7.6E+05	2.3E+00	02:49
40.000	5.8E-10	2.5E+05	7.4E-01	05:39
60.000	3.1E-10	1.3E+05	3.9E-01	08:28
80.000	2.0E-10	8.2E+04	2.5E-01	11:18

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:09:16 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Child Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Child Mixture 25% released, 25% HTO

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.87 m/s  
 Stability Class : C  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 4.77E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.030 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	1.0E-03	4.4E+11	1.4E+06	<00:01
0.100	1.0E-04	4.2E+10	1.3E+05	<00:01
0.200	2.5E-05	1.1E+10	3.2E+04	00:01
0.300	1.1E-05	4.8E+09	1.4E+04	00:02
0.400	6.4E-06	2.7E+09	8.1E+03	00:03
0.500	4.2E-06	1.8E+09	5.3E+03	00:04
0.600	2.9E-06	1.2E+09	3.7E+03	00:05
0.700	2.2E-06	9.1E+08	2.7E+03	00:06
0.800	1.7E-06	7.1E+08	2.1E+03	00:07
0.900	1.3E-06	5.7E+08	1.7E+03	00:08
1.000	1.1E-06	4.6E+08	1.4E+03	00:08
2.000	3.1E-07	1.3E+08	3.9E+02	00:17
4.000	9.3E-08	3.9E+07	1.2E+02	00:35
6.000	4.8E-08	2.0E+07	6.1E+01	00:53
8.000	3.1E-08	1.3E+07	3.9E+01	01:11

10.000	2.3E-08	9.5E+06	2.8E+01	01:28
20.000	8.7E-09	3.7E+06	1.1E+01	02:57
40.000	3.7E-09	1.5E+06	4.6E+00	05:55
60.000	2.3E-09	9.6E+05	2.9E+00	08:53
80.000	1.6E-09	6.9E+05	2.1E+00	11:51

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:09:34 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Child Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Child Mixture 25% released, 25% HTO

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.73 m/s  
 Stability Class : D  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.012 km  
 Maximum TEDE : 5.48E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.044 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	1.9E-03	8.2E+11	2.9E+06	<00:01
0.100	2.1E-04	8.7E+10	2.6E+05	<00:01
0.200	5.5E-05	2.3E+10	6.9E+04	00:01
0.300	2.6E-05	1.1E+10	3.2E+04	00:02
0.400	1.5E-05	6.3E+09	1.9E+04	00:03
0.500	1.0E-05	4.2E+09	1.3E+04	00:04
0.600	7.3E-06	3.1E+09	9.2E+03	00:05
0.700	5.6E-06	2.3E+09	7.0E+03	00:06
0.800	4.4E-06	1.9E+09	5.6E+03	00:07
0.900	3.6E-06	1.5E+09	4.6E+03	00:08
1.000	3.0E-06	1.3E+09	3.8E+03	00:09
2.000	9.7E-07	4.1E+08	1.2E+03	00:19
4.000	3.3E-07	1.4E+08	4.2E+02	00:38
6.000	1.8E-07	7.7E+07	2.3E+02	00:57
8.000	1.2E-07	5.2E+07	1.6E+02	01:17

10.000	9.1E-08	3.8E+07	1.1E+02	01:36
20.000	3.5E-08	1.5E+07	4.5E+01	03:12
40.000	1.4E-08	6.1E+06	1.8E+01	06:25
60.000	8.6E-09	3.6E+06	1.1E+01	09:38
80.000	6.0E-09	2.5E+06	7.6E+00	12:51

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:09:53 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Child Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Child Mixture 25% released, 25% HTO

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.25 m/s  
 Stability Class : E  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.023 km  
 Maximum TEDE : 4.79E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.078 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	4.3E-03	1.8E+12	1.0E+07	<00:01
0.100	6.4E-04	2.7E+11	8.5E+05	00:01
0.200	1.6E-04	6.9E+10	2.1E+05	00:02
0.300	7.4E-05	3.1E+10	9.4E+04	00:04
0.400	4.2E-05	1.8E+10	5.4E+04	00:05
0.500	2.7E-05	1.2E+10	3.5E+04	00:06
0.600	1.9E-05	8.2E+09	2.5E+04	00:07
0.700	1.5E-05	6.1E+09	1.8E+04	00:09
0.800	1.1E-05	4.8E+09	1.4E+04	00:10
0.900	9.2E-06	3.9E+09	1.2E+04	00:11
1.000	7.6E-06	3.2E+09	9.6E+03	00:13
2.000	2.3E-06	9.6E+08	2.9E+03	00:26
4.000	7.8E-07	3.3E+08	9.8E+02	00:53
6.000	4.4E-07	1.9E+08	5.6E+02	01:19
8.000	3.0E-07	1.3E+08	3.8E+02	01:46

10.000	2.3E-07	9.8E+07	2.9E+02	02:13
20.000	9.4E-08	3.9E+07	1.2E+02	04:26
40.000	3.5E-08	1.5E+07	4.4E+01	08:52
60.000	1.7E-08	7.2E+06	2.1E+01	13:18
80.000	1.0E-08	4.4E+06	1.3E+01	17:44

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:10:28 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Child Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Child Mixture 25% released, 25% HTO

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 0.91 m/s  
 Stability Class : F  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.042 km  
 Maximum TEDE : 4.32E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.13 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	3.2E-03	1.3E+12	3.4E+07	<00:01
0.100	1.7E-03	7.0E+11	2.6E+06	00:01
0.200	4.5E-04	1.9E+11	6.0E+05	00:03
0.300	2.0E-04	8.4E+10	2.6E+05	00:05
0.400	1.1E-04	4.7E+10	1.4E+05	00:07
0.500	7.0E-05	3.0E+10	9.0E+04	00:09
0.600	4.9E-05	2.0E+10	6.2E+04	00:11
0.700	3.6E-05	1.5E+10	4.6E+04	00:12
0.800	2.8E-05	1.2E+10	3.5E+04	00:14
0.900	2.2E-05	9.2E+09	2.8E+04	00:16
1.000	1.8E-05	7.5E+09	2.3E+04	00:18
2.000	4.8E-06	2.0E+09	6.1E+03	00:36
4.000	1.4E-06	6.1E+08	1.8E+03	01:13
6.000	7.4E-07	3.1E+08	9.3E+02	01:50
8.000	4.8E-07	2.0E+08	6.0E+02	02:26

10.000	3.5E-07	1.5E+08	4.4E+02	03:03
20.000	9.0E-08	3.8E+07	1.1E+02	06:07
40.000	1.5E-08	6.5E+06	1.9E+01	12:14
60.000	3.7E-09	1.6E+06	4.7E+00	18:21
80.000	1.4E-09	5.7E+05	1.7E+00	>24:00

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:11:11 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Infant Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Infant Mixture 25% Release 25% HTO

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.97 m/s  
 Stability Class : A  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 1.41E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.012 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	1.6E-04	9.1E+10	2.7E+05	<00:01
0.100	1.4E-05	8.2E+09	2.5E+04	<00:01
0.200	3.6E-06	2.1E+09	6.2E+03	00:01
0.300	1.6E-06	9.1E+08	2.7E+03	00:02
0.400	9.0E-07	5.2E+08	1.5E+03	00:03
0.500	5.8E-07	3.3E+08	9.9E+02	00:04
0.600	4.0E-07	2.3E+08	6.9E+02	00:05
0.700	3.0E-07	1.7E+08	5.1E+02	00:05
0.800	2.3E-07	1.3E+08	3.9E+02	00:06
0.900	1.8E-07	1.0E+08	3.1E+02	00:07
1.000	1.5E-07	8.4E+07	2.5E+02	00:08
2.000	3.8E-08	2.2E+07	6.6E+01	00:16
4.000	1.0E-08	5.9E+06	1.8E+01	00:33
6.000	4.9E-09	2.8E+06	8.4E+00	00:50
8.000	2.9E-09	1.7E+06	5.0E+00	01:07

10.000	2.0E-09	1.1E+06	3.4E+00	01:24
20.000	6.0E-10	3.4E+05	1.0E+00	02:49
40.000	1.9E-10	1.1E+05	3.3E-01	05:39
60.000	1.0E-10	5.8E+04	1.7E-01	08:28
80.000	6.5E-11	3.7E+04	1.1E-01	11:18

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:11:27 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Infant Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Infant Mixture 25% Release 25% HTO

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.97 m/s  
 Stability Class : B  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 3.05E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.018 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	3.6E-04	2.1E+11	6.3E+05	<00:01
0.100	3.3E-05	1.9E+10	5.6E+04	<00:01
0.200	8.1E-06	4.6E+09	1.4E+04	00:01
0.300	3.6E-06	2.1E+09	6.2E+03	00:02
0.400	2.0E-06	1.2E+09	3.5E+03	00:03
0.500	1.3E-06	7.5E+08	2.2E+03	00:04
0.600	9.1E-07	5.2E+08	1.6E+03	00:05
0.700	6.7E-07	3.8E+08	1.2E+03	00:05
0.800	5.2E-07	2.9E+08	8.8E+02	00:06
0.900	4.1E-07	2.3E+08	7.0E+02	00:07
1.000	3.3E-07	1.9E+08	5.7E+02	00:08
2.000	8.6E-08	4.9E+07	1.5E+02	00:16
4.000	2.3E-08	1.3E+07	4.0E+01	00:33
6.000	1.1E-08	6.3E+06	1.9E+01	00:50
8.000	6.5E-09	3.7E+06	1.1E+01	01:07

10.000	4.4E-09	2.5E+06	7.5E+00	01:24
20.000	1.3E-09	7.6E+05	2.3E+00	02:49
40.000	4.3E-10	2.5E+05	7.4E-01	05:39
60.000	2.3E-10	1.3E+05	3.9E-01	08:28
80.000	1.4E-10	8.2E+04	2.5E-01	11:18

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:11:46 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Infant Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Infant Mixture 25% Release 25% HTO

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.87 m/s  
 Stability Class : C  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 6.27E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.027 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	8.2E-04	4.7E+11	1.4E+06	<00:01
0.100	7.4E-05	4.2E+10	1.3E+05	<00:01
0.200	1.9E-05	1.1E+10	3.2E+04	00:01
0.300	8.4E-06	4.8E+09	1.4E+04	00:02
0.400	4.8E-06	2.7E+09	8.1E+03	00:03
0.500	3.1E-06	1.8E+09	5.3E+03	00:04
0.600	2.2E-06	1.2E+09	3.7E+03	00:05
0.700	1.6E-06	9.1E+08	2.7E+03	00:06
0.800	1.2E-06	7.1E+08	2.1E+03	00:07
0.900	9.9E-07	5.7E+08	1.7E+03	00:08
1.000	8.1E-07	4.6E+08	1.4E+03	00:08
2.000	2.3E-07	1.3E+08	3.9E+02	00:17
4.000	6.8E-08	3.9E+07	1.2E+02	00:35
6.000	3.6E-08	2.0E+07	6.1E+01	00:53
8.000	2.3E-08	1.3E+07	3.9E+01	01:11

10.000	1.7E-08	9.5E+06	2.8E+01	01:28
20.000	6.4E-09	3.7E+06	1.1E+01	02:57
40.000	2.7E-09	1.5E+06	4.6E+00	05:55
60.000	1.7E-09	9.6E+05	2.9E+00	08:53
80.000	1.2E-09	6.9E+05	2.1E+00	11:51

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:12:02 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Infant Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Infant Mixture 25% Release 25% HTO

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.73 m/s  
 Stability Class : D  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 0.011 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.038 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	1.6E-03	9.2E+11	2.9E+06	<00:01
0.100	1.5E-04	8.8E+10	2.6E+05	<00:01
0.200	4.0E-05	2.3E+10	6.9E+04	00:01
0.300	1.9E-05	1.1E+10	3.2E+04	00:02
0.400	1.1E-05	6.3E+09	1.9E+04	00:03
0.500	7.4E-06	4.2E+09	1.3E+04	00:04
0.600	5.4E-06	3.1E+09	9.2E+03	00:05
0.700	4.1E-06	2.3E+09	7.0E+03	00:06
0.800	3.3E-06	1.9E+09	5.6E+03	00:07
0.900	2.7E-06	1.5E+09	4.6E+03	00:08
1.000	2.2E-06	1.3E+09	3.8E+03	00:09
2.000	7.1E-07	4.1E+08	1.2E+03	00:19
4.000	2.5E-07	1.4E+08	4.2E+02	00:38
6.000	1.4E-07	7.7E+07	2.3E+02	00:57
8.000	9.1E-08	5.2E+07	1.6E+02	01:17

10.000	6.7E-08	3.8E+07	1.1E+02	01:36
20.000	2.6E-08	1.5E+07	4.5E+01	03:12
40.000	1.1E-08	6.1E+06	1.8E+01	06:25
60.000	6.4E-09	3.6E+06	1.1E+01	09:38
80.000	4.4E-09	2.5E+06	7.6E+00	12:51

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:12:19 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Infant Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Infant Mixture 25% Release 25% HTO

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.25 m/s  
 Stability Class : E  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.011 km  
 Maximum TEDE : 0.015 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.070 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	5.0E-03	2.8E+12	1.0E+07	<00:01
0.100	4.9E-04	2.8E+11	8.5E+05	00:01
0.200	1.2E-04	7.0E+10	2.1E+05	00:02
0.300	5.5E-05	3.1E+10	9.4E+04	00:04
0.400	3.1E-05	1.8E+10	5.4E+04	00:05
0.500	2.0E-05	1.2E+10	3.5E+04	00:06
0.600	1.4E-05	8.2E+09	2.5E+04	00:07
0.700	1.1E-05	6.1E+09	1.8E+04	00:09
0.800	8.4E-06	4.8E+09	1.4E+04	00:10
0.900	6.8E-06	3.9E+09	1.2E+04	00:11
1.000	5.6E-06	3.2E+09	9.6E+03	00:13
2.000	1.7E-06	9.6E+08	2.9E+03	00:26
4.000	5.7E-07	3.3E+08	9.8E+02	00:53
6.000	3.2E-07	1.9E+08	5.6E+02	01:19
8.000	2.2E-07	1.3E+08	3.8E+02	01:46

10.000	1.7E-07	9.8E+07	2.9E+02	02:13
20.000	6.9E-08	3.9E+07	1.2E+02	04:26
40.000	2.6E-08	1.5E+07	4.4E+01	08:52
60.000	1.3E-08	7.2E+06	2.1E+01	13:18
80.000	7.7E-09	4.4E+06	1.3E+01	17:44

HotSpot Version 3.1.1 General Plume  
 Jul 24, 2023 1:12:41 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0023A Lift  
 Gate Failure DONE\One Skid, 25% Release, 25% HTO\0023A Infant Mixture 25%  
 Release 25% HTO.mix (Mixture Scale Factor = 1.0000E+00)  
 0023A Infant Mixture 25% Release 25% HTO

Effective Release Height : 0.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 0.91 m/s  
 Stability Class : F  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.021 km  
 Maximum TEDE : 0.014 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.12 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	1.2E-02	6.6E+12	3.4E+07	<00:01
0.100	1.4E-03	8.2E+11	2.6E+06	00:01
0.200	3.5E-04	2.0E+11	6.0E+05	00:03
0.300	1.5E-04	8.5E+10	2.6E+05	00:05
0.400	8.2E-05	4.7E+10	1.4E+05	00:07
0.500	5.2E-05	3.0E+10	9.0E+04	00:09
0.600	3.6E-05	2.1E+10	6.2E+04	00:11
0.700	2.7E-05	1.5E+10	4.6E+04	00:12
0.800	2.0E-05	1.2E+10	3.5E+04	00:14
0.900	1.6E-05	9.2E+09	2.8E+04	00:16
1.000	1.3E-05	7.6E+09	2.3E+04	00:18
2.000	3.6E-06	2.0E+09	6.1E+03	00:36
4.000	1.1E-06	6.1E+08	1.8E+03	01:13
6.000	5.5E-07	3.1E+08	9.3E+02	01:50
8.000	3.5E-07	2.0E+08	6.0E+02	02:26

10.000	2.6E-07	1.5E+08	4.4E+02	03:03
20.000	6.6E-08	3.8E+07	1.1E+02	06:07
40.000	1.1E-08	6.5E+06	1.9E+01	12:14
60.000	2.7E-09	1.6E+06	4.7E+00	18:21
80.000	1.0E-09	5.7E+05	1.7E+00	>24:00

**SEQUENCE 0038C**

Record Snow Fall with Roof Collapse

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Adult Mixture.mix

0038C Adult Mixture

Mixture Scale Factor : 1.0000E+00

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Nuclide [01] :	HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.0000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.0000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.0000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.0000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.0000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.0000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.0000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.0000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.0000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.0000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.0000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.0000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.0000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.0000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.0000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.0000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	5.0000E+13
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.0000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.0000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.0000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.0000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.0000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.0000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.0000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.0000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.0000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.0000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.0000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.0000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.0000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.0000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.0000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.0000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.0000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.0000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.0000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.0000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 9.5000E+14
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

## HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Child Mixture.mix

0038C Child Mixture

Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	: HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.8000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.8000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.8000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.8000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.8000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.8000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.8000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.8000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.8000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.8000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.8000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.8000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.8000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.8000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.8000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.8000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.8000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.8000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.8000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.8000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.8000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.8000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.8000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.8000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	5.0000E+13
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.5000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.5000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.5000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.5000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.5000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.5000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.5000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.5000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.5000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.5000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.5000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.5000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.5000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.5000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.5000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.5000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.5000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.5000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.5000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.5000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 9.5000E+14
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

## HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Infant Mixture.mix

0038C Infant Mixture

Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	: HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	8.0000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	8.0000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	8.0000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	8.0000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	8.0000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	8.0000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	8.0000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	8.0000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	8.0000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	8.0000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	8.0000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	8.0000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	8.0000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	8.0000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	8.0000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	8.0000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	8.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	8.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	8.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	8.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	8.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	8.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	8.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	8.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	5.0000E+13
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	5.3000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	5.3000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	5.3000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	5.3000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	5.3000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	5.3000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	5.3000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) :	5.3000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Ovaries	Inhalation	(Sv/Bq) :	5.3000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Adrenals	Inhalation	(Sv/Bq) :	5.3000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Breast	Inhalation	(Sv/Bq) :	5.3000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) :	5.3000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thymus	Inhalation	(Sv/Bq) :	5.3000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) :	5.3000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Esophagus	Inhalation	(Sv/Bq) :	5.3000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) :	5.3000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	5.3000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	5.3000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	5.3000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	5.3000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	5.3000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	5.3000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	5.3000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	5.3000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	9.5000E+14
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:20:37 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Adult Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Adult Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.12 m/s  
 Stability Class : A  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.019 km  
 Maximum TEDE : 1.22E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.028 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	9.3E-04	2.3E+12	6.9E+06	<00:01
0.100	1.3E-04	3.2E+11	9.7E+05	<00:01
0.200	3.4E-05	8.4E+10	2.5E+05	00:01
0.300	1.5E-05	3.8E+10	1.1E+05	00:02
0.400	8.6E-06	2.1E+10	6.4E+04	00:03
0.500	5.5E-06	1.4E+10	4.1E+04	00:03
0.600	3.9E-06	9.6E+09	2.9E+04	00:04
0.700	2.8E-06	7.1E+09	2.1E+04	00:05
0.800	2.2E-06	5.4E+09	1.6E+04	00:06
0.900	1.7E-06	4.3E+09	1.3E+04	00:07
1.000	1.4E-06	3.5E+09	1.1E+04	00:07
2.000	3.7E-07	9.1E+08	2.7E+03	00:15
4.000	9.9E-08	2.5E+08	7.4E+02	00:31
6.000	4.7E-08	1.2E+08	3.5E+02	00:47
8.000	2.8E-08	6.9E+07	2.1E+02	01:02

10.000	1.9E-08	4.7E+07	1.4E+02	01:18
20.000	5.7E-09	1.4E+07	4.3E+01	02:37
40.000	1.8E-09	4.6E+06	1.4E+01	05:14
60.000	9.7E-10	2.4E+06	7.2E+00	07:51
80.000	6.2E-10	1.5E+06	4.6E+00	10:28

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:21:09 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Adult Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Adult Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.12 m/s  
 Stability Class : B  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.031 km  
 Maximum TEDE : 1.00E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.033 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	1.0E-03	2.5E+12	6.5E+06	<00:01
0.100	2.8E-04	6.8E+11	2.1E+06	<00:01
0.200	7.6E-05	1.9E+11	5.7E+05	00:01
0.300	3.4E-05	8.5E+10	2.6E+05	00:02
0.400	1.9E-05	4.8E+10	1.5E+05	00:03
0.500	1.3E-05	3.1E+10	9.3E+04	00:03
0.600	8.8E-06	2.2E+10	6.5E+04	00:04
0.700	6.5E-06	1.6E+10	4.8E+04	00:05
0.800	5.0E-06	1.2E+10	3.7E+04	00:06
0.900	3.9E-06	9.8E+09	2.9E+04	00:07
1.000	3.2E-06	8.0E+09	2.4E+04	00:07
2.000	8.3E-07	2.1E+09	6.2E+03	00:15
4.000	2.2E-07	5.5E+08	1.7E+03	00:31
6.000	1.1E-07	2.6E+08	7.9E+02	00:47
8.000	6.3E-08	1.6E+08	4.7E+02	01:02

10.000	4.2E-08	1.0E+08	3.1E+02	01:18
20.000	1.3E-08	3.2E+07	9.6E+01	02:37
40.000	4.1E-09	1.0E+07	3.1E+01	05:14
60.000	2.2E-09	5.4E+06	1.6E+01	07:51
80.000	1.4E-09	3.4E+06	1.0E+01	10:28

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:21:31 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Adult Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Adult Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.09 m/s  
 Stability Class : C  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.047 km  
 Maximum TEDE : 9.84E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	6.9E-04	1.7E+12	2.5E+06	<00:01
0.100	5.2E-04	1.3E+12	3.9E+06	<00:01
0.200	1.6E-04	4.1E+11	1.2E+06	00:01
0.300	7.7E-05	1.9E+11	5.7E+05	00:02
0.400	4.4E-05	1.1E+11	3.3E+05	00:03
0.500	2.9E-05	7.1E+10	2.1E+05	00:03
0.600	2.0E-05	5.0E+10	1.5E+05	00:04
0.700	1.5E-05	3.7E+10	1.1E+05	00:05
0.800	1.2E-05	2.9E+10	8.7E+04	00:06
0.900	9.4E-06	2.3E+10	7.0E+04	00:07
1.000	7.7E-06	1.9E+10	5.7E+04	00:07
2.000	2.1E-06	5.3E+09	1.6E+04	00:15
4.000	6.5E-07	1.6E+09	4.8E+03	00:31
6.000	3.4E-07	8.4E+08	2.5E+03	00:47
8.000	2.2E-07	5.4E+08	1.6E+03	01:03

10.000	1.6E-07	3.9E+08	1.2E+03	01:19
20.000	6.1E-08	1.5E+08	4.5E+02	02:39
40.000	2.6E-08	6.4E+07	1.9E+02	05:18
60.000	1.6E-08	3.9E+07	1.2E+02	07:58
80.000	1.1E-08	2.8E+07	8.5E+01	10:37

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:21:57 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Adult Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Adult Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.04 m/s  
 Stability Class : D  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.064 km  
 Maximum TEDE : 9.99E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	2.8E-04	7.1E+11	3.3E+05	<00:01
0.100	7.9E-04	2.0E+12	5.9E+06	<00:01
0.200	3.1E-04	7.8E+11	2.3E+06	00:01
0.300	1.6E-04	4.0E+11	1.2E+06	00:02
0.400	9.7E-05	2.4E+11	7.3E+05	00:03
0.500	6.6E-05	1.6E+11	4.9E+05	00:04
0.600	4.8E-05	1.2E+11	3.6E+05	00:04
0.700	3.7E-05	9.2E+10	2.8E+05	00:05
0.800	3.0E-05	7.3E+10	2.2E+05	00:06
0.900	2.4E-05	6.0E+10	1.8E+05	00:07
1.000	2.0E-05	5.0E+10	1.5E+05	00:08
2.000	6.6E-06	1.6E+10	4.9E+04	00:16
4.000	2.3E-06	5.7E+09	1.7E+04	00:32
6.000	1.3E-06	3.1E+09	9.4E+03	00:49
8.000	8.5E-07	2.1E+09	6.3E+03	01:05

10.000	6.3E-07	1.6E+09	4.7E+03	01:21
20.000	2.5E-07	6.2E+08	1.8E+03	02:43
40.000	1.0E-07	2.5E+08	7.6E+02	05:27
60.000	6.1E-08	1.5E+08	4.6E+02	08:10
80.000	4.3E-08	1.1E+08	3.2E+02	10:54

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:22:15 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Adult Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Adult Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.84 m/s  
 Stability Class : E  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.13 km  
 Maximum TEDE : 7.42E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	6.4E-08	1.6E+08	4.8E-02	<00:01
0.100	6.8E-04	1.7E+12	3.6E+06	<00:01
0.200	5.8E-04	1.4E+12	4.3E+06	00:01
0.300	3.5E-04	8.8E+11	2.7E+06	00:02
0.400	2.3E-04	5.6E+11	1.7E+06	00:03
0.500	1.6E-04	3.9E+11	1.2E+06	00:04
0.600	1.1E-04	2.8E+11	8.5E+05	00:05
0.700	8.7E-05	2.2E+11	6.5E+05	00:06
0.800	6.9E-05	1.7E+11	5.2E+05	00:07
0.900	5.6E-05	1.4E+11	4.2E+05	00:08
1.000	4.7E-05	1.2E+11	3.5E+05	00:09
2.000	1.5E-05	3.7E+10	1.1E+05	00:18
4.000	5.2E-06	1.3E+10	3.9E+04	00:36
6.000	3.0E-06	7.4E+09	2.2E+04	00:54
8.000	2.1E-06	5.2E+09	1.6E+04	01:12

10.000	1.6E-06	4.0E+09	1.2E+04	01:30
20.000	7.2E-07	1.8E+09	5.4E+03	03:01
40.000	3.1E-07	7.6E+08	2.3E+03	06:02
60.000	1.7E-07	4.2E+08	1.3E+03	09:03
80.000	1.1E-07	2.8E+08	8.4E+02	12:04

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:22:34 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Adult Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Adult Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.66 m/s  
 Stability Class : F  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.25 km  
 Maximum TEDE : 6.35E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	6.2E-06	0.0E+00	<00:01
0.100	9.3E-05	2.3E+11	5.4E+04	00:01
0.200	6.0E-04	1.5E+12	3.3E+06	00:02
0.300	6.0E-04	1.5E+12	4.3E+06	00:03
0.400	4.8E-04	1.2E+12	3.6E+06	00:04
0.500	3.7E-04	9.2E+11	2.8E+06	00:05
0.600	2.9E-04	7.1E+11	2.2E+06	00:06
0.700	2.3E-04	5.7E+11	1.7E+06	00:07
0.800	1.9E-04	4.6E+11	1.4E+06	00:08
0.900	1.6E-04	3.8E+11	1.2E+06	00:09
1.000	1.3E-04	3.2E+11	9.8E+05	00:10
2.000	4.2E-05	1.0E+11	3.1E+05	00:20
4.000	1.4E-05	3.5E+10	1.0E+05	00:40
6.000	7.7E-06	1.9E+10	5.8E+04	01:00
8.000	5.2E-06	1.3E+10	3.9E+04	01:20

10.000	3.9E-06	9.8E+09	2.9E+04	01:40
20.000	1.4E-06	3.5E+09	1.1E+04	03:20
40.000	4.2E-07	1.0E+09	3.1E+03	06:41
60.000	1.7E-07	4.1E+08	1.2E+03	10:02
80.000	8.7E-08	2.2E+08	6.5E+02	13:22

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:23:19 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Child Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Child Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.12 m/s  
 Stability Class : A  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.020 km  
 Maximum TEDE : 1.37E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.032 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	1.1E-03	2.3E+12	6.9E+06	<00:01
0.100	1.5E-04	3.2E+11	9.7E+05	<00:01
0.200	4.0E-05	8.4E+10	2.5E+05	00:01
0.300	1.8E-05	3.8E+10	1.1E+05	00:02
0.400	1.0E-05	2.1E+10	6.4E+04	00:03
0.500	6.5E-06	1.4E+10	4.1E+04	00:03
0.600	4.6E-06	9.6E+09	2.9E+04	00:04
0.700	3.4E-06	7.1E+09	2.1E+04	00:05
0.800	2.6E-06	5.4E+09	1.6E+04	00:06
0.900	2.0E-06	4.3E+09	1.3E+04	00:07
1.000	1.7E-06	3.5E+09	1.1E+04	00:07
2.000	4.3E-07	9.1E+08	2.7E+03	00:15
4.000	1.2E-07	2.5E+08	7.4E+02	00:31
6.000	5.5E-08	1.2E+08	3.5E+02	00:47
8.000	3.3E-08	6.9E+07	2.1E+02	01:02

10.000	2.2E-08	4.7E+07	1.4E+02	01:18
20.000	6.8E-09	1.4E+07	4.3E+01	02:37
40.000	2.2E-09	4.6E+06	1.4E+01	05:14
60.000	1.1E-09	2.4E+06	7.2E+00	07:51
80.000	7.3E-10	1.5E+06	4.6E+00	10:28

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:23:38 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Child Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Child Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.12 m/s  
 Stability Class : B  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.034 km  
 Maximum TEDE : 1.13E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.044 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	1.1E-03	2.3E+12	6.5E+06	<00:01
0.100	3.3E-04	6.9E+11	2.1E+06	<00:01
0.200	9.0E-05	1.9E+11	5.7E+05	00:01
0.300	4.1E-05	8.5E+10	2.6E+05	00:02
0.400	2.3E-05	4.8E+10	1.5E+05	00:03
0.500	1.5E-05	3.1E+10	9.3E+04	00:03
0.600	1.0E-05	2.2E+10	6.5E+04	00:04
0.700	7.6E-06	1.6E+10	4.8E+04	00:05
0.800	5.9E-06	1.2E+10	3.7E+04	00:06
0.900	4.7E-06	9.8E+09	2.9E+04	00:07
1.000	3.8E-06	8.0E+09	2.4E+04	00:07
2.000	9.8E-07	2.1E+09	6.2E+03	00:15
4.000	2.6E-07	5.5E+08	1.7E+03	00:31
6.000	1.2E-07	2.6E+08	7.9E+02	00:47
8.000	7.4E-08	1.6E+08	4.7E+02	01:02

10.000	5.0E-08	1.0E+08	3.1E+02	01:18
20.000	1.5E-08	3.2E+07	9.6E+01	02:37
40.000	4.9E-09	1.0E+07	3.1E+01	05:14
60.000	2.6E-09	5.4E+06	1.6E+01	07:51
80.000	1.6E-09	3.4E+06	1.0E+01	10:28

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:23:55 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Child Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Child Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.09 m/s  
 Stability Class : C  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.051 km  
 Maximum TEDE : 1.11E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.066 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED	GROUND SURFACE	ARRIVAL
km	(Sv)	AIR CONCENTRATION	DEPOSITION	TIME
		(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	5.8E-04	1.2E+12	2.5E+06	<00:01
0.100	6.2E-04	1.3E+12	3.9E+06	<00:01
0.200	1.9E-04	4.1E+11	1.2E+06	00:01
0.300	9.1E-05	1.9E+11	5.7E+05	00:02
0.400	5.2E-05	1.1E+11	3.3E+05	00:03
0.500	3.4E-05	7.1E+10	2.1E+05	00:03
0.600	2.4E-05	5.0E+10	1.5E+05	00:04
0.700	1.8E-05	3.7E+10	1.1E+05	00:05
0.800	1.4E-05	2.9E+10	8.7E+04	00:06
0.900	1.1E-05	2.3E+10	7.0E+04	00:07
1.000	9.1E-06	1.9E+10	5.7E+04	00:07
2.000	2.5E-06	5.3E+09	1.6E+04	00:15
4.000	7.7E-07	1.6E+09	4.8E+03	00:31
6.000	4.0E-07	8.4E+08	2.5E+03	00:47
8.000	2.6E-07	5.4E+08	1.6E+03	01:03

10.000	1.9E-07	3.9E+08	1.2E+03	01:19
20.000	7.2E-08	1.5E+08	4.5E+02	02:39
40.000	3.0E-08	6.4E+07	1.9E+02	05:18
60.000	1.9E-08	3.9E+07	1.2E+02	07:58
80.000	1.4E-08	2.8E+07	8.5E+01	10:37

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:24:09 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Child Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Child Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.04 m/s  
 Stability Class : D  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.070 km  
 Maximum TEDE : 1.12E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.092 km

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	1.6E-04	3.4E+11	3.3E+05	<00:01
0.100	9.4E-04	2.0E+12	5.9E+06	<00:01
0.200	3.7E-04	7.8E+11	2.3E+06	00:01
0.300	1.9E-04	4.0E+11	1.2E+06	00:02
0.400	1.2E-04	2.4E+11	7.3E+05	00:03
0.500	7.8E-05	1.6E+11	4.9E+05	00:04
0.600	5.7E-05	1.2E+11	3.6E+05	00:04
0.700	4.4E-05	9.2E+10	2.8E+05	00:05
0.800	3.5E-05	7.3E+10	2.2E+05	00:06
0.900	2.9E-05	6.0E+10	1.8E+05	00:07
1.000	2.4E-05	5.0E+10	1.5E+05	00:08
2.000	7.8E-06	1.6E+10	4.9E+04	00:16
4.000	2.7E-06	5.7E+09	1.7E+04	00:32
6.000	1.5E-06	3.1E+09	9.4E+03	00:49
8.000	1.0E-06	2.1E+09	6.3E+03	01:05

10.000	7.4E-07	1.6E+09	4.7E+03	01:21
20.000	2.9E-07	6.2E+08	1.8E+03	02:43
40.000	1.2E-07	2.5E+08	7.6E+02	05:27
60.000	7.2E-08	1.5E+08	4.6E+02	08:10
80.000	5.0E-08	1.1E+08	3.2E+02	10:54

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:24:26 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Child Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Child Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.84 m/s  
 Stability Class : E  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.14 km  
 Maximum TEDE : 8.31E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	3.8E-09	8.1E+06	4.8E-02	<00:01
0.100	6.7E-04	1.4E+12	3.6E+06	<00:01
0.200	6.9E-04	1.4E+12	4.3E+06	00:01
0.300	4.2E-04	8.8E+11	2.7E+06	00:02
0.400	2.7E-04	5.6E+11	1.7E+06	00:03
0.500	1.8E-04	3.9E+11	1.2E+06	00:04
0.600	1.3E-04	2.8E+11	8.5E+05	00:05
0.700	1.0E-04	2.2E+11	6.5E+05	00:06
0.800	8.2E-05	1.7E+11	5.2E+05	00:07
0.900	6.7E-05	1.4E+11	4.2E+05	00:08
1.000	5.6E-05	1.2E+11	3.5E+05	00:09
2.000	1.7E-05	3.7E+10	1.1E+05	00:18
4.000	6.1E-06	1.3E+10	3.9E+04	00:36
6.000	3.5E-06	7.4E+09	2.2E+04	00:54
8.000	2.5E-06	5.2E+09	1.6E+04	01:12

10.000	1.9E-06	4.0E+09	1.2E+04	01:30
20.000	8.5E-07	1.8E+09	5.4E+03	03:01
40.000	3.6E-07	7.6E+08	2.3E+03	06:02
60.000	2.0E-07	4.2E+08	1.3E+03	09:03
80.000	1.3E-07	2.8E+08	8.4E+02	12:04

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:24:41 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Child Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Child Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.66 m/s  
 Stability Class : F  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.27 km  
 Maximum TEDE : 7.10E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	1.7E-10	0.0E+00	<00:01
0.100	4.2E-05	8.8E+10	5.4E+04	00:01
0.200	6.1E-04	1.3E+12	3.3E+06	00:02
0.300	7.0E-04	1.5E+12	4.3E+06	00:03
0.400	5.7E-04	1.2E+12	3.6E+06	00:04
0.500	4.4E-04	9.2E+11	2.8E+06	00:05
0.600	3.4E-04	7.2E+11	2.2E+06	00:06
0.700	2.7E-04	5.7E+11	1.7E+06	00:07
0.800	2.2E-04	4.6E+11	1.4E+06	00:08
0.900	1.8E-04	3.9E+11	1.2E+06	00:09
1.000	1.6E-04	3.3E+11	9.8E+05	00:10
2.000	4.9E-05	1.0E+11	3.1E+05	00:20
4.000	1.7E-05	3.5E+10	1.0E+05	00:40
6.000	9.1E-06	1.9E+10	5.8E+04	01:00
8.000	6.2E-06	1.3E+10	3.9E+04	01:20

10.000	4.6E-06	9.8E+09	2.9E+04	01:40
20.000	1.7E-06	3.5E+09	1.1E+04	03:20
40.000	5.0E-07	1.0E+09	3.1E+03	06:41
60.000	2.0E-07	4.1E+08	1.2E+03	10:02
80.000	1.0E-07	2.2E+08	6.5E+02	13:22

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:25:21 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Infant Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Infant Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.12 m/s  
 Stability Class : A  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.021 km  
 Maximum TEDE : 9.85E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	8.1E-04	2.3E+12	6.9E+06	<00:01
0.100	1.1E-04	3.2E+11	9.7E+05	<00:01
0.200	3.0E-05	8.4E+10	2.5E+05	00:01
0.300	1.3E-05	3.8E+10	1.1E+05	00:02
0.400	7.5E-06	2.1E+10	6.4E+04	00:03
0.500	4.8E-06	1.4E+10	4.1E+04	00:03
0.600	3.4E-06	9.6E+09	2.9E+04	00:04
0.700	2.5E-06	7.1E+09	2.1E+04	00:05
0.800	1.9E-06	5.4E+09	1.6E+04	00:06
0.900	1.5E-06	4.3E+09	1.3E+04	00:07
1.000	1.2E-06	3.5E+09	1.1E+04	00:07
2.000	3.2E-07	9.1E+08	2.7E+03	00:15
4.000	8.6E-08	2.5E+08	7.4E+02	00:31
6.000	4.1E-08	1.2E+08	3.5E+02	00:47
8.000	2.4E-08	6.9E+07	2.1E+02	01:02

10.000	1.6E-08	4.7E+07	1.4E+02	01:18
20.000	5.0E-09	1.4E+07	4.3E+01	02:37
40.000	1.6E-09	4.6E+06	1.4E+01	05:14
60.000	8.4E-10	2.4E+06	7.2E+00	07:51
80.000	5.4E-10	1.5E+06	4.6E+00	10:28

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:25:40 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Infant Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Infant Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.12 m/s  
 Stability Class : B  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.035 km  
 Maximum TEDE : 8.13E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	7.7E-04	2.2E+12	6.5E+06	<00:01
0.100	2.4E-04	6.9E+11	2.1E+06	<00:01
0.200	6.6E-05	1.9E+11	5.7E+05	00:01
0.300	3.0E-05	8.5E+10	2.6E+05	00:02
0.400	1.7E-05	4.8E+10	1.5E+05	00:03
0.500	1.1E-05	3.1E+10	9.3E+04	00:03
0.600	7.6E-06	2.2E+10	6.5E+04	00:04
0.700	5.6E-06	1.6E+10	4.8E+04	00:05
0.800	4.3E-06	1.2E+10	3.7E+04	00:06
0.900	3.4E-06	9.8E+09	2.9E+04	00:07
1.000	2.8E-06	8.0E+09	2.4E+04	00:07
2.000	7.2E-07	2.1E+09	6.2E+03	00:15
4.000	1.9E-07	5.5E+08	1.7E+03	00:31
6.000	9.2E-08	2.6E+08	7.9E+02	00:47
8.000	5.5E-08	1.6E+08	4.7E+02	01:02

10.000	3.7E-08	1.0E+08	3.1E+02	01:18
20.000	1.1E-08	3.2E+07	9.6E+01	02:37
40.000	3.6E-09	1.0E+07	3.1E+01	05:14
60.000	1.9E-09	5.4E+06	1.6E+01	07:51
80.000	1.2E-09	3.4E+06	1.0E+01	10:28

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:25:55 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Infant Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Infant Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.09 m/s  
 Stability Class : C  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.053 km  
 Maximum TEDE : 7.97E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	3.3E-04	9.3E+11	2.5E+06	<00:01
0.100	4.6E-04	1.3E+12	3.9E+06	<00:01
0.200	1.4E-04	4.1E+11	1.2E+06	00:01
0.300	6.7E-05	1.9E+11	5.7E+05	00:02
0.400	3.8E-05	1.1E+11	3.3E+05	00:03
0.500	2.5E-05	7.1E+10	2.1E+05	00:03
0.600	1.8E-05	5.0E+10	1.5E+05	00:04
0.700	1.3E-05	3.7E+10	1.1E+05	00:05
0.800	1.0E-05	2.9E+10	8.7E+04	00:06
0.900	8.2E-06	2.3E+10	7.0E+04	00:07
1.000	6.7E-06	1.9E+10	5.7E+04	00:07
2.000	1.9E-06	5.3E+09	1.6E+04	00:15
4.000	5.7E-07	1.6E+09	4.8E+03	00:31
6.000	2.9E-07	8.4E+08	2.5E+03	00:47
8.000	1.9E-07	5.4E+08	1.6E+03	01:03

10.000	1.4E-07	3.9E+08	1.2E+03	01:19
20.000	5.3E-08	1.5E+08	4.5E+02	02:39
40.000	2.2E-08	6.4E+07	1.9E+02	05:18
60.000	1.4E-08	3.9E+07	1.2E+02	07:58
80.000	1.0E-08	2.8E+07	8.5E+01	10:37

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:26:13 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Infant Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Infant Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.04 m/s  
 Stability Class : D  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.072 km  
 Maximum TEDE : 8.05E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	5.6E-05	1.6E+11	3.3E+05	<00:01
0.100	6.9E-04	2.0E+12	5.9E+06	<00:01
0.200	2.7E-04	7.8E+11	2.3E+06	00:01
0.300	1.4E-04	4.0E+11	1.2E+06	00:02
0.400	8.5E-05	2.4E+11	7.3E+05	00:03
0.500	5.8E-05	1.6E+11	4.9E+05	00:04
0.600	4.2E-05	1.2E+11	3.6E+05	00:04
0.700	3.2E-05	9.2E+10	2.8E+05	00:05
0.800	2.6E-05	7.3E+10	2.2E+05	00:06
0.900	2.1E-05	6.0E+10	1.8E+05	00:07
1.000	1.8E-05	5.0E+10	1.5E+05	00:08
2.000	5.7E-06	1.6E+10	4.9E+04	00:16
4.000	2.0E-06	5.7E+09	1.7E+04	00:32
6.000	1.1E-06	3.1E+09	9.4E+03	00:49
8.000	7.4E-07	2.1E+09	6.3E+03	01:05

10.000	5.5E-07	1.6E+09	4.7E+03	01:21
20.000	2.2E-07	6.2E+08	1.8E+03	02:43
40.000	8.9E-08	2.5E+08	7.6E+02	05:27
60.000	5.3E-08	1.5E+08	4.6E+02	08:10
80.000	3.7E-08	1.1E+08	3.2E+02	10:54

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:26:29 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Infant Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Infant Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.84 m/s  
 Stability Class : E  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.14 km  
 Maximum TEDE : 5.97E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE		
		TIME-INTEGRATED AIR CONCENTRATION	GROUND SURFACE DEPOSITION	ARRIVAL TIME
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	1.0E-10	3.0E+05	4.8E-02	<00:01
0.100	4.4E-04	1.2E+12	3.6E+06	<00:01
0.200	5.1E-04	1.4E+12	4.3E+06	00:01
0.300	3.1E-04	8.8E+11	2.7E+06	00:02
0.400	2.0E-04	5.6E+11	1.7E+06	00:03
0.500	1.4E-04	3.9E+11	1.2E+06	00:04
0.600	9.9E-05	2.8E+11	8.5E+05	00:05
0.700	7.6E-05	2.2E+11	6.5E+05	00:06
0.800	6.0E-05	1.7E+11	5.2E+05	00:07
0.900	4.9E-05	1.4E+11	4.2E+05	00:08
1.000	4.1E-05	1.2E+11	3.5E+05	00:09
2.000	1.3E-05	3.7E+10	1.1E+05	00:18
4.000	4.5E-06	1.3E+10	3.9E+04	00:36
6.000	2.6E-06	7.4E+09	2.2E+04	00:54
8.000	1.8E-06	5.2E+09	1.6E+04	01:12

10.000	1.4E-06	4.0E+09	1.2E+04	01:30
20.000	6.3E-07	1.8E+09	5.4E+03	03:01
40.000	2.7E-07	7.6E+08	2.3E+03	06:02
60.000	1.5E-07	4.2E+08	1.3E+03	09:03
80.000	9.9E-08	2.8E+08	8.4E+02	12:04

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 3:26:44 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\Roof  
 Collapse under Snow\0038C Infant Mixture.mix (Mixture Scale Factor =  
 1.0000E+00)

0038C Infant Mixture

Effective Release Height : 6.00 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 1.66 m/s  
 Stability Class : F  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.28 km  
 Maximum TEDE : 5.10E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	1.6E-15	0.0E+00	<00:01
0.100	1.1E-05	3.2E+10	5.4E+04	00:01
0.200	4.0E-04	1.1E+12	3.3E+06	00:02
0.300	5.0E-04	1.4E+12	4.3E+06	00:03
0.400	4.2E-04	1.2E+12	3.6E+06	00:04
0.500	3.2E-04	9.2E+11	2.8E+06	00:05
0.600	2.5E-04	7.2E+11	2.2E+06	00:06
0.700	2.0E-04	5.7E+11	1.7E+06	00:07
0.800	1.6E-04	4.7E+11	1.4E+06	00:08
0.900	1.4E-04	3.9E+11	1.2E+06	00:09
1.000	1.1E-04	3.3E+11	9.8E+05	00:10
2.000	3.6E-05	1.0E+11	3.1E+05	00:20
4.000	1.2E-05	3.5E+10	1.0E+05	00:40
6.000	6.7E-06	1.9E+10	5.8E+04	01:00
8.000	4.6E-06	1.3E+10	3.9E+04	01:20

10.000	3.4E-06	9.8E+09	2.9E+04	01:40
20.000	1.2E-06	3.5E+09	1.1E+04	03:20
40.000	3.7E-07	1.0E+09	3.1E+03	06:41
60.000	1.4E-07	4.1E+08	1.2E+03	10:02
80.000	7.6E-08	2.2E+08	6.5E+02	13:22

**SEQUENCE 0024A**

Uncontrolled Fire, Complete Conflagration

HotSpot User Mixture Database  
 User Mixture Name : s\Jamie\Desktop\Base Adult Mixture.mix  
 0024A and 0024B Adult Mixture  
 Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	: HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.0000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.0000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.0000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.0000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.0000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.0000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.0000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.0000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.0000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.0000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.0000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.0000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.0000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.0000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.0000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.0000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	6.0000E+15
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.0000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.0000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.0000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.0000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.0000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.0000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.0000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.0000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.0000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.0000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.0000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.0000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.0000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.0000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.0000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.0000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.0000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.0000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.0000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.0000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 0.0000E+00
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot User Mixture Database  
 User Mixture Name : s\Jamie\Desktop\Base Child Mixture.mix  
 0024A and 0024B Child Mixture  
 Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	: HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.8000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.8000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.8000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.8000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.8000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.8000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.8000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.8000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.8000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.8000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.8000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.8000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.8000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.8000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.8000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.8000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.8000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.8000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.8000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.8000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.8000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.8000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.8000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.8000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	6.0000E+15
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.5000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.5000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.5000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.5000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.5000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.5000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.5000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.5000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.5000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.5000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.5000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.5000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.5000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.5000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.5000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.5000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.5000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.5000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.5000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.5000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 0.0000E+00
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Infant Mixture.mix

0024A and 0024B Infant Mixture

Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	: HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	8.0000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	8.0000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	8.0000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	8.0000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	8.0000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	8.0000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	8.0000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	8.0000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	8.0000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	8.0000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	8.0000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	8.0000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	8.0000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	8.0000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	8.0000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	8.0000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	8.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	8.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	8.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	8.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	8.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	8.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	8.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	8.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	6.0000E+15
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	5.3000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	5.3000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	5.3000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	5.3000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	5.3000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	5.3000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	5.3000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 5.3000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 5.3000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 5.3000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 5.3000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 5.3000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 5.3000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 5.3000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 5.3000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 5.3000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 5.3000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 5.3000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 5.3000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 5.3000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 5.3000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 5.3000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 5.3000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 5.3000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 0.0000E+00
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 5:54:33 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Adult Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Adult Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 2675 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 3.25 m/s  
 Stability Class : A  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 3.99E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	3.9E-05	4.7E+01	1.6E+06	<00:01
0.100	3.7E-05	1.3E+02	1.6E+06	<00:01
0.200	3.5E-05	4.5E+02	1.5E+06	00:01
0.300	3.3E-05	1.3E+03	1.4E+06	00:01
0.400	3.1E-05	3.6E+03	1.3E+06	00:02
0.500	2.9E-05	8.4E+03	1.2E+06	00:02
0.600	2.7E-05	1.8E+04	1.1E+06	00:03
0.700	2.5E-05	3.5E+04	1.1E+06	00:03
0.800	2.4E-05	6.4E+04	9.9E+05	00:04

0.900	2.2E-05	1.1E+05	9.3E+05	00:04
1.000	2.1E-05	1.8E+05	8.8E+05	00:05
2.000	1.2E-05	3.1E+06	5.1E+05	00:10
4.000	4.9E-06	1.3E+07	2.0E+05	00:20
6.000	2.2E-06	1.1E+07	8.6E+04	00:30
8.000	1.0E-06	6.5E+06	4.0E+04	00:40
10.000	4.8E-07	3.4E+06	1.9E+04	00:51
20.000	1.4E-08	8.6E+04	5.7E+02	01:42
40.000	2.0E-11	7.3E+01	8.2E-01	03:24
60.000	3.4E-14	8.7E-02	1.4E-03	05:07
80.000	6.2E-17	1.2E-04	2.5E-06	06:49

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 5:55:31 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Adult Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Adult Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 2675 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 3.25 m/s  
 Stability Class : B  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 4.00E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	4.0E-05	3.9E+01	1.6E+06	<00:01
0.100	3.8E-05	7.1E+01	1.6E+06	<00:01
0.200	3.6E-05	1.6E+02	1.5E+06	00:01
0.300	3.4E-05	3.4E+02	1.4E+06	00:01
0.400	3.2E-05	6.7E+02	1.3E+06	00:02
0.500	3.0E-05	1.3E+03	1.3E+06	00:02
0.600	2.9E-05	2.2E+03	1.2E+06	00:03
0.700	2.7E-05	3.8E+03	1.1E+06	00:03
0.800	2.6E-05	6.3E+03	1.1E+06	00:04

0.900	2.5E-05	1.0E+04	1.0E+06	00:04
1.000	2.3E-05	1.6E+04	9.7E+05	00:05
2.000	1.4E-05	3.1E+05	5.9E+05	00:10
4.000	5.9E-06	3.1E+06	2.4E+05	00:20
6.000	2.7E-06	5.3E+06	1.1E+05	00:30
8.000	1.3E-06	4.7E+06	5.1E+04	00:40
10.000	6.1E-07	3.1E+06	2.4E+04	00:51
20.000	1.9E-08	1.4E+05	7.6E+02	01:42
40.000	2.8E-11	1.5E+02	1.1E+00	03:24
60.000	4.7E-14	1.9E-01	1.9E-03	05:07
80.000	8.5E-17	2.6E-04	3.4E-06	06:49

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 5:55:47 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Adult Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Adult Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 2336 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 3.80 m/s  
 Stability Class : C  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 3.93E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	3.9E-05	3.5E+01	1.6E+06	<00:01
0.100	3.8E-05	4.2E+01	1.6E+06	<00:01
0.200	3.6E-05	5.5E+01	1.5E+06	<00:01
0.300	3.4E-05	7.1E+01	1.4E+06	00:01
0.400	3.3E-05	9.1E+01	1.4E+06	00:01
0.500	3.1E-05	1.2E+02	1.3E+06	00:02
0.600	3.0E-05	1.5E+02	1.2E+06	00:02
0.700	2.9E-05	1.8E+02	1.2E+06	00:03
0.800	2.8E-05	2.2E+02	1.1E+06	00:03

0.900	2.6E-05	2.8E+02	1.1E+06	00:03
1.000	2.5E-05	3.4E+02	1.1E+06	00:04
2.000	1.7E-05	1.8E+03	7.0E+05	00:08
4.000	7.9E-06	1.4E+04	3.3E+05	00:17
6.000	3.9E-06	4.5E+04	1.6E+05	00:26
8.000	2.0E-06	8.2E+04	8.4E+04	00:35
10.000	1.1E-06	1.1E+05	4.5E+04	00:43
20.000	5.3E-08	5.3E+04	2.2E+03	01:27
40.000	1.9E-10	7.2E+02	7.7E+00	02:55
60.000	8.0E-13	4.6E+00	3.2E-02	04:23
80.000	3.5E-15	2.4E-02	1.4E-04	05:51

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 5:56:08 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Adult Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Adult Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 1893 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 4.83 m/s  
 Stability Class : D  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 3.82E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	3.8E-05	1.3E+01	1.6E+06	<00:01
0.100	3.7E-05	1.3E+01	1.5E+06	<00:01
0.200	3.5E-05	1.4E+01	1.5E+06	<00:01
0.300	3.4E-05	1.4E+01	1.4E+06	00:01
0.400	3.3E-05	1.4E+01	1.4E+06	00:01
0.500	3.2E-05	1.4E+01	1.3E+06	00:01
0.600	3.1E-05	1.4E+01	1.3E+06	00:02
0.700	3.0E-05	1.4E+01	1.2E+06	00:02
0.800	2.8E-05	1.5E+01	1.2E+06	00:02

0.900	2.8E-05	1.5E+01	1.1E+06	00:03
1.000	2.7E-05	1.5E+01	1.1E+06	00:03
2.000	1.9E-05	1.7E+01	7.9E+05	00:06
4.000	1.0E-05	2.2E+01	4.2E+05	00:13
6.000	5.8E-06	2.6E+01	2.4E+05	00:20
8.000	3.4E-06	3.1E+01	1.4E+05	00:27
10.000	2.0E-06	3.6E+01	8.3E+04	00:34
20.000	1.7E-07	4.1E+01	7.2E+03	01:09
40.000	1.9E-09	1.0E+01	7.8E+01	02:18
60.000	2.3E-11	7.9E-01	9.7E-01	03:27
80.000	3.2E-13	3.5E-02	1.3E-02	04:36

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 5:56:24 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Adult Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Adult Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 299 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 7.23 m/s  
 Stability Class : E  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 7.51E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	6.7E-04	2.3E-02	2.8E+07	<00:01
0.100	5.0E-04	1.7E-02	2.1E+07	<00:01
0.200	3.6E-04	1.2E-02	1.5E+07	<00:01
0.300	2.8E-04	9.4E-03	1.2E+07	<00:01
0.400	2.3E-04	7.7E-03	9.4E+06	<00:01
0.500	1.9E-04	6.5E-03	8.0E+06	00:01
0.600	1.7E-04	5.6E-03	6.9E+06	00:01
0.700	1.4E-04	4.9E-03	6.0E+06	00:01
0.800	1.3E-04	4.4E-03	5.3E+06	00:01

0.900	1.2E-04	3.9E-03	4.8E+06	00:02
1.000	1.0E-04	3.5E-03	4.3E+06	00:02
2.000	5.1E-05	2.3E-01	2.1E+06	00:04
4.000	2.2E-05	1.1E+04	9.1E+05	00:09
6.000	1.2E-05	1.8E+05	5.0E+05	00:13
8.000	7.2E-06	5.3E+05	3.0E+05	00:18
10.000	4.7E-06	8.1E+05	1.9E+05	00:23
20.000	7.2E-07	6.4E+05	3.0E+04	00:46
40.000	2.9E-08	5.4E+04	1.2E+03	01:32
60.000	1.5E-09	3.4E+03	5.9E+01	02:18
80.000	7.7E-11	2.0E+02	3.2E+00	03:04

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 5:56:50 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Adult Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Adult Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 211 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 11.76 m/s  
 Stability Class : F  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 4.71E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	4.4E-04	1.5E-02	1.8E+07	<00:01
0.100	3.5E-04	1.2E-02	1.5E+07	<00:01
0.200	2.7E-04	9.2E-03	1.1E+07	<00:01
0.300	2.2E-04	7.5E-03	9.2E+06	<00:01
0.400	1.9E-04	6.3E-03	7.8E+06	<00:01
0.500	1.6E-04	5.5E-03	6.7E+06	<00:01
0.600	1.4E-04	4.8E-03	5.9E+06	<00:01
0.700	1.3E-04	4.3E-03	5.3E+06	<00:01
0.800	1.1E-04	3.9E-03	4.7E+06	00:01

0.900	1.0E-04	3.5E-03	4.3E+06	00:01
1.000	9.5E-05	3.2E-03	4.0E+06	00:01
2.000	5.1E-05	1.7E-03	2.1E+06	00:02
4.000	2.4E-05	4.4E+00	1.0E+06	00:05
6.000	1.5E-05	4.0E+02	6.2E+05	00:08
8.000	1.0E-05	3.1E+03	4.2E+05	00:11
10.000	7.3E-06	9.2E+03	3.0E+05	00:14
20.000	1.9E-06	3.8E+04	8.0E+04	00:28
40.000	2.3E-07	1.7E+04	9.5E+03	00:56
60.000	3.3E-08	3.6E+03	1.4E+03	01:25
80.000	5.1E-09	7.0E+02	2.1E+02	01:53

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 5:57:41 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Child Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Child Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 2675 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 3.25 m/s  
 Stability Class : A  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 4.71E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	4.6E-05	4.7E+01	1.6E+06	<00:01
0.100	4.4E-05	1.3E+02	1.6E+06	<00:01
0.200	4.1E-05	4.5E+02	1.5E+06	00:01
0.300	3.9E-05	1.3E+03	1.4E+06	00:01
0.400	3.6E-05	3.6E+03	1.3E+06	00:02
0.500	3.4E-05	8.4E+03	1.2E+06	00:02
0.600	3.2E-05	1.8E+04	1.1E+06	00:03
0.700	3.0E-05	3.5E+04	1.1E+06	00:03
0.800	2.8E-05	6.4E+04	9.9E+05	00:04

0.900	2.6E-05	1.1E+05	9.3E+05	00:04
1.000	2.5E-05	1.8E+05	8.8E+05	00:05
2.000	1.5E-05	3.1E+06	5.1E+05	00:10
4.000	5.8E-06	1.3E+07	2.0E+05	00:20
6.000	2.6E-06	1.1E+07	8.6E+04	00:30
8.000	1.2E-06	6.5E+06	4.0E+04	00:40
10.000	5.6E-07	3.4E+06	1.9E+04	00:51
20.000	1.7E-08	8.6E+04	5.7E+02	01:42
40.000	2.4E-11	7.3E+01	8.2E-01	03:24
60.000	4.0E-14	8.7E-02	1.4E-03	05:07
80.000	7.3E-17	1.2E-04	2.5E-06	06:49

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 5:58:02 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Child Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Child Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 2675 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 3.25 m/s  
 Stability Class : B  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 4.72E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	4.7E-05	3.9E+01	1.6E+06	<00:01
0.100	4.5E-05	7.1E+01	1.6E+06	<00:01
0.200	4.2E-05	1.6E+02	1.5E+06	00:01
0.300	4.0E-05	3.4E+02	1.4E+06	00:01
0.400	3.8E-05	6.7E+02	1.3E+06	00:02
0.500	3.6E-05	1.3E+03	1.3E+06	00:02
0.600	3.4E-05	2.2E+03	1.2E+06	00:03
0.700	3.2E-05	3.8E+03	1.1E+06	00:03
0.800	3.1E-05	6.3E+03	1.1E+06	00:04

0.900	2.9E-05	1.0E+04	1.0E+06	00:04
1.000	2.8E-05	1.6E+04	9.7E+05	00:05
2.000	1.7E-05	3.1E+05	5.9E+05	00:10
4.000	7.0E-06	3.1E+06	2.4E+05	00:20
6.000	3.1E-06	5.3E+06	1.1E+05	00:30
8.000	1.5E-06	4.7E+06	5.1E+04	00:40
10.000	7.2E-07	3.1E+06	2.4E+04	00:51
20.000	2.3E-08	1.4E+05	7.6E+02	01:42
40.000	3.3E-11	1.5E+02	1.1E+00	03:24
60.000	5.5E-14	1.9E-01	1.9E-03	05:07
80.000	1.0E-16	2.6E-04	3.4E-06	06:49

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 5:58:17 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Child Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Child Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 2336 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 3.80 m/s  
 Stability Class : C  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 4.64E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	4.6E-05	3.5E+01	1.6E+06	<00:01
0.100	4.4E-05	4.2E+01	1.6E+06	<00:01
0.200	4.2E-05	5.5E+01	1.5E+06	<00:01
0.300	4.1E-05	7.1E+01	1.4E+06	00:01
0.400	3.9E-05	9.1E+01	1.4E+06	00:01
0.500	3.7E-05	1.2E+02	1.3E+06	00:02
0.600	3.6E-05	1.5E+02	1.2E+06	00:02
0.700	3.4E-05	1.8E+02	1.2E+06	00:03
0.800	3.3E-05	2.2E+02	1.1E+06	00:03

0.900	3.1E-05	2.8E+02	1.1E+06	00:03
1.000	3.0E-05	3.4E+02	1.1E+06	00:04
2.000	2.0E-05	1.8E+03	7.0E+05	00:08
4.000	9.3E-06	1.4E+04	3.3E+05	00:17
6.000	4.6E-06	4.5E+04	1.6E+05	00:26
8.000	2.4E-06	8.2E+04	8.4E+04	00:35
10.000	1.3E-06	1.1E+05	4.5E+04	00:43
20.000	6.3E-08	5.3E+04	2.2E+03	01:27
40.000	2.3E-10	7.2E+02	7.7E+00	02:55
60.000	9.4E-13	4.6E+00	3.2E-02	04:23
80.000	4.2E-15	2.4E-02	1.4E-04	05:51

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 5:58:35 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Child Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Child Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 1893 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 4.83 m/s  
 Stability Class : D  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 4.51E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	4.5E-05	1.3E+01	1.6E+06	<00:01
0.100	4.4E-05	1.3E+01	1.5E+06	<00:01
0.200	4.2E-05	1.4E+01	1.5E+06	<00:01
0.300	4.0E-05	1.4E+01	1.4E+06	00:01
0.400	3.9E-05	1.4E+01	1.4E+06	00:01
0.500	3.7E-05	1.4E+01	1.3E+06	00:01
0.600	3.6E-05	1.4E+01	1.3E+06	00:02
0.700	3.5E-05	1.4E+01	1.2E+06	00:02
0.800	3.4E-05	1.5E+01	1.2E+06	00:02

0.900	3.2E-05	1.5E+01	1.1E+06	00:03
1.000	3.1E-05	1.5E+01	1.1E+06	00:03
2.000	2.2E-05	1.7E+01	7.9E+05	00:06
4.000	1.2E-05	2.2E+01	4.2E+05	00:13
6.000	6.8E-06	2.6E+01	2.4E+05	00:20
8.000	4.0E-06	3.1E+01	1.4E+05	00:27
10.000	2.4E-06	3.6E+01	8.3E+04	00:34
20.000	2.1E-07	4.1E+01	7.2E+03	01:09
40.000	2.2E-09	1.0E+01	7.8E+01	02:18
60.000	2.8E-11	7.9E-01	9.7E-01	03:27
80.000	3.7E-13	3.5E-02	1.3E-02	04:36

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 5:58:48 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Child Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Child Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 299 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 7.23 m/s  
 Stability Class : E  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 8.87E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	8.0E-04	2.3E-02	2.8E+07	<00:01
0.100	5.8E-04	1.7E-02	2.1E+07	<00:01
0.200	4.2E-04	1.2E-02	1.5E+07	<00:01
0.300	3.3E-04	9.4E-03	1.2E+07	<00:01
0.400	2.7E-04	7.7E-03	9.4E+06	<00:01
0.500	2.3E-04	6.5E-03	8.0E+06	00:01
0.600	1.9E-04	5.6E-03	6.9E+06	00:01
0.700	1.7E-04	4.9E-03	6.0E+06	00:01
0.800	1.5E-04	4.4E-03	5.3E+06	00:01

0.900	1.4E-04	3.9E-03	4.8E+06	00:02
1.000	1.2E-04	3.5E-03	4.3E+06	00:02
2.000	6.1E-05	2.2E-01	2.1E+06	00:04
4.000	2.6E-05	1.1E+04	9.1E+05	00:09
6.000	1.4E-05	1.8E+05	5.0E+05	00:13
8.000	8.6E-06	5.2E+05	3.0E+05	00:18
10.000	5.5E-06	8.1E+05	1.9E+05	00:23
20.000	8.5E-07	6.4E+05	3.0E+04	00:46
40.000	3.5E-08	5.4E+04	1.2E+03	01:32
60.000	1.7E-09	3.4E+03	5.9E+01	02:18
80.000	9.1E-11	2.0E+02	3.2E+00	03:04

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 5:59:05 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Child Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Child Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 211 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 11.76 m/s  
 Stability Class : F  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 5.56E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED		
km	(Sv)	AIR CONCENTRATION	(kBq/m2)	(hour:min)
		(Bq-sec)/m3		
0.030	5.2E-04	1.5E-02	1.8E+07	<00:01
0.100	4.1E-04	1.2E-02	1.5E+07	<00:01
0.200	3.2E-04	9.2E-03	1.1E+07	<00:01
0.300	2.6E-04	7.5E-03	9.2E+06	<00:01
0.400	2.2E-04	6.3E-03	7.8E+06	<00:01
0.500	1.9E-04	5.5E-03	6.7E+06	<00:01
0.600	1.7E-04	4.8E-03	5.9E+06	<00:01
0.700	1.5E-04	4.3E-03	5.3E+06	<00:01
0.800	1.3E-04	3.9E-03	4.7E+06	00:01

0.900	1.2E-04	3.5E-03	4.3E+06	00:01
1.000	1.1E-04	3.2E-03	4.0E+06	00:01
2.000	6.0E-05	1.7E-03	2.1E+06	00:02
4.000	2.9E-05	4.3E+00	1.0E+06	00:05
6.000	1.8E-05	3.9E+02	6.2E+05	00:08
8.000	1.2E-05	3.0E+03	4.2E+05	00:11
10.000	8.6E-06	9.1E+03	3.0E+05	00:14
20.000	2.3E-06	3.8E+04	8.0E+04	00:28
40.000	2.7E-07	1.6E+04	9.5E+03	00:56
60.000	3.9E-08	3.6E+03	1.4E+03	01:25
80.000	6.0E-09	7.0E+02	2.1E+02	01:53

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 5:59:53 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Infant Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Infant Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 2675 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 3.25 m/s  
 Stability Class : A  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 3.47E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	3.4E-05	4.7E+01	1.6E+06	<00:01
0.100	3.3E-05	1.3E+02	1.6E+06	<00:01
0.200	3.0E-05	4.5E+02	1.5E+06	00:01
0.300	2.8E-05	1.3E+03	1.4E+06	00:01
0.400	2.7E-05	3.6E+03	1.3E+06	00:02
0.500	2.5E-05	8.4E+03	1.2E+06	00:02
0.600	2.3E-05	1.8E+04	1.1E+06	00:03
0.700	2.2E-05	3.5E+04	1.1E+06	00:03
0.800	2.1E-05	6.4E+04	9.9E+05	00:04

0.900	2.0E-05	1.1E+05	9.3E+05	00:04
1.000	1.8E-05	1.8E+05	8.8E+05	00:05
2.000	1.1E-05	3.1E+06	5.1E+05	00:10
4.000	4.3E-06	1.3E+07	2.0E+05	00:20
6.000	1.9E-06	1.1E+07	8.6E+04	00:30
8.000	8.7E-07	6.5E+06	4.0E+04	00:40
10.000	4.2E-07	3.4E+06	1.9E+04	00:51
20.000	1.3E-08	8.6E+04	5.7E+02	01:42
40.000	1.8E-11	7.3E+01	8.2E-01	03:24
60.000	3.0E-14	8.7E-02	1.4E-03	05:07
80.000	5.4E-17	1.2E-04	2.5E-06	06:49

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:00:14 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Infant Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Infant Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 2675 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 3.25 m/s  
 Stability Class : B  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 3.48E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	3.4E-05	3.9E+01	1.6E+06	<00:01
0.100	3.3E-05	7.1E+01	1.6E+06	<00:01
0.200	3.1E-05	1.6E+02	1.5E+06	00:01
0.300	2.9E-05	3.4E+02	1.4E+06	00:01
0.400	2.8E-05	6.7E+02	1.3E+06	00:02
0.500	2.6E-05	1.3E+03	1.3E+06	00:02
0.600	2.5E-05	2.2E+03	1.2E+06	00:03
0.700	2.4E-05	3.8E+03	1.1E+06	00:03
0.800	2.2E-05	6.3E+03	1.1E+06	00:04

0.900	2.1E-05	1.0E+04	1.0E+06	00:04
1.000	2.0E-05	1.6E+04	9.7E+05	00:05
2.000	1.2E-05	3.1E+05	5.9E+05	00:10
4.000	5.1E-06	3.1E+06	2.4E+05	00:20
6.000	2.3E-06	5.3E+06	1.1E+05	00:30
8.000	1.1E-06	4.7E+06	5.1E+04	00:40
10.000	5.3E-07	3.1E+06	2.4E+04	00:51
20.000	1.7E-08	1.4E+05	7.6E+02	01:42
40.000	2.4E-11	1.5E+02	1.1E+00	03:24
60.000	4.1E-14	1.9E-01	1.9E-03	05:07
80.000	7.4E-17	2.6E-04	3.4E-06	06:49

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:00:28 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Infant Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Infant Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 2336 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 3.80 m/s  
 Stability Class : C  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 3.42E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	3.4E-05	3.5E+01	1.6E+06	<00:01
0.100	3.3E-05	4.2E+01	1.6E+06	<00:01
0.200	3.1E-05	5.5E+01	1.5E+06	<00:01
0.300	3.0E-05	7.1E+01	1.4E+06	00:01
0.400	2.9E-05	9.1E+01	1.4E+06	00:01
0.500	2.7E-05	1.2E+02	1.3E+06	00:02
0.600	2.6E-05	1.5E+02	1.2E+06	00:02
0.700	2.5E-05	1.8E+02	1.2E+06	00:03
0.800	2.4E-05	2.2E+02	1.1E+06	00:03

0.900	2.3E-05	2.8E+02	1.1E+06	00:03
1.000	2.2E-05	3.4E+02	1.1E+06	00:04
2.000	1.5E-05	1.8E+03	7.0E+05	00:08
4.000	6.9E-06	1.4E+04	3.3E+05	00:17
6.000	3.4E-06	4.5E+04	1.6E+05	00:26
8.000	1.8E-06	8.2E+04	8.4E+04	00:35
10.000	9.3E-07	1.1E+05	4.5E+04	00:43
20.000	4.6E-08	5.3E+04	2.2E+03	01:27
40.000	1.7E-10	7.2E+02	7.7E+00	02:55
60.000	6.9E-13	4.6E+00	3.2E-02	04:23
80.000	3.1E-15	2.4E-02	1.4E-04	05:51

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:00:42 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Infant Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Infant Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 1893 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 4.83 m/s  
 Stability Class : D  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 3.32E-05 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	3.3E-05	1.3E+01	1.6E+06	<00:01
0.100	3.2E-05	1.3E+01	1.5E+06	<00:01
0.200	3.1E-05	1.4E+01	1.5E+06	<00:01
0.300	3.0E-05	1.4E+01	1.4E+06	00:01
0.400	2.9E-05	1.4E+01	1.4E+06	00:01
0.500	2.8E-05	1.4E+01	1.3E+06	00:01
0.600	2.7E-05	1.4E+01	1.3E+06	00:02
0.700	2.6E-05	1.4E+01	1.2E+06	00:02
0.800	2.5E-05	1.5E+01	1.2E+06	00:02

0.900	2.4E-05	1.5E+01	1.1E+06	00:03
1.000	2.3E-05	1.5E+01	1.1E+06	00:03
2.000	1.6E-05	1.7E+01	7.9E+05	00:06
4.000	8.9E-06	2.1E+01	4.2E+05	00:13
6.000	5.0E-06	2.6E+01	2.4E+05	00:20
8.000	2.9E-06	3.1E+01	1.4E+05	00:27
10.000	1.7E-06	3.6E+01	8.3E+04	00:34
20.000	1.5E-07	4.1E+01	7.2E+03	01:09
40.000	1.6E-09	1.0E+01	7.8E+01	02:18
60.000	2.0E-11	7.9E-01	9.7E-01	03:27
80.000	2.7E-13	3.5E-02	1.3E-02	04:36

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:00:55 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Infant Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Infant Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 299 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 7.23 m/s  
 Stability Class : E  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 6.54E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	5.9E-04	2.3E-02	2.8E+07	<00:01
0.100	4.3E-04	1.7E-02	2.1E+07	<00:01
0.200	3.1E-04	1.2E-02	1.5E+07	<00:01
0.300	2.4E-04	9.4E-03	1.2E+07	<00:01
0.400	2.0E-04	7.7E-03	9.4E+06	<00:01
0.500	1.7E-04	6.5E-03	8.0E+06	00:01
0.600	1.4E-04	5.6E-03	6.9E+06	00:01
0.700	1.3E-04	4.9E-03	6.0E+06	00:01
0.800	1.1E-04	4.4E-03	5.3E+06	00:01

0.900	1.0E-04	3.9E-03	4.8E+06	00:02
1.000	9.1E-05	3.5E-03	4.3E+06	00:02
2.000	4.5E-05	2.2E-01	2.1E+06	00:04
4.000	1.9E-05	1.1E+04	9.1E+05	00:09
6.000	1.0E-05	1.8E+05	5.0E+05	00:13
8.000	6.3E-06	5.2E+05	3.0E+05	00:18
10.000	4.1E-06	8.1E+05	1.9E+05	00:23
20.000	6.3E-07	6.4E+05	3.0E+04	00:46
40.000	2.6E-08	5.4E+04	1.2E+03	01:32
60.000	1.3E-09	3.4E+03	5.9E+01	02:18
80.000	6.7E-11	2.0E+02	3.2E+00	03:04

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:01:11 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Infant Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Infant Mixture

Heat Emission : 2.08E+08 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 6 m  
 Effective Release Height : 211 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 11.76 m/s  
 Stability Class : F  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 4.10E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	3.8E-04	1.5E-02	1.8E+07	<00:01
0.100	3.0E-04	1.2E-02	1.5E+07	<00:01
0.200	2.4E-04	9.2E-03	1.1E+07	<00:01
0.300	1.9E-04	7.5E-03	9.2E+06	<00:01
0.400	1.6E-04	6.3E-03	7.8E+06	<00:01
0.500	1.4E-04	5.5E-03	6.7E+06	<00:01
0.600	1.2E-04	4.8E-03	5.9E+06	<00:01
0.700	1.1E-04	4.3E-03	5.3E+06	<00:01
0.800	9.9E-05	3.9E-03	4.7E+06	00:01

0.900	9.0E-05	3.5E-03	4.3E+06	00:01
1.000	8.3E-05	3.2E-03	4.0E+06	00:01
2.000	4.4E-05	1.7E-03	2.1E+06	00:02
4.000	2.1E-05	4.2E+00	1.0E+06	00:05
6.000	1.3E-05	3.9E+02	6.2E+05	00:08
8.000	8.8E-06	3.0E+03	4.2E+05	00:11
10.000	6.3E-06	9.0E+03	3.0E+05	00:14
20.000	1.7E-06	3.7E+04	8.0E+04	00:28
40.000	2.0E-07	1.6E+04	9.5E+03	00:56
60.000	2.9E-08	3.6E+03	1.4E+03	01:25
80.000	4.4E-09	6.9E+02	2.1E+02	01:53

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:05:40 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Adult Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Adult Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 471 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 2.88 m/s  
 Stability Class : A  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 2.50E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	2.4E-04	1.2E+04	9.8E+06	<00:01
0.100	2.0E-04	5.7E+05	8.1E+06	<00:01
0.200	1.6E-04	1.4E+07	6.5E+06	00:01
0.300	1.3E-04	8.8E+07	5.3E+06	00:01
0.400	1.1E-04	2.6E+08	4.5E+06	00:02
0.500	9.7E-05	5.1E+08	3.9E+06	00:02
0.600	8.7E-05	7.8E+08	3.3E+06	00:03
0.700	7.9E-05	1.0E+09	2.9E+06	00:04
0.800	7.3E-05	1.2E+09	2.6E+06	00:04

0.900	6.7E-05	1.4E+09	2.3E+06	00:05
1.000	6.2E-05	1.4E+09	2.1E+06	00:05
2.000	2.9E-05	9.1E+08	8.9E+05	00:11
4.000	7.8E-06	2.0E+08	2.6E+05	00:23
6.000	2.7E-06	5.5E+07	9.4E+04	00:34
8.000	1.0E-06	1.7E+07	3.8E+04	00:46
10.000	4.3E-07	6.0E+06	1.6E+04	00:57
20.000	7.9E-09	6.0E+04	3.1E+02	01:55
40.000	4.8E-12	1.9E+01	1.9E-01	03:51
60.000	3.6E-15	9.7E-03	1.5E-04	05:47
80.000	3.0E-18	6.0E-06	1.2E-07	07:42

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:06:14 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Adult Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Adult Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 471 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 2.88 m/s  
 Stability Class : B  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 2.52E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	2.4E-04	4.8E+03	1.0E+07	<00:01
0.100	2.1E-04	7.6E+04	8.6E+06	<00:01
0.200	1.7E-04	1.2E+06	7.2E+06	00:01
0.300	1.5E-04	7.8E+06	6.1E+06	00:01
0.400	1.3E-04	2.9E+07	5.3E+06	00:02
0.500	1.1E-04	7.5E+07	4.6E+06	00:02
0.600	9.9E-05	1.5E+08	4.0E+06	00:03
0.700	8.9E-05	2.5E+08	3.6E+06	00:04
0.800	8.1E-05	3.7E+08	3.2E+06	00:04

0.900	7.4E-05	5.0E+08	2.9E+06	00:05
1.000	6.8E-05	6.2E+08	2.6E+06	00:05
2.000	3.6E-05	9.7E+08	1.2E+06	00:11
4.000	1.1E-05	3.4E+08	3.5E+05	00:23
6.000	3.9E-06	1.1E+08	1.3E+05	00:34
8.000	1.5E-06	3.5E+07	5.1E+04	00:46
10.000	6.2E-07	1.3E+07	2.2E+04	00:57
20.000	1.1E-08	1.3E+05	4.2E+02	01:55
40.000	6.7E-12	4.3E+01	2.6E-01	03:51
60.000	5.0E-15	2.2E-02	2.0E-04	05:47
80.000	4.1E-18	1.4E-05	1.6E-07	07:42

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:06:28 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Adult Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Adult Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 429 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 3.20 m/s  
 Stability Class : C  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 2.50E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	2.4E-04	3.0E+03	1.0E+07	<00:01
0.100	2.2E-04	1.9E+04	9.0E+06	<00:01
0.200	1.9E-04	1.5E+05	7.7E+06	00:01
0.300	1.6E-04	7.6E+05	6.7E+06	00:01
0.400	1.4E-04	2.6E+06	5.9E+06	00:02
0.500	1.3E-04	7.0E+06	5.3E+06	00:02
0.600	1.1E-04	1.5E+07	4.7E+06	00:03
0.700	1.0E-04	2.9E+07	4.3E+06	00:03
0.800	9.4E-05	4.9E+07	3.9E+06	00:04

0.900	8.6E-05	7.6E+07	3.5E+06	00:04
1.000	7.9E-05	1.1E+08	3.2E+06	00:05
2.000	4.1E-05	4.8E+08	1.5E+06	00:10
4.000	1.6E-05	4.5E+08	5.0E+05	00:20
6.000	6.6E-06	2.2E+08	2.0E+05	00:31
8.000	2.9E-06	9.8E+07	8.7E+04	00:41
10.000	1.3E-06	4.4E+07	4.0E+04	00:52
20.000	3.4E-08	9.9E+05	1.1E+03	01:44
40.000	4.0E-11	9.3E+02	1.4E+00	03:28
60.000	5.9E-14	1.2E+00	2.1E-03	05:12
80.000	9.5E-17	1.7E-03	3.4E-06	06:56

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:06:53 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Adult Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Adult Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 370 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 3.78 m/s  
 Stability Class : D  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 2.46E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	2.4E-04	1.6E+03	9.9E+06	<00:01
0.100	2.2E-04	2.9E+03	9.0E+06	<00:01
0.200	1.9E-04	6.5E+03	7.9E+06	<00:01
0.300	1.7E-04	1.3E+04	7.1E+06	00:01
0.400	1.5E-04	2.5E+04	6.3E+06	00:01
0.500	1.4E-04	4.5E+04	5.7E+06	00:02
0.600	1.2E-04	7.7E+04	5.2E+06	00:02
0.700	1.1E-04	1.2E+05	4.7E+06	00:03
0.800	1.0E-04	1.9E+05	4.3E+06	00:03

0.900	9.6E-05	2.8E+05	4.0E+06	00:03
1.000	8.9E-05	4.1E+05	3.7E+06	00:04
2.000	4.6E-05	4.4E+06	1.9E+06	00:08
4.000	1.7E-05	2.6E+07	7.0E+05	00:17
6.000	7.7E-06	3.9E+07	3.1E+05	00:26
8.000	3.9E-06	3.8E+07	1.5E+05	00:35
10.000	2.0E-06	2.9E+07	7.5E+04	00:44
20.000	1.0E-07	3.0E+06	3.3E+03	01:28
40.000	3.6E-10	1.3E+04	1.0E+01	02:56
60.000	1.4E-12	5.2E+01	4.0E-02	04:24
80.000	5.8E-15	2.1E-01	1.7E-04	05:52

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:07:10 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Adult Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Adult Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 102 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 4.96 m/s  
 Stability Class : E  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 1.09E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.026 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	9.8E-04	3.3E-02	4.1E+07	<00:01
0.100	7.2E-04	2.9E-02	3.0E+07	<00:01
0.200	5.1E-04	3.7E+01	2.1E+07	<00:01
0.300	4.0E-04	7.7E+03	1.7E+07	00:01
0.400	3.2E-04	2.4E+05	1.3E+07	00:01
0.500	2.7E-04	2.4E+06	1.1E+07	00:01
0.600	2.3E-04	1.3E+07	9.6E+06	00:02
0.700	2.0E-04	4.2E+07	8.4E+06	00:02
0.800	1.8E-04	1.0E+08	7.4E+06	00:02

0.900	1.6E-04	2.1E+08	6.6E+06	00:03
1.000	1.5E-04	3.6E+08	5.9E+06	00:03
2.000	8.7E-05	2.6E+09	2.7E+06	00:06
4.000	4.8E-05	2.8E+09	1.0E+06	00:13
6.000	2.6E-05	1.8E+09	5.0E+05	00:20
8.000	1.5E-05	1.1E+09	2.6E+05	00:26
10.000	8.6E-06	6.3E+08	1.5E+05	00:33
20.000	7.1E-07	5.4E+07	1.2E+04	01:07
40.000	7.8E-09	5.9E+05	1.3E+02	02:14
60.000	1.0E-10	7.7E+03	1.7E+00	03:21
80.000	1.5E-12	1.1E+02	2.4E-02	04:28

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:07:31 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Adult Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Adult Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 71 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 6.48 m/s  
 Stability Class : F  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 8.54E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	7.9E-04	1.6E+02	3.3E+07	<00:01
0.100	6.3E-04	2.1E+03	2.6E+07	<00:01
0.200	4.9E-04	3.7E+04	2.0E+07	<00:01
0.300	3.9E-04	3.1E+05	1.6E+07	<00:01
0.400	3.3E-04	1.6E+06	1.4E+07	00:01
0.500	2.8E-04	5.5E+06	1.2E+07	00:01
0.600	2.5E-04	1.5E+07	1.0E+07	00:01
0.700	2.2E-04	3.3E+07	9.1E+06	00:01
0.800	2.0E-04	6.5E+07	8.1E+06	00:02

0.900	1.8E-04	1.1E+08	7.4E+06	00:02
1.000	1.6E-04	1.8E+08	6.7E+06	00:02
2.000	9.2E-05	1.4E+09	3.3E+06	00:05
4.000	5.5E-05	2.7E+09	1.4E+06	00:10
6.000	3.6E-05	2.3E+09	7.5E+05	00:15
8.000	2.4E-05	1.6E+09	4.4E+05	00:20
10.000	1.6E-05	1.1E+09	2.7E+05	00:25
20.000	2.3E-06	1.8E+08	3.5E+04	00:51
40.000	6.7E-08	5.5E+06	9.8E+02	01:42
60.000	2.3E-09	1.9E+05	3.3E+01	02:34
80.000	8.7E-11	7.2E+03	1.2E+00	03:25

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:08:10 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Child Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Child Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 471 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 2.88 m/s  
 Stability Class : A  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 2.95E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	2.8E-04	1.2E+04	9.8E+06	<00:01
0.100	2.3E-04	5.7E+05	8.1E+06	<00:01
0.200	1.8E-04	1.4E+07	6.5E+06	00:01
0.300	1.5E-04	8.7E+07	5.3E+06	00:01
0.400	1.3E-04	2.6E+08	4.5E+06	00:02
0.500	1.1E-04	5.1E+08	3.9E+06	00:02
0.600	1.0E-04	7.8E+08	3.3E+06	00:03
0.700	9.3E-05	1.0E+09	2.9E+06	00:04
0.800	8.6E-05	1.2E+09	2.6E+06	00:04

0.900	7.9E-05	1.4E+09	2.3E+06	00:05
1.000	7.3E-05	1.4E+09	2.1E+06	00:05
2.000	3.4E-05	9.1E+08	8.9E+05	00:11
4.000	9.2E-06	2.0E+08	2.6E+05	00:23
6.000	3.2E-06	5.5E+07	9.4E+04	00:34
8.000	1.2E-06	1.7E+07	3.8E+04	00:46
10.000	5.1E-07	6.0E+06	1.6E+04	00:57
20.000	9.3E-09	6.0E+04	3.1E+02	01:55
40.000	5.7E-12	1.9E+01	1.9E-01	03:51
60.000	4.3E-15	9.7E-03	1.5E-04	05:47
80.000	3.5E-18	6.0E-06	1.2E-07	07:42

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:08:31 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Child Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Child Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 471 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 2.88 m/s  
 Stability Class : B  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 2.97E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	2.8E-04	4.8E+03	1.0E+07	<00:01
0.100	2.5E-04	7.6E+04	8.6E+06	<00:01
0.200	2.0E-04	1.2E+06	7.2E+06	00:01
0.300	1.7E-04	7.8E+06	6.1E+06	00:01
0.400	1.5E-04	2.9E+07	5.3E+06	00:02
0.500	1.3E-04	7.5E+07	4.6E+06	00:02
0.600	1.2E-04	1.5E+08	4.0E+06	00:03
0.700	1.0E-04	2.5E+08	3.6E+06	00:04
0.800	9.5E-05	3.7E+08	3.2E+06	00:04

0.900	8.7E-05	5.0E+08	2.9E+06	00:05
1.000	8.1E-05	6.2E+08	2.6E+06	00:05
2.000	4.2E-05	9.7E+08	1.2E+06	00:11
4.000	1.3E-05	3.4E+08	3.5E+05	00:23
6.000	4.6E-06	1.1E+08	1.3E+05	00:34
8.000	1.8E-06	3.5E+07	5.1E+04	00:46
10.000	7.4E-07	1.3E+07	2.2E+04	00:57
20.000	1.3E-08	1.3E+05	4.2E+02	01:55
40.000	7.9E-12	4.3E+01	2.6E-01	03:51
60.000	5.9E-15	2.2E-02	2.0E-04	05:47
80.000	4.8E-18	1.4E-05	1.6E-07	07:42

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:08:46 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Child Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Child Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 429 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 3.20 m/s  
 Stability Class : C  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 2.95E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	2.9E-04	2.9E+03	1.0E+07	<00:01
0.100	2.5E-04	1.9E+04	9.0E+06	<00:01
0.200	2.2E-04	1.5E+05	7.7E+06	00:01
0.300	1.9E-04	7.6E+05	6.7E+06	00:01
0.400	1.7E-04	2.6E+06	5.9E+06	00:02
0.500	1.5E-04	7.0E+06	5.3E+06	00:02
0.600	1.3E-04	1.5E+07	4.7E+06	00:03
0.700	1.2E-04	2.9E+07	4.3E+06	00:03
0.800	1.1E-04	4.9E+07	3.9E+06	00:04

0.900	1.0E-04	7.6E+07	3.5E+06	00:04
1.000	9.3E-05	1.1E+08	3.2E+06	00:05
2.000	4.8E-05	4.8E+08	1.5E+06	00:10
4.000	1.9E-05	4.5E+08	5.0E+05	00:20
6.000	7.8E-06	2.2E+08	2.0E+05	00:31
8.000	3.4E-06	9.8E+07	8.7E+04	00:41
10.000	1.5E-06	4.4E+07	4.0E+04	00:52
20.000	4.0E-08	9.9E+05	1.1E+03	01:44
40.000	4.7E-11	9.3E+02	1.4E+00	03:28
60.000	7.0E-14	1.2E+00	2.1E-03	05:12
80.000	1.1E-16	1.7E-03	3.4E-06	06:56

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:09:43 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Child Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Child Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 370 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 3.78 m/s  
 Stability Class : D  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 2.91E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	2.8E-04	1.6E+03	9.9E+06	<00:01
0.100	2.6E-04	2.9E+03	9.0E+06	<00:01
0.200	2.3E-04	6.5E+03	7.9E+06	<00:01
0.300	2.0E-04	1.3E+04	7.1E+06	00:01
0.400	1.8E-04	2.5E+04	6.3E+06	00:01
0.500	1.6E-04	4.5E+04	5.7E+06	00:02
0.600	1.5E-04	7.6E+04	5.2E+06	00:02
0.700	1.3E-04	1.2E+05	4.7E+06	00:03
0.800	1.2E-04	1.9E+05	4.3E+06	00:03

0.900	1.1E-04	2.8E+05	4.0E+06	00:03
1.000	1.0E-04	4.1E+05	3.7E+06	00:04
2.000	5.4E-05	4.4E+06	1.9E+06	00:08
4.000	2.0E-05	2.6E+07	7.0E+05	00:17
6.000	9.1E-06	3.9E+07	3.1E+05	00:26
8.000	4.6E-06	3.8E+07	1.5E+05	00:35
10.000	2.4E-06	2.9E+07	7.5E+04	00:44
20.000	1.2E-07	3.0E+06	3.3E+03	01:28
40.000	4.2E-10	1.3E+04	1.0E+01	02:56
60.000	1.6E-12	5.2E+01	4.0E-02	04:24
80.000	6.8E-15	2.1E-01	1.7E-04	05:52

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:09:56 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Child Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Child Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 102 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 4.96 m/s  
 Stability Class : E  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 1.29E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.060 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	1.2E-03	3.3E-02	4.1E+07	<00:01
0.100	8.5E-04	2.8E-02	3.0E+07	<00:01
0.200	6.1E-04	3.3E+01	2.1E+07	<00:01
0.300	4.7E-04	7.1E+03	1.7E+07	00:01
0.400	3.8E-04	2.2E+05	1.3E+07	00:01
0.500	3.2E-04	2.3E+06	1.1E+07	00:01
0.600	2.7E-04	1.2E+07	9.6E+06	00:02
0.700	2.4E-04	4.1E+07	8.4E+06	00:02
0.800	2.1E-04	1.0E+08	7.4E+06	00:02

0.900	1.9E-04	2.1E+08	6.6E+06	00:03
1.000	1.7E-04	3.5E+08	5.9E+06	00:03
2.000	1.0E-04	2.6E+09	2.7E+06	00:06
4.000	5.6E-05	2.8E+09	1.0E+06	00:13
6.000	3.1E-05	1.8E+09	5.0E+05	00:20
8.000	1.7E-05	1.1E+09	2.6E+05	00:26
10.000	1.0E-05	6.3E+08	1.5E+05	00:33
20.000	8.4E-07	5.4E+07	1.2E+04	01:07
40.000	9.2E-09	5.9E+05	1.3E+02	02:14
60.000	1.2E-10	7.7E+03	1.7E+00	03:21
80.000	1.7E-12	1.1E+02	2.4E-02	04:28

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:10:20 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Child Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Child Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 71 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 6.48 m/s  
 Stability Class : F  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 1.01E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.012 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	9.3E-04	1.2E+02	3.3E+07	<00:01
0.100	7.4E-04	1.8E+03	2.6E+07	<00:01
0.200	5.7E-04	3.2E+04	2.0E+07	<00:01
0.300	4.7E-04	2.8E+05	1.6E+07	<00:01
0.400	3.9E-04	1.4E+06	1.4E+07	00:01
0.500	3.3E-04	5.2E+06	1.2E+07	00:01
0.600	2.9E-04	1.4E+07	1.0E+07	00:01
0.700	2.6E-04	3.2E+07	9.1E+06	00:01
0.800	2.3E-04	6.3E+07	8.1E+06	00:02

0.900	2.1E-04	1.1E+08	7.4E+06	00:02
1.000	1.9E-04	1.7E+08	6.7E+06	00:02
2.000	1.1E-04	1.4E+09	3.3E+06	00:05
4.000	6.5E-05	2.7E+09	1.4E+06	00:10
6.000	4.2E-05	2.2E+09	7.5E+05	00:15
8.000	2.8E-05	1.6E+09	4.4E+05	00:20
10.000	1.9E-05	1.1E+09	2.7E+05	00:25
20.000	2.7E-06	1.8E+08	3.5E+04	00:51
40.000	8.0E-08	5.5E+06	9.8E+02	01:42
60.000	2.7E-09	1.9E+05	3.3E+01	02:34
80.000	1.0E-10	7.2E+03	1.2E+00	03:25

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:11:13 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Infant Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Infant Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 471 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 2.88 m/s  
 Stability Class : A  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 2.17E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	2.1E-04	1.2E+04	9.8E+06	<00:01
0.100	1.7E-04	5.7E+05	8.1E+06	<00:01
0.200	1.4E-04	1.4E+07	6.5E+06	00:01
0.300	1.1E-04	8.7E+07	5.3E+06	00:01
0.400	9.6E-05	2.6E+08	4.5E+06	00:02
0.500	8.4E-05	5.1E+08	3.9E+06	00:02
0.600	7.6E-05	7.8E+08	3.3E+06	00:03
0.700	6.9E-05	1.0E+09	2.9E+06	00:04
0.800	6.3E-05	1.2E+09	2.6E+06	00:04

0.900	5.8E-05	1.4E+09	2.3E+06	00:05
1.000	5.4E-05	1.4E+09	2.1E+06	00:05
2.000	2.5E-05	9.1E+08	8.9E+05	00:11
4.000	6.8E-06	2.0E+08	2.6E+05	00:23
6.000	2.4E-06	5.5E+07	9.4E+04	00:34
8.000	9.1E-07	1.7E+07	3.8E+04	00:46
10.000	3.8E-07	6.0E+06	1.6E+04	00:57
20.000	6.9E-09	6.0E+04	3.1E+02	01:55
40.000	4.2E-12	1.9E+01	1.9E-01	03:51
60.000	3.2E-15	9.7E-03	1.5E-04	05:47
80.000	2.6E-18	6.0E-06	1.2E-07	07:42

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:11:31 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Infant Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Infant Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 471 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 2.88 m/s  
 Stability Class : B  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 2.19E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	2.1E-04	4.8E+03	1.0E+07	<00:01
0.100	1.8E-04	7.6E+04	8.6E+06	<00:01
0.200	1.5E-04	1.2E+06	7.2E+06	00:01
0.300	1.3E-04	7.8E+06	6.1E+06	00:01
0.400	1.1E-04	2.9E+07	5.3E+06	00:02
0.500	9.7E-05	7.5E+07	4.6E+06	00:02
0.600	8.6E-05	1.5E+08	4.0E+06	00:03
0.700	7.7E-05	2.5E+08	3.6E+06	00:04
0.800	7.0E-05	3.7E+08	3.2E+06	00:04

0.900	6.4E-05	5.0E+08	2.9E+06	00:05
1.000	5.9E-05	6.2E+08	2.6E+06	00:05
2.000	3.1E-05	9.7E+08	1.2E+06	00:11
4.000	9.6E-06	3.4E+08	3.5E+05	00:23
6.000	3.4E-06	1.1E+08	1.3E+05	00:34
8.000	1.3E-06	3.5E+07	5.1E+04	00:46
10.000	5.4E-07	1.3E+07	2.2E+04	00:57
20.000	9.7E-09	1.3E+05	4.2E+02	01:55
40.000	5.8E-12	4.3E+01	2.6E-01	03:51
60.000	4.4E-15	2.2E-02	2.0E-04	05:47
80.000	3.5E-18	1.4E-05	1.6E-07	07:42

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:11:46 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Infant Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Infant Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 429 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 3.20 m/s  
 Stability Class : C  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 2.18E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	2.1E-04	2.9E+03	1.0E+07	<00:01
0.100	1.9E-04	1.9E+04	9.0E+06	<00:01
0.200	1.6E-04	1.5E+05	7.7E+06	00:01
0.300	1.4E-04	7.6E+05	6.7E+06	00:01
0.400	1.2E-04	2.6E+06	5.9E+06	00:02
0.500	1.1E-04	7.0E+06	5.3E+06	00:02
0.600	9.9E-05	1.5E+07	4.7E+06	00:03
0.700	9.0E-05	2.9E+07	4.3E+06	00:03
0.800	8.1E-05	4.9E+07	3.9E+06	00:04

0.900	7.4E-05	7.6E+07	3.5E+06	00:04
1.000	6.8E-05	1.1E+08	3.2E+06	00:05
2.000	3.6E-05	4.8E+08	1.5E+06	00:10
4.000	1.4E-05	4.5E+08	5.0E+05	00:20
6.000	5.7E-06	2.2E+08	2.0E+05	00:31
8.000	2.5E-06	9.8E+07	8.7E+04	00:41
10.000	1.1E-06	4.4E+07	4.0E+04	00:52
20.000	3.0E-08	9.9E+05	1.1E+03	01:44
40.000	3.5E-11	9.3E+02	1.4E+00	03:28
60.000	5.1E-14	1.2E+00	2.1E-03	05:12
80.000	8.3E-17	1.7E-03	3.4E-06	06:56

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:12:00 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Infant Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Infant Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 370 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 3.78 m/s  
 Stability Class : D  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 2.14E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	2.1E-04	1.6E+03	9.9E+06	<00:01
0.100	1.9E-04	2.9E+03	9.0E+06	<00:01
0.200	1.7E-04	6.5E+03	7.9E+06	<00:01
0.300	1.5E-04	1.3E+04	7.1E+06	00:01
0.400	1.3E-04	2.5E+04	6.3E+06	00:01
0.500	1.2E-04	4.5E+04	5.7E+06	00:02
0.600	1.1E-04	7.6E+04	5.2E+06	00:02
0.700	9.9E-05	1.2E+05	4.7E+06	00:03
0.800	9.1E-05	1.9E+05	4.3E+06	00:03

0.900	8.4E-05	2.8E+05	4.0E+06	00:03
1.000	7.7E-05	4.0E+05	3.7E+06	00:04
2.000	4.0E-05	4.4E+06	1.9E+06	00:08
4.000	1.5E-05	2.6E+07	7.0E+05	00:17
6.000	6.7E-06	3.9E+07	3.1E+05	00:26
8.000	3.4E-06	3.8E+07	1.5E+05	00:35
10.000	1.8E-06	2.9E+07	7.5E+04	00:44
20.000	9.0E-08	3.0E+06	3.3E+03	01:28
40.000	3.1E-10	1.3E+04	1.0E+01	02:56
60.000	1.2E-12	5.2E+01	4.0E-02	04:24
80.000	5.0E-15	2.1E-01	1.7E-04	05:52

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:12:16 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Infant Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Infant Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 102 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 4.96 m/s  
 Stability Class : E  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 9.52E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	8.5E-04	3.3E-02	4.1E+07	<00:01
0.100	6.2E-04	2.8E-02	3.0E+07	<00:01
0.200	4.5E-04	3.0E+01	2.1E+07	<00:01
0.300	3.5E-04	6.8E+03	1.7E+07	00:01
0.400	2.8E-04	2.2E+05	1.3E+07	00:01
0.500	2.4E-04	2.3E+06	1.1E+07	00:01
0.600	2.0E-04	1.2E+07	9.6E+06	00:02
0.700	1.8E-04	4.1E+07	8.4E+06	00:02
0.800	1.6E-04	1.0E+08	7.4E+06	00:02

0.900	1.4E-04	2.0E+08	6.6E+06	00:03
1.000	1.3E-04	3.5E+08	5.9E+06	00:03
2.000	7.5E-05	2.6E+09	2.7E+06	00:06
4.000	4.1E-05	2.8E+09	1.0E+06	00:13
6.000	2.3E-05	1.8E+09	5.0E+05	00:20
8.000	1.3E-05	1.1E+09	2.6E+05	00:26
10.000	7.5E-06	6.3E+08	1.5E+05	00:33
20.000	6.2E-07	5.4E+07	1.2E+04	01:07
40.000	6.7E-09	5.9E+05	1.3E+02	02:14
60.000	8.9E-11	7.7E+03	1.7E+00	03:21
80.000	1.3E-12	1.1E+02	2.4E-02	04:28

HotSpot Version 3.1.1 General Fire  
 Jun 28, 2023 6:12:34 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024A  
 Complete Building Fire\0024A and 0024B Infant Mixture.mix (Mixture Scale  
 Factor = 1.0000E+00)

0024A and 0024B Infant Mixture

Heat Emission : 1.04E+07 cal/s  
 Air Temperature : 20.0 deg C  
 Release Radius : 2.00E+01 m  
 Physical Height of Fire : 1 m  
 Effective Release Height : 71 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Avg Wind Speed (h=H-eff) : 6.48 m/s  
 Stability Class : F  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Washout Coefficient : 1.00E-03 1/s  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.010 km  
 Maximum TEDE : 7.43E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE	T E D E	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION		
km	(Sv)	(Bq-sec)/m3	(kBq/m2)	(hour:min)
0.030	6.9E-04	1.1E+02	3.3E+07	<00:01
0.100	5.5E-04	1.6E+03	2.6E+07	<00:01
0.200	4.2E-04	3.0E+04	2.0E+07	<00:01
0.300	3.4E-04	2.6E+05	1.6E+07	<00:01
0.400	2.9E-04	1.4E+06	1.4E+07	00:01
0.500	2.5E-04	5.0E+06	1.2E+07	00:01
0.600	2.2E-04	1.4E+07	1.0E+07	00:01
0.700	1.9E-04	3.1E+07	9.1E+06	00:01
0.800	1.7E-04	6.1E+07	8.1E+06	00:02

0.900	1.5E-04	1.1E+08	7.4E+06	00:02
1.000	1.4E-04	1.7E+08	6.7E+06	00:02
2.000	8.0E-05	1.4E+09	3.3E+06	00:05
4.000	4.8E-05	2.7E+09	1.4E+06	00:10
6.000	3.1E-05	2.2E+09	7.5E+05	00:15
8.000	2.1E-05	1.6E+09	4.4E+05	00:20
10.000	1.4E-05	1.1E+09	2.7E+05	00:25
20.000	2.0E-06	1.8E+08	3.5E+04	00:51
40.000	5.9E-08	5.5E+06	9.8E+02	01:42
60.000	2.0E-09	1.9E+05	3.3E+01	02:34
80.000	7.6E-11	7.2E+03	1.2E+00	03:25

**SEQUENCE 0024B**

100% of Maximum Inventory Released as Oxide to Stack

HotSpot User Mixture Database  
 User Mixture Name : s\Jamie\Desktop\Base Adult Mixture.mix  
 0024A and 0024B Adult Mixture  
 Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	: HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.0000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.0000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.0000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.0000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.0000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.0000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.0000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.0000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.0000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.0000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.0000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.0000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.0000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.0000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.0000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.0000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	6.0000E+15
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.0000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.0000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.0000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.0000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.0000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.0000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.0000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.0000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.0000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.0000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.0000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.0000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.0000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.0000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.0000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.0000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.0000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.0000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.0000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.0000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.0000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.0000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 0.0000E+00
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot User Mixture Database  
 User Mixture Name : s\Jamie\Desktop\Base Child Mixture.mix  
 0024A and 0024B Child Mixture  
 Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	: HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	3.8000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	3.8000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	3.8000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	3.8000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	3.8000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	3.8000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	3.8000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	3.8000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	3.8000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	3.8000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	3.8000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	3.8000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	3.8000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	3.8000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	3.8000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	3.8000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	3.8000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	3.8000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	3.8000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	3.8000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	3.8000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	3.8000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	3.8000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	3.8000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	6.0000E+15
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	2.5000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	2.5000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	2.5000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	2.5000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	2.5000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	2.5000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	2.5000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 2.5000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 2.5000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 2.5000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 2.5000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 2.5000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 2.5000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 2.5000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 2.5000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 2.5000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 2.5000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 2.5000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 2.5000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 2.5000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 2.5000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 2.5000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 0.0000E+00
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot User Mixture Database

User Mixture Name : s\Jamie\Desktop\Base Infant Mixture.mix

0024A and 0024B Infant Mixture

Mixture Scale Factor : 1.0000E+00

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Nuclide [01]	: HTO	V 1.2350E+01	y
Halflife		(Years):	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq):	8.0000E-11
Submersion		(Sv-m3) / (Bq-sec):	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec):	0.0000E+00
Skin	Inhalation	(Sv/Bq):	8.0000E-11
Skin	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Lung	Inhalation	(Sv/Bq):	8.0000E-11
Lung	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thyroid	Inhalation	(Sv/Bq):	8.0000E-11
Thyroid	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq):	8.0000E-11
Surface Bone	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq):	8.0000E-11
Red Marrow	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Liver	Inhalation	(Sv/Bq):	8.0000E-11
Liver	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Spleen	Inhalation	(Sv/Bq):	8.0000E-11
Spleen	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Ovaries	Inhalation	(Sv/Bq):	8.0000E-11
Ovaries	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Adrenals	Inhalation	(Sv/Bq):	8.0000E-11
Adrenals	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Breast	Inhalation	(Sv/Bq):	8.0000E-11
Breast	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
ULI Wall	Inhalation	(Sv/Bq):	8.0000E-11
ULI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Thymus	Inhalation	(Sv/Bq):	8.0000E-11
Thymus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq):	8.0000E-11
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
Esophagus	Inhalation	(Sv/Bq):	8.0000E-11
Esophagus	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec):	0.0000E+00
LLI Wall	Inhalation	(Sv/Bq):	8.0000E-11
LLI Wall	Submersion	(Sv-m3) / (Bq-sec):	0.0000E+00

LLI Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Muscle	Inhalation	(Sv/Bq) :	8.0000E-11
Muscle	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) :	8.0000E-11
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Kidneys	Inhalation	(Sv/Bq) :	8.0000E-11
Kidneys	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Testes	Inhalation	(Sv/Bq) :	8.0000E-11
Testes	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Uterus	Inhalation	(Sv/Bq) :	8.0000E-11
Uterus	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Brain	Inhalation	(Sv/Bq) :	8.0000E-11
Brain	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
SIWall	Inhalation	(Sv/Bq) :	8.0000E-11
SIWall	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Pancreas	Inhalation	(Sv/Bq) :	8.0000E-11
Pancreas	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Total Activity Released		(Bq) :	6.0000E+15
Airborne Fraction		:	1.0000E+00
Respirable Fraction		:	1.0000E+00
Respirable Deposition Velocity (cm/sec)		:	3.0000E-01
Non-resp. Deposition Velocity (cm/sec)		:	8.0000E+00

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Nuclide [02] :	T2	V 1.2350E+01 y	
Halflife		(Years) :	1.2350E+01
Inhalation	50-yr CEDE	(Sv/Bq) :	5.3000E-15
Submersion		(Sv-m3) / (Bq-sec) :	0.0000E+00
Ground Shine		(Sv-m2) / (Bq-sec) :	0.0000E+00
Skin	Inhalation	(Sv/Bq) :	5.3000E-15
Skin	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Skin	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Lung	Inhalation	(Sv/Bq) :	5.3000E-15
Lung	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Lung	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Thyroid	Inhalation	(Sv/Bq) :	5.3000E-15
Thyroid	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Thyroid	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Surface Bone	Inhalation	(Sv/Bq) :	5.3000E-15
Surface Bone	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Surface Bone	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Red Marrow	Inhalation	(Sv/Bq) :	5.3000E-15
Red Marrow	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Red Marrow	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00
Liver	Inhalation	(Sv/Bq) :	5.3000E-15
Liver	Submersion	(Sv-m3) / (Bq-sec) :	0.0000E+00
Liver	Ground	Sv-m2) / (Bq-sec) :	0.0000E+00

Spleen	Inhalation	(Sv/Bq) : 5.3000E-15
Spleen	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Spleen	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Ovaries	Inhalation	(Sv/Bq) : 5.3000E-15
Ovaries	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Ovaries	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Adrenals	Inhalation	(Sv/Bq) : 5.3000E-15
Adrenals	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Adrenals	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Breast	Inhalation	(Sv/Bq) : 5.3000E-15
Breast	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Breast	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
ULI Wall	Inhalation	(Sv/Bq) : 5.3000E-15
ULI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
ULI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Thymus	Inhalation	(Sv/Bq) : 5.3000E-15
Thymus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Thymus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Bladder Wall	Inhalation	(Sv/Bq) : 5.3000E-15
Bladder Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Bladder Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Esophagus	Inhalation	(Sv/Bq) : 5.3000E-15
Esophagus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Esophagus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
LLI Wall	Inhalation	(Sv/Bq) : 5.3000E-15
LLI Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
LLI Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Muscle	Inhalation	(Sv/Bq) : 5.3000E-15
Muscle	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Muscle	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Stomach Wall	Inhalation	(Sv/Bq) : 5.3000E-15
Stomach Wall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Stomach Wall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Kidneys	Inhalation	(Sv/Bq) : 5.3000E-15
Kidneys	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Kidneys	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Testes	Inhalation	(Sv/Bq) : 5.3000E-15
Testes	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Testes	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Uterus	Inhalation	(Sv/Bq) : 5.3000E-15
Uterus	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Uterus	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Brain	Inhalation	(Sv/Bq) : 5.3000E-15
Brain	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Brain	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
SIWall	Inhalation	(Sv/Bq) : 5.3000E-15
SIWall	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
SIWall	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Pancreas	Inhalation	(Sv/Bq) : 5.3000E-15
Pancreas	Submersion	(Sv-m3) / (Bq-sec) : 0.0000E+00
Pancreas	Ground	Sv-m2) / (Bq-sec) : 0.0000E+00
Total Activity Released		(Bq) : 0.0000E+00
Airborne Fraction		: 1.0000E+00
Respirable Fraction		: 1.0000E+00

Respirable Deposition Velocity (cm/sec) : 3.0000E-01  
Non-resp. Deposition Velocity (cm/sec) : 8.0000E+00

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 6:19:56 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Adult  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Adult Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : A  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.099 km  
 Maximum TEDE : 5.59E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.37 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL TIME (hour:min)
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	
0.030	5.2E-06	6.5E+08	1.1E+03	<00:01
0.100	5.6E-03	6.9E+11	2.1E+06	<00:01
0.200	2.9E-03	3.6E+11	1.1E+06	00:01
0.300	1.5E-03	1.8E+11	5.5E+05	00:02
0.400	8.8E-04	1.1E+11	3.3E+05	00:02
0.500	5.8E-04	7.2E+10	2.2E+05	00:03
0.600	4.1E-04	5.1E+10	1.5E+05	00:04
0.700	3.0E-04	3.8E+10	1.1E+05	00:04
0.800	2.3E-04	2.9E+10	8.7E+04	00:05
0.900	1.9E-04	2.3E+10	6.9E+04	00:06
1.000	1.5E-04	1.9E+10	5.7E+04	00:07
2.000	4.0E-05	4.9E+09	1.5E+04	00:14
4.000	1.1E-05	1.3E+09	4.0E+03	00:28
6.000	5.1E-06	6.3E+08	1.9E+03	00:42

8.000	3.0E-06	3.8E+08	1.1E+03	00:56
10.000	2.0E-06	2.5E+08	7.6E+02	01:10
20.000	6.2E-07	7.7E+07	2.3E+02	02:20
40.000	2.0E-07	2.5E+07	7.5E+01	04:41
60.000	1.1E-07	1.3E+07	3.9E+01	07:02
80.000	6.7E-08	8.3E+06	2.5E+01	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 6:20:49 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Adult  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Adult Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : B  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.16 km  
 Maximum TEDE : 4.62E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.56 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL TIME (hour:min)
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	
0.030	3.2E-13	4.0E+01	1.0E-05	<00:01
0.100	2.3E-03	2.9E+11	8.3E+05	<00:01
0.200	4.3E-03	5.4E+11	1.6E+06	00:01
0.300	2.8E-03	3.5E+11	1.0E+06	00:02
0.400	1.8E-03	2.2E+11	6.7E+05	00:02
0.500	1.2E-03	1.5E+11	4.6E+05	00:03
0.600	8.9E-04	1.1E+11	3.3E+05	00:04
0.700	6.7E-04	8.3E+10	2.5E+05	00:04
0.800	5.2E-04	6.5E+10	1.9E+05	00:05
0.900	4.2E-04	5.2E+10	1.6E+05	00:06
1.000	3.4E-04	4.2E+10	1.3E+05	00:07
2.000	9.0E-05	1.1E+10	3.4E+04	00:14
4.000	2.4E-05	3.0E+09	9.1E+03	00:28
6.000	1.2E-05	1.4E+09	4.3E+03	00:42

8.000	6.9E-06	8.6E+08	2.6E+03	00:56
10.000	4.6E-06	5.8E+08	1.7E+03	01:10
20.000	1.4E-06	1.8E+08	5.3E+02	02:20
40.000	4.5E-07	5.6E+07	1.7E+02	04:41
60.000	2.4E-07	2.9E+07	8.8E+01	07:02
80.000	1.5E-07	1.9E+07	5.6E+01	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 6:21:20 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Adult  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Adult Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.44 m/s  
 Stability Class : C  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.25 km  
 Maximum TEDE : 4.26E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.85 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	1.2E-13	0.0E+00	<00:01
0.100	1.7E-04	2.1E+10	5.2E+04	<00:01
0.200	3.8E-03	4.7E+11	1.4E+06	00:01
0.300	4.0E-03	5.0E+11	1.5E+06	00:02
0.400	3.1E-03	3.9E+11	1.2E+06	00:02
0.500	2.3E-03	2.9E+11	8.7E+05	00:03
0.600	1.8E-03	2.2E+11	6.6E+05	00:04
0.700	1.4E-03	1.7E+11	5.2E+05	00:04
0.800	1.1E-03	1.4E+11	4.1E+05	00:05
0.900	9.1E-04	1.1E+11	3.4E+05	00:06
1.000	7.5E-04	9.4E+10	2.8E+05	00:06
2.000	2.2E-04	2.8E+10	8.3E+04	00:13
4.000	6.8E-05	8.5E+09	2.5E+04	00:27
6.000	3.6E-05	4.4E+09	1.3E+04	00:41

8.000	2.3E-05	2.9E+09	8.6E+03	00:54
10.000	1.7E-05	2.1E+09	6.2E+03	01:08
20.000	6.5E-06	8.0E+08	2.4E+03	02:16
40.000	2.7E-06	3.4E+08	1.0E+03	04:33
60.000	1.7E-06	2.1E+08	6.3E+02	06:50
80.000	1.2E-06	1.5E+08	4.6E+02	09:06

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 6:21:52 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Adult  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Adult Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.57 m/s  
 Stability Class : D  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.39 km  
 Maximum TEDE : 3.39E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 1.4 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL TIME (hour:min)
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	9.6E-07	1.2E+08	1.8E+02	<00:01
0.200	1.1E-03	1.4E+11	3.9E+05	00:01
0.300	3.0E-03	3.7E+11	1.1E+06	00:01
0.400	3.4E-03	4.2E+11	1.3E+06	00:02
0.500	3.1E-03	3.9E+11	1.2E+06	00:03
0.600	2.7E-03	3.4E+11	1.0E+06	00:03
0.700	2.4E-03	2.9E+11	8.8E+05	00:04
0.800	2.0E-03	2.5E+11	7.6E+05	00:05
0.900	1.8E-03	2.2E+11	6.6E+05	00:05
1.000	1.6E-03	1.9E+11	5.8E+05	00:06
2.000	5.9E-04	7.4E+10	2.2E+05	00:12
4.000	2.2E-04	2.7E+10	8.2E+04	00:25
6.000	1.2E-04	1.6E+10	4.7E+04	00:38

8.000	8.5E-05	1.1E+10	3.2E+04	00:51
10.000	6.3E-05	7.8E+09	2.3E+04	01:04
20.000	2.6E-05	3.2E+09	9.5E+03	02:09
40.000	1.1E-05	1.3E+09	4.0E+03	04:19
60.000	6.6E-06	8.2E+08	2.4E+03	06:29
80.000	4.6E-06	5.8E+08	1.7E+03	08:39

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 6:22:11 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Adult  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Adult Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.15 m/s  
 Stability Class : E  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.77 km  
 Maximum TEDE : 1.91E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 1.8 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	TIME (hour:min)
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	1.8E-05	8.9E-13	<00:01
0.200	6.7E-07	8.4E+07	1.3E+02	00:01
0.300	1.2E-04	1.5E+10	3.9E+04	00:01
0.400	6.7E-04	8.3E+10	2.4E+05	00:02
0.500	1.3E-03	1.6E+11	4.7E+05	00:02
0.600	1.7E-03	2.1E+11	6.3E+05	00:03
0.700	1.9E-03	2.3E+11	7.0E+05	00:03
0.800	1.9E-03	2.4E+11	7.1E+05	00:04
0.900	1.9E-03	2.3E+11	6.9E+05	00:04
1.000	1.8E-03	2.2E+11	6.5E+05	00:05
2.000	8.7E-04	1.1E+11	3.3E+05	00:10
4.000	3.7E-04	4.5E+10	1.4E+05	00:21
6.000	2.2E-04	2.8E+10	8.3E+04	00:31

8.000	1.6E-04	2.0E+10	6.0E+04	00:42
10.000	1.3E-04	1.6E+10	4.8E+04	00:52
20.000	6.3E-05	7.8E+09	2.3E+04	01:45
40.000	3.1E-05	3.9E+09	1.2E+04	03:31
60.000	2.0E-05	2.5E+09	7.5E+03	05:17
80.000	1.5E-05	1.9E+09	5.6E+03	07:02

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 6:22:28 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Adult  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Adult Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.88 m/s  
 Stability Class : F  
 Receptor Height : 1.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.66E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 1.7 km  
 Maximum TEDE : 1.04E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 2.0 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL TIME (hour:min)
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	0.0E+00	0.0E+00	<00:01
0.200	1.5E-18	1.9E-04	1.3E-11	<00:01
0.300	5.2E-10	6.6E+04	4.7E-02	00:01
0.400	5.1E-07	6.3E+07	1.0E+02	00:01
0.500	1.2E-05	1.5E+09	3.3E+03	00:02
0.600	6.6E-05	8.3E+09	2.1E+04	00:02
0.700	1.8E-04	2.2E+10	6.1E+04	00:03
0.800	3.4E-04	4.2E+10	1.2E+05	00:03
0.900	5.0E-04	6.2E+10	1.8E+05	00:03
1.000	6.5E-04	8.1E+10	2.4E+05	00:04
2.000	1.0E-03	1.3E+11	3.7E+05	00:08
4.000	6.1E-04	7.5E+10	2.3E+05	00:17
6.000	4.1E-04	5.0E+10	1.5E+05	00:25

8.000	3.0E-04	3.8E+10	1.1E+05	00:34
10.000	2.5E-04	3.0E+10	9.1E+04	00:43
20.000	1.2E-04	1.5E+10	4.5E+04	01:26
40.000	5.8E-05	7.2E+09	2.2E+04	02:52
60.000	3.5E-05	4.4E+09	1.3E+04	04:18
80.000	2.5E-05	3.1E+09	9.3E+03	05:44

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 6:23:25 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Child  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Child Mixture  
 Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : A  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.099 km  
 Maximum TEDE : 6.59E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.41 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL TIME (hour:min)
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	
0.030	4.7E-06	5.0E+08	1.1E+03	<00:01
0.100	6.6E-03	6.9E+11	2.1E+06	<00:01
0.200	3.4E-03	3.6E+11	1.1E+06	00:01
0.300	1.8E-03	1.8E+11	5.5E+05	00:02
0.400	1.0E-03	1.1E+11	3.3E+05	00:02
0.500	6.8E-04	7.2E+10	2.2E+05	00:03
0.600	4.8E-04	5.1E+10	1.5E+05	00:04
0.700	3.6E-04	3.8E+10	1.1E+05	00:04
0.800	2.8E-04	2.9E+10	8.7E+04	00:05
0.900	2.2E-04	2.3E+10	6.9E+04	00:06
1.000	1.8E-04	1.9E+10	5.7E+04	00:07
2.000	4.7E-05	4.9E+09	1.5E+04	00:14
4.000	1.3E-05	1.3E+09	4.0E+03	00:28
6.000	6.0E-06	6.3E+08	1.9E+03	00:42

8.000	3.6E-06	3.8E+08	1.1E+03	00:56
10.000	2.4E-06	2.5E+08	7.6E+02	01:10
20.000	7.4E-07	7.7E+07	2.3E+02	02:20
40.000	2.4E-07	2.5E+07	7.5E+01	04:41
60.000	1.2E-07	1.3E+07	3.9E+01	07:02
80.000	7.9E-08	8.3E+06	2.5E+01	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 6:23:45 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Child  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Child Mixture  
 Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : B  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.17 km  
 Maximum TEDE : 5.45E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.62 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL TIME (hour:min)
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	
0.030	1.4E-13	1.4E+01	1.0E-05	<00:01
0.100	2.7E-03	2.8E+11	8.3E+05	<00:01
0.200	5.1E-03	5.4E+11	1.6E+06	00:01
0.300	3.3E-03	3.5E+11	1.0E+06	00:02
0.400	2.1E-03	2.2E+11	6.7E+05	00:02
0.500	1.5E-03	1.5E+11	4.6E+05	00:03
0.600	1.1E-03	1.1E+11	3.3E+05	00:04
0.700	7.9E-04	8.3E+10	2.5E+05	00:04
0.800	6.2E-04	6.5E+10	1.9E+05	00:05
0.900	4.9E-04	5.2E+10	1.6E+05	00:06
1.000	4.0E-04	4.2E+10	1.3E+05	00:07
2.000	1.1E-04	1.1E+10	3.4E+04	00:14
4.000	2.9E-05	3.0E+09	9.1E+03	00:28
6.000	1.4E-05	1.4E+09	4.3E+03	00:42

8.000	8.1E-06	8.6E+08	2.6E+03	00:56
10.000	5.5E-06	5.8E+08	1.7E+03	01:10
20.000	1.7E-06	1.8E+08	5.3E+02	02:20
40.000	5.4E-07	5.6E+07	1.7E+02	04:41
60.000	2.8E-07	2.9E+07	8.8E+01	07:02
80.000	1.8E-07	1.9E+07	5.6E+01	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 6:24:07 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Child  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Child Mixture  
 Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.44 m/s  
 Stability Class : C  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.25 km  
 Maximum TEDE : 5.02E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.93 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL TIME (hour:min)
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	
0.030	0.0E+00	1.1E-14	0.0E+00	<00:01
0.100	1.8E-04	1.9E+10	5.2E+04	<00:01
0.200	4.4E-03	4.7E+11	1.4E+06	00:01
0.300	4.8E-03	5.0E+11	1.5E+06	00:02
0.400	3.7E-03	3.9E+11	1.2E+06	00:02
0.500	2.8E-03	2.9E+11	8.7E+05	00:03
0.600	2.1E-03	2.2E+11	6.6E+05	00:04
0.700	1.6E-03	1.7E+11	5.2E+05	00:04
0.800	1.3E-03	1.4E+11	4.1E+05	00:05
0.900	1.1E-03	1.1E+11	3.4E+05	00:06
1.000	8.9E-04	9.4E+10	2.8E+05	00:06
2.000	2.6E-04	2.8E+10	8.3E+04	00:13
4.000	8.1E-05	8.5E+09	2.5E+04	00:27
6.000	4.2E-05	4.4E+09	1.3E+04	00:41

8.000	2.7E-05	2.9E+09	8.6E+03	00:54
10.000	2.0E-05	2.1E+09	6.2E+03	01:08
20.000	7.6E-06	8.0E+08	2.4E+03	02:16
40.000	3.2E-06	3.4E+08	1.0E+03	04:33
60.000	2.0E-06	2.1E+08	6.3E+02	06:50
80.000	1.4E-06	1.5E+08	4.6E+02	09:06

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 6:24:24 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Child  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Child Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.57 m/s  
 Stability Class : D  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.39 km  
 Maximum TEDE : 3.99E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 1.6 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL TIME (hour:min)
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	8.1E-07	8.6E+07	1.8E+02	<00:01
0.200	1.3E-03	1.3E+11	3.9E+05	00:01
0.300	3.5E-03	3.7E+11	1.1E+06	00:01
0.400	4.0E-03	4.2E+11	1.3E+06	00:02
0.500	3.7E-03	3.9E+11	1.2E+06	00:03
0.600	3.2E-03	3.4E+11	1.0E+06	00:03
0.700	2.8E-03	2.9E+11	8.8E+05	00:04
0.800	2.4E-03	2.5E+11	7.6E+05	00:05
0.900	2.1E-03	2.2E+11	6.6E+05	00:05
1.000	1.8E-03	1.9E+11	5.8E+05	00:06
2.000	7.0E-04	7.4E+10	2.2E+05	00:12
4.000	2.6E-04	2.7E+10	8.2E+04	00:25
6.000	1.5E-04	1.6E+10	4.7E+04	00:38

8.000	1.0E-04	1.1E+10	3.2E+04	00:51
10.000	7.4E-05	7.8E+09	2.3E+04	01:04
20.000	3.0E-05	3.2E+09	9.5E+03	02:09
40.000	1.3E-05	1.3E+09	4.0E+03	04:19
60.000	7.8E-06	8.2E+08	2.4E+03	06:29
80.000	5.5E-06	5.8E+08	1.7E+03	08:39

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 6:24:47 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Child  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Child Mixture  
 Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.15 m/s  
 Stability Class : E  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.77 km  
 Maximum TEDE : 2.25E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 2.1 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL TIME (hour:min)
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	3.8E-06	8.9E-13	<00:01
0.200	5.7E-07	6.1E+07	1.3E+02	00:01
0.300	1.3E-04	1.4E+10	3.9E+04	00:01
0.400	7.7E-04	8.1E+10	2.4E+05	00:02
0.500	1.5E-03	1.6E+11	4.7E+05	00:02
0.600	2.0E-03	2.1E+11	6.3E+05	00:03
0.700	2.2E-03	2.3E+11	7.0E+05	00:03
0.800	2.3E-03	2.4E+11	7.1E+05	00:04
0.900	2.2E-03	2.3E+11	6.9E+05	00:04
1.000	2.1E-03	2.2E+11	6.5E+05	00:05
2.000	1.0E-03	1.1E+11	3.3E+05	00:10
4.000	4.3E-04	4.5E+10	1.4E+05	00:21
6.000	2.6E-04	2.8E+10	8.3E+04	00:31

8.000	1.9E-04	2.0E+10	6.0E+04	00:42
10.000	1.5E-04	1.6E+10	4.8E+04	00:52
20.000	7.4E-05	7.8E+09	2.3E+04	01:45
40.000	3.7E-05	3.9E+09	1.2E+04	03:31
60.000	2.4E-05	2.5E+09	7.5E+03	05:17
80.000	1.8E-05	1.9E+09	5.6E+03	07:02

HotSpot Version 3.1.1 General Plume  
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Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Child  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Child Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.88 m/s  
 Stability Class : F  
 Receptor Height : 1.0 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 2.48E-04 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 1.7 km  
 Maximum TEDE : 1.22E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 2.7 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL TIME (hour:min)
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	0.0E+00	0.0E+00	<00:01
0.200	0.0E+00	4.4E-05	1.3E-11	<00:01
0.300	3.2E-10	3.4E+04	4.7E-02	00:01
0.400	4.4E-07	4.6E+07	1.0E+02	00:01
0.500	1.2E-05	1.3E+09	3.3E+03	00:02
0.600	7.2E-05	7.5E+09	2.1E+04	00:02
0.700	2.0E-04	2.1E+10	6.1E+04	00:03
0.800	3.8E-04	4.0E+10	1.2E+05	00:03
0.900	5.8E-04	6.1E+10	1.8E+05	00:03
1.000	7.6E-04	8.0E+10	2.4E+05	00:04
2.000	1.2E-03	1.2E+11	3.7E+05	00:08
4.000	7.2E-04	7.5E+10	2.3E+05	00:17
6.000	4.8E-04	5.0E+10	1.5E+05	00:25

8.000	3.6E-04	3.8E+10	1.1E+05	00:34
10.000	2.9E-04	3.0E+10	9.1E+04	00:43
20.000	1.4E-04	1.5E+10	4.5E+04	01:26
40.000	6.8E-05	7.2E+09	2.2E+04	02:52
60.000	4.2E-05	4.4E+09	1.3E+04	04:18
80.000	2.9E-05	3.1E+09	9.3E+03	05:44

HotSpot Version 3.1.1 General Plume  
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Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Infant  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Infant Mixture  
 Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : A  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.099 km  
 Maximum TEDE : 4.85E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.35 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL TIME (hour:min)
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	
0.030	2.9E-06	4.1E+08	1.1E+03	<00:01
0.100	4.8E-03	6.9E+11	2.1E+06	<00:01
0.200	2.5E-03	3.6E+11	1.1E+06	00:01
0.300	1.3E-03	1.8E+11	5.5E+05	00:02
0.400	7.7E-04	1.1E+11	3.3E+05	00:02
0.500	5.0E-04	7.2E+10	2.2E+05	00:03
0.600	3.6E-04	5.1E+10	1.5E+05	00:04
0.700	2.6E-04	3.8E+10	1.1E+05	00:04
0.800	2.0E-04	2.9E+10	8.7E+04	00:05
0.900	1.6E-04	2.3E+10	6.9E+04	00:06
1.000	1.3E-04	1.9E+10	5.7E+04	00:07
2.000	3.5E-05	4.9E+09	1.5E+04	00:14
4.000	9.3E-06	1.3E+09	4.0E+03	00:28
6.000	4.4E-06	6.3E+08	1.9E+03	00:42

8.000	2.6E-06	3.8E+08	1.1E+03	00:56
10.000	1.8E-06	2.5E+08	7.6E+02	01:10
20.000	5.4E-07	7.7E+07	2.3E+02	02:20
40.000	1.7E-07	2.5E+07	7.5E+01	04:41
60.000	9.2E-08	1.3E+07	3.9E+01	07:02
80.000	5.8E-08	8.3E+06	2.5E+01	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 6:26:19 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Infant  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Infant Mixture  
 Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.36 m/s  
 Stability Class : B  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.17 km  
 Maximum TEDE : 4.01E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.52 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL TIME (hour:min)
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	
0.030	3.9E-14	5.6E+00	1.0E-05	<00:01
0.100	2.0E-03	2.8E+11	8.3E+05	<00:01
0.200	3.8E-03	5.4E+11	1.6E+06	00:01
0.300	2.4E-03	3.5E+11	1.0E+06	00:02
0.400	1.6E-03	2.2E+11	6.7E+05	00:02
0.500	1.1E-03	1.5E+11	4.6E+05	00:03
0.600	7.7E-04	1.1E+11	3.3E+05	00:04
0.700	5.8E-04	8.3E+10	2.5E+05	00:04
0.800	4.5E-04	6.5E+10	1.9E+05	00:05
0.900	3.6E-04	5.2E+10	1.6E+05	00:06
1.000	3.0E-04	4.2E+10	1.3E+05	00:07
2.000	7.9E-05	1.1E+10	3.4E+04	00:14
4.000	2.1E-05	3.0E+09	9.1E+03	00:28
6.000	1.0E-05	1.4E+09	4.3E+03	00:42

8.000	6.0E-06	8.6E+08	2.6E+03	00:56
10.000	4.0E-06	5.8E+08	1.7E+03	01:10
20.000	1.2E-06	1.8E+08	5.3E+02	02:20
40.000	3.9E-07	5.6E+07	1.7E+02	04:41
60.000	2.1E-07	2.9E+07	8.8E+01	07:02
80.000	1.3E-07	1.9E+07	5.6E+01	09:23

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 6:26:33 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Infant  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Infant Mixture  
 Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.44 m/s  
 Stability Class : C  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.25 km  
 Maximum TEDE : 3.69E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 0.78 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL TIME (hour:min)
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	
0.030	0.0E+00	1.0E-15	0.0E+00	<00:01
0.100	1.3E-04	1.8E+10	5.2E+04	<00:01
0.200	3.3E-03	4.7E+11	1.4E+06	00:01
0.300	3.5E-03	5.0E+11	1.5E+06	00:02
0.400	2.7E-03	3.9E+11	1.2E+06	00:02
0.500	2.0E-03	2.9E+11	8.7E+05	00:03
0.600	1.5E-03	2.2E+11	6.6E+05	00:04
0.700	1.2E-03	1.7E+11	5.2E+05	00:04
0.800	9.6E-04	1.4E+11	4.1E+05	00:05
0.900	7.9E-04	1.1E+11	3.4E+05	00:06
1.000	6.6E-04	9.4E+10	2.8E+05	00:06
2.000	1.9E-04	2.8E+10	8.3E+04	00:13
4.000	5.9E-05	8.5E+09	2.5E+04	00:27
6.000	3.1E-05	4.4E+09	1.3E+04	00:41

8.000	2.0E-05	2.9E+09	8.6E+03	00:54
10.000	1.4E-05	2.1E+09	6.2E+03	01:08
20.000	5.6E-06	8.0E+08	2.4E+03	02:16
40.000	2.4E-06	3.4E+08	1.0E+03	04:33
60.000	1.5E-06	2.1E+08	6.3E+02	06:50
80.000	1.1E-06	1.5E+08	4.6E+02	09:06

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 6:26:49 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Infant  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Infant Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 2.57 m/s  
 Stability Class : D  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.40 km  
 Maximum TEDE : 2.94E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 1.2 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL TIME (hour:min)
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	4.7E-07	6.7E+07	1.8E+02	<00:01
0.200	9.1E-04	1.3E+11	3.9E+05	00:01
0.300	2.6E-03	3.6E+11	1.1E+06	00:01
0.400	2.9E-03	4.2E+11	1.3E+06	00:02
0.500	2.7E-03	3.9E+11	1.2E+06	00:03
0.600	2.4E-03	3.4E+11	1.0E+06	00:03
0.700	2.1E-03	2.9E+11	8.8E+05	00:04
0.800	1.8E-03	2.5E+11	7.6E+05	00:05
0.900	1.5E-03	2.2E+11	6.6E+05	00:05
1.000	1.4E-03	1.9E+11	5.8E+05	00:06
2.000	5.2E-04	7.4E+10	2.2E+05	00:12
4.000	1.9E-04	2.7E+10	8.2E+04	00:25
6.000	1.1E-04	1.6E+10	4.7E+04	00:38

8.000	7.4E-05	1.1E+10	3.2E+04	00:51
10.000	5.5E-05	7.8E+09	2.3E+04	01:04
20.000	2.2E-05	3.2E+09	9.5E+03	02:09
40.000	9.4E-06	1.3E+09	4.0E+03	04:19
60.000	5.7E-06	8.2E+08	2.4E+03	06:29
80.000	4.0E-06	5.8E+08	1.7E+03	08:39

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 6:27:08 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Infant  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Infant Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.15 m/s  
 Stability Class : E  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 0.77 km  
 Maximum TEDE : 1.66E-03 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : 1.6 km

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL TIME (hour:min)
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	7.9E-07	8.9E-13	<00:01
0.200	3.3E-07	4.8E+07	1.3E+02	00:01
0.300	9.4E-05	1.3E+10	3.9E+04	00:01
0.400	5.6E-04	7.9E+10	2.4E+05	00:02
0.500	1.1E-03	1.6E+11	4.7E+05	00:02
0.600	1.5E-03	2.1E+11	6.3E+05	00:03
0.700	1.6E-03	2.3E+11	7.0E+05	00:03
0.800	1.7E-03	2.4E+11	7.1E+05	00:04
0.900	1.6E-03	2.3E+11	6.9E+05	00:04
1.000	1.5E-03	2.2E+11	6.5E+05	00:05
2.000	7.6E-04	1.1E+11	3.3E+05	00:10
4.000	3.2E-04	4.5E+10	1.4E+05	00:21
6.000	1.9E-04	2.8E+10	8.3E+04	00:31

8.000	1.4E-04	2.0E+10	6.0E+04	00:42
10.000	1.1E-04	1.6E+10	4.8E+04	00:52
20.000	5.4E-05	7.8E+09	2.3E+04	01:45
40.000	2.7E-05	3.9E+09	1.2E+04	03:31
60.000	1.8E-05	2.5E+09	7.5E+03	05:17
80.000	1.3E-05	1.9E+09	5.6E+03	07:02

HotSpot Version 3.1.1 General Plume  
 Jun 28, 2023 6:27:28 PM

Source Term : J:\HEALTH PHYSICS\JAMIE - HP\Safety  
 Analysis\Safety Analysis Report\Revision 5\HotSpot Data Files\0024B 100%  
 release as oxide to stack\Released to Stack\0024A and 0024B Infant  
 Mixture.mix (Mixture Scale Factor = 1.0000E+00)  
 0024A and 0024B Infant Mixture

Effective Release Height : 28 m  
 Wind Speed (h=10 m) : 2.20 m/s  
 Wind Direction : 150.0 degrees Wind from the SSE  
 Wind Speed (h=H-eff) : 3.88 m/s  
 Stability Class : F  
 Receptor Height : 0.5 m  
 Inversion Layer Height : None  
 Sample Time : 10.000 min  
 Breathing Rate : 8.68E-05 m3/sec  
 Distance Coordinates : All distances are on the Plume Centerline

Maximum Dose Distance : 1.7 km  
 Maximum TEDE : 9.00E-04 Sv  
 Inner Contour Dose : 1.0 Sv  
 Middle Contour Dose : 0.050 Sv  
 Outer Contour Dose : 1.00E-03 Sv  
 Exceeds Inner Dose Out To : Not Exceeded  
 Exceeds Middle Dose Out To : Not Exceeded  
 Exceeds Outer Dose Out To : Not Exceeded

Note: Dose Results Include HTO Skin Absorption

Include Plume Passage Inhalation and Submersion  
 Include Resuspension (Resuspension Factor : Maxwell-Anspaugh)  
 Exposure Window:(Start: 0.00 days; Duration: 4.00 days) [100% stay  
 time].

DISTANCE km	T E D E (Sv)	RESPIRABLE	GROUND SURFACE	ARRIVAL TIME (hour:min)
		TIME-INTEGRATED AIR CONCENTRATION (Bq-sec)/m3	DEPOSITION (kBq/m2)	
0.030	0.0E+00	0.0E+00	0.0E+00	<00:01
0.100	0.0E+00	0.0E+00	0.0E+00	<00:01
0.200	0.0E+00	1.0E-05	1.3E-11	<00:01
0.300	1.4E-10	2.0E+04	4.7E-02	00:01
0.400	2.6E-07	3.7E+07	1.0E+02	00:01
0.500	8.0E-06	1.1E+09	3.3E+03	00:02
0.600	5.0E-05	7.1E+09	2.1E+04	00:02
0.700	1.4E-04	2.0E+10	6.1E+04	00:03
0.800	2.8E-04	3.9E+10	1.2E+05	00:03
0.900	4.2E-04	6.0E+10	1.8E+05	00:03
1.000	5.5E-04	7.9E+10	2.4E+05	00:04
2.000	8.7E-04	1.2E+11	3.7E+05	00:08
4.000	5.3E-04	7.5E+10	2.3E+05	00:17
6.000	3.5E-04	5.0E+10	1.5E+05	00:25

8.000	2.7E-04	3.8E+10	1.1E+05	00:34
10.000	2.1E-04	3.0E+10	9.1E+04	00:43
20.000	1.1E-04	1.5E+10	4.5E+04	01:26
40.000	5.0E-05	7.2E+09	2.2E+04	02:52
60.000	3.1E-05	4.4E+09	1.3E+04	04:18
80.000	2.2E-05	3.1E+09	9.3E+03	05:44

**APPENDIX C**

**2017 Review and Update of Hypothetical Worst-Case Scenarios for SRBT**

***FOR HISTORICAL REFERENCE ONLY***

***REFER TO SRBT SAR REVISION 4 FOR COMPLETE DETAILS***

## **2017 Review and Update of Hypothetical Worst-Case Scenarios for SRBT**

### Introduction

In 2008, based upon an analysis of the SRBT facility and the operations conducted, as well as a review and assessment of the previous set of safety analyses for the facility, seven bounding hypothetical worst case scenarios were developed and analyzed in order to determine the possible radiological consequences to members of the public, and to SRBT employees.

These seven scenarios and the associated maximum effective dose calculated were as follows:

### **Hypothetical Worst-Case Maximum Doses (2008)**

	<b>Scenario</b>	<b>Maximum Dose (mSv)</b>	<b>Receptor</b>
A	Release of the entire contents of a tritium trap ('pyrophoric unit')	0.027	Member of the public
B	Release of the entire contents of a bulk container	0.222	Member of the public
C	Release from a tornado	0.147	Member of the public
D	Release from impact of a large rogue vehicle	0.142	Member of the public
E	Smoldering fire within the controlled area of the facility	12.41	Staff
F	Release from breakage during handling	5.28	Staff
G	Release from breakage during packing	4.04	Staff

Since 2008, several of the parameters and assumptions used to determine the likely maximum dose to any person have evolved due to advances in the scientific understanding of the mechanisms contributing to the resultant dose.

For example, the CSA standards that establish the acceptable dose coefficients and intake parameters for certain receptors have been revised. As well, the meteorological conditions near the facility are better understood with the installation and operation of a dedicated weather station since 2010.

As a result, the above seven hypothetical incidents require review and refinement based upon the latest available data and understanding of the conditions that would lead to exposure during worst-case emergency situations.

For the scenarios that involve limiting worker doses (scenarios E, F and G in the above table), the dose coefficient for HTO and HT for adults defined in N288.1-14 were applied to determine expected worst case effective dose.

The scenarios described which affect the public (scenarios A, B, C and D above) were analyzed using 'HotSpot', a modern plume dispersion modelling program designed to provide estimates of expected effective dose to persons located in a specific geographic zone under given meteorological conditions.

### HotSpot Modelling Codes

HotSpot was created at the Lawrence Livermore National Laboratory by the National Atmospheric Release Advisory Center in the United States. The program uses Health Physics codes that were created to provide emergency response personnel with a set of software tools to conservatively evaluate incidents involving radioactive material, as well as to be used for safety analysis of facilities which handle nuclear material.

The user can simulate various scenarios using defined source term information. Pre-loaded mixtures of radionuclides may be used, or the user can specifically define the mixture profile, as well as other parameters such as committed effective dose coefficients (i.e. for adult, child, infant).

The user also defines several key parameters using the graphical interface, including effective release height, wind speed and direction, Pasquill stability class, height of the receptor, breathing rate of the receptor, and geographic terrain / surface roughness.

The outputs from these codes can be graphically translated using a mapping system that integrates with other common software such as Google © Earth, in order to provide a visual representation of the potential areas that could be at risk of significant exposure to radioactive materials dispersed into the air.

HotSpot codes involving the dispersal of radioactive material use the Gaussian model, and are continuously updated to incorporate the most current and approved methodologies as recommended by the International Commission on Radiation Protection (ICRP).

Version 3.0.3 (August 15, 2015) was used to validate the magnitude of radiological risk that may be presented by any of the four hypothetical worst case scenarios identified in

the analysis, and to expand the understanding of the potential geographic areas that may be affected by a tritium release during an emergency.

The following process was implemented in order to derive the maximum estimated effective dose to a member of the public, at a minimum distance of around 100 metres from the facility:

1. Create a 'unit mixture' in the HotSpot library with 25% HTO (1 Bq) and 75% HT (3 Bq), with appropriate dose coefficients for committed effective dose included for each of the three groups (infant, child, adult, as listed in N288.1).
2. Adjust scaling factor as required to generate release quantity of this mixture for each scenario. This is equal to the total release defined for the scenario, divided by 4 (as the 'unit mixture' contains 4 Bq of activity).
3. Run 'General Plume' model using each 'unit mixture' and appropriate parameters for each type of group:
  - Breathing rates (as per N288.1-14 -  $2.66E-04$  m<sup>3</sup>/s for adults,  $2.48E-04$  m<sup>3</sup>/s for child, and  $8.68E-05$  m<sup>3</sup>/s for infant).
  - Receptor height (1.5 m for adult, 1.0 m for child and 0.5 m infant).
4. Run for each of the six Pasquill stability classes, using 2008 parameters for wind speed and release height. Surface roughness is set at standard as a conservative measure.
5. The wind is set at 135 degrees (out of the southeast, toward the critical group).
6. This will generate a total of 24 modelled scenarios. Tabulate the maximum public doses projected, and at what distance from the facility the maximum public dose is anticipated to occur.

The results of the HotSpot modelling aligns very closely with the previously calculated worst-case effective doses at a given distance.

Based on the methodology described above, the following information represents the maximum effective doses anticipated for the seven limiting hypothetical worst-case scenarios for SRBT in 2017.

**Hypothetical Worst-Case Maximum Doses for Scenario A – Loss of PUTT (2017)**

Pasquill Stability Class	Maximum Effective Dose (in mSv)			Distance from Source (in metres)
	Adult	Child	Infant	
A	0.0286	<b>0.0337</b>	0.0248	98 (adult) 99 (child/infant)
B	0.0237	0.0279	0.0206	160
C	0.0218	0.0257	0.0189	250
D	0.0174	0.0205	0.0151	390
E	0.0099	0.0116	0.0086	770
F	0.0054	0.0064	0.0047	1,700

**Hypothetical Worst-Case Maximum Doses for Scenario B – Loss of Bulk Container (2017)**

Pasquill Stability Class	Maximum Effective Dose (in mSv)			Distance from Source (in metres)
	Adult	Child	Infant	
A	0.258	<b>0.304</b>	0.224	98 (adult) 99 (child/infant)
B	0.213	0.252	0.185	160
C	0.197	0.232	0.171	250
D	0.157	0.185	0.136	390
E	0.089	0.105	0.077	770
F	0.049	0.058	0.042	1,700

**Hypothetical Worst-Case Maximum Doses for Scenario C – Tornado (2017)**

Pasquill Stability Class*	Maximum Effective Dose (in mSv)			Distance from Source (in metres)
	Adult	Child	Infant	
A	8.30	11.00	8.73	10**
A	1.20	1.50	1.10	30**
A	0.12	<b>0.14</b>	0.10	100
A	0.029	0.035	0.026	200
A	0.0048	0.0056	0.0041	500
A	0.0012	0.0014	0.0011	1,000

\* Pasquill Stability Class A (highly unstable) is the only assessed condition assessed for this type of weather event.

\*\*The presence of an unsheltered member of the public within 100 metres of the facility during a tornado event would be extremely unlikely.

**Hypothetical Worst-Case Maximum Doses for Scenario D – Rogue Vehicle (2017)**

Pasquill Stability Class	Maximum Effective Dose (in mSv)			Distance from Source (in metres)
	Adult	Child	Infant	
A	0.153	<b>0.180</b>	0.133	98 (adult) 99 (child/infant)
B	0.127	0.149	0.110	160
C	0.117	0.138	0.101	250
D	0.093	0.110	0.081	390
E	0.053	0.062	0.046	770
F	0.029	0.034	0.025	1,700

For the three analyzed scenarios where the exposed individual is a staff member (E, F, and G), the only difference between the defined parameters used in the calculations in 2008 and 2017 are the dose coefficients for tritium gas (HT) and tritium oxide (HTO).

In 2008, the coefficients used were based upon the ICRP 30 guidance for dose due to inhalation. In the case of HTO, the coefficient was artificially doubled in order to conservatively account for the absorption of HTO through the skin.

The CSA N288.1-14 standard accounts for absorption as part of the listed coefficient for HTO, thus the decision to artificially double the coefficient is no longer reasonable.

The analysis of the three internal scenarios yields the following updated calculations:

#### Scenario E: Smoldering Fire within the Controlled Area of the Facility

Based upon the fact that general operations with gaseous tritium light sources have not significantly changed since 2008, the source term of a container holding 100 light sources, each with an activity of 81.03 GBq (2.19 Ci.) continues to represent a conservative treatment of the worst-case scenario for a small smoldering fire.

The assumption of 25% conversion of the source term to tritium oxide in the time span of the event (300 seconds) is also considered to be sufficiently conservative. Adult breathing rates remain the same in the current guidance.

$$\text{Dose} = [(\chi) (B) (DCF) (t) (\%HTO)]_{\text{FOR HTO}} + [(\chi) (B) (DCF) (t) (\%HT)]_{\text{FOR HT}}$$

Where:

$\chi$	= tritium concentration (Bq/m <sup>3</sup> ) = 1.55 x 10 <sup>10</sup> Bq/m <sup>3</sup>
B	= breathing rate of receptor (meters <sup>3</sup> /second) = 2.66 x 10 <sup>-4</sup> m <sup>3</sup> /s (for an adult) (23.01 m <sup>3</sup> /day)
DCF FOR HTO	= dose conversion factor for receptor for HTO (mSv/Bq) = 3.0 x 10 <sup>-8</sup> mSv/Bq (inhalation and absorption)
DCF FOR HT	= dose conversion factor for receptor for HT (mSv/Bq) = 2.0 x 10 <sup>-12</sup> mSv/Bq for HT (inhalation)
t	= exposure time (seconds) = 300 seconds
%HTO	= % of source term / concentration which is tritium oxide = 0.25
%HT	= % of source term / concentration which is tritium gas = 0.75

The maximum dose to a worker from this scenario is calculated to be **9.28 mSv**.

Scenario F: Release from Breakage During Handling

Based upon the fact that general operations with gaseous tritium light sources have not significantly changed since 2008, the source term of a dropped container of light sources releasing 17,233 GBq (465.75 Ci.) continues to represent a conservative treatment of the worst-case scenario for such an event.

The assumption of 25% conversion of the source term to tritium oxide in the time span of the event (120 seconds) is also considered to be sufficiently conservative. Adult breathing rates remain the same in the current guidance, as does the total volume in the room where the lights were broken.

$$\text{Dose} = [(\chi) (B) (DCF) (t) (\%HTO)]_{\text{FOR HTO}} + [(\chi) (B) (DCF) (t) (\%HT)]_{\text{FOR HT}}$$

Where:

$\chi$	= tritium concentration (Bq/m <sup>3</sup> ) = $1.65 \times 10^{10}$ Bq/m <sup>3</sup>
B	= breathing rate of receptor (meters <sup>3</sup> /second) = $2.66 \times 10^{-4}$ m <sup>3</sup> /s (for an adult) (23.01 m <sup>3</sup> /day)
DCF FOR HTO	= dose conversion factor for receptor for HTO (mSv/Bq) = $3.0 \times 10^{-8}$ mSv/Bq (inhalation and absorption)
DCF FOR HT	= dose conversion factor for receptor for HT (mSv/Bq) = $2.0 \times 10^{-12}$ mSv/Bq for HT (inhalation)
t	= exposure time (seconds) = 120 seconds
%HTO	= % of source term / concentration which is tritium oxide = 0.25
%HT	= % of source term / concentration which is tritium gas = 0.75

The maximum dose to a worker from this scenario is calculated to be **3.95 mSv**.

Scenario G: Release from Breakage During Packing

Based upon the fact that general operations with gaseous tritium light sources have not significantly changed since 2008, the source term of a dropped shipping container of light sources releasing 10% of the activity in the container (total 74,000 GBq (2,000 Ci.); source term 7,400 GBq (200 Ci.)) continues to represent a conservative treatment of the worst-case scenario for such an event.

The assumption of 25% conversion of the source term to tritium oxide in the time span of the event (120 seconds) is also considered to be sufficiently conservative. Adult

breathing rates remain the same in the current guidance, as does the total volume in the room where the lights were broken.

$$\text{Dose} = [(\chi) (B) (DCF) (t) (\%HTO)]_{\text{FOR HTO}} + [(\chi) (B) (DCF) (t) (\%HT)]_{\text{FOR HT}}$$

Where:

$\chi$  = tritium concentration (Bq/m<sup>3</sup>)  
 = 1.26 x 10<sup>10</sup> Bq/m<sup>3</sup>

B = breathing rate of receptor (meters<sup>3</sup>/second)  
 = 2.66 x 10<sup>-4</sup> m<sup>3</sup>/s (for an adult) (23.01 m<sup>3</sup>/day)

DCF FOR HTO = dose conversion factor for receptor for HTO (mSv/Bq)  
 = 3.0 x 10<sup>-8</sup> mSv/Bq (inhalation and absorption)

DCF FOR HT = dose conversion factor for receptor for HT (mSv/Bq)  
 = 2.0 x 10<sup>-12</sup> mSv/Bq for HT (inhalation)

t = exposure time (seconds)  
 = 120 seconds

%HTO = % of source term / concentration which is tritium oxide  
 = 0.25

%HT = % of source term / concentration which is tritium gas  
 = 0.75

The maximum dose to a worker from this scenario is calculated to be **3.02 mSv**.

The following table provides an overall accounting of the maximum calculated effective doses for seven worst-case hypothetical scenarios for SRBT:

**Hypothetical Worst-Case Maximum Doses (2017)**

Scenario		Maximum Dose (mSv)	Receptor	Distance (m)
A	Release of the entire contents of a tritium trap ('pyrophoric unit')	0.0337	Member of the public	99
B	Release of the entire contents of a bulk container	0.304	Member of the public	99
C	Release from a tornado	0.140	Member of the public	100
D	Release from impact of a large rogue vehicle	0.180	Member of the public	99
E	Smoldering fire within the controlled area of the facility	9.28	Staff	
F	Release from breakage during handling	3.95	Staff	
G	Release from breakage during packing	3.02	Staff	

**APPENDIX D**

**Rationale for Change to OL&C for Minimum Effective Stack Height**

**(Effective for Revision 4) – November 2017**

***FOR HISTORICAL REFERENCE ONLY***

***REFER TO SRBT SAR REVISION 4 FOR COMPLETE DETAILS***

## RATIONALE FOR CHANGE TO OL&C FOR MINIMUM EFFECTIVE STACK HEIGHT

Effective stack height (ESH) is a derived characteristic that integrates the physical nature of the actual stack itself (including the height of the stack relative to the ground, and the velocity of the gases being ejected) with environmental factors such as temperature and wind speed.

This value is taken to be a more accurate input into calculations of pollutant concentration from a point source in Gaussian dispersion models.

The simplified equation historically used by SRBT in calculating the effective stack height is as follows:

$$\text{Effective Stack Height (m)} = \text{Physical Stack Height (m)} + \left( \frac{\text{Exhaust Gas Velocity (m/s)}}{\text{Wind Speed (m/s)}} \right)^{1.4}$$

### ESH Requirement

In the SRBT Safety Analysis Report (SAR) Revision 3, under the Operating Limits and Conditions in Section 10, it is stated under clause (f) that:

*“Tritium processing operations shall not occur unless the minimum effective stack height of 27.8 metres is being achieved on applicable stack unit.”*

This limit was included in the latest version of the SAR, as it has been enforced since 2005 as part of our compliance with a previous licence condition. This condition is not currently explicitly noted in either our licence nor our LCH, but continues to be applied as a requirement internally.

### ESH History

The value of 27.8 metres was originally calculated by Canatom in the 1996 Derived Emission Limit (DEL) document (as being the average between the two stacks), and was based upon best available data at that time. It was not established as an operating limit for the facility at that point, but was only used in the calculation of the derived emission limit (DEL).

In 2005, CNSC inserted the maintenance of an effective stack height of 27.8 metres directly into our operating licence as a licence condition.

Subsequently in 2006 the DEL was replaced by a new derived release limits (DRL) document. The 2006 DRL calculation was different than the 1996 DEL calculation in several ways.

First, the physical stack height used in 1996 (7.5 metres) neglected that the stacks were raised off of ground level by several metres, as they were mounted on top of the air handling units (AHU). Taking this into account added about 3-4 physical metres to each stack as part of the 2006 DRL calculation.

The rated air moving capacity of the AHUs was used in 1996 to calculate the exhaust gas velocity. In 2006, actual directly measured values of flow rates were integrated into the calculation of effective stack height in the DRL.

In 1996 a wind speed of 2.6 m/s was used based upon data from Environment Canada for Petawawa for the years 1979-1988, for wind blowing from the ESE wind sector, towards the WNW

sector where the critical group is situated. The 2006 DRL used data from 2000-2004, applying a wind speed of 2.2 m/s.

Finally, buoyancy effects due to temperature differences were ignored in 1996, while the 2006 calculation accounted for it within the DRL calculation.

### **ESH Compliance**

SRBT has continued to evaluate the average effective stack height as part of weekly gaseous effluent measurements, in order to demonstrate that the minimum effective stack height is being achieved.

SRBT does not calculate instantaneous effective stack height; rather, a calculation is performed on a weekly basis based on an assumed average wind speed, as well as direct daily measurements of the differential pressure of the gas flowing out of each stack.

The assumed average wind speed incorporated into our calculations is 2.2 m/s, which aligns with the 2006 DRL calculation assumptions.

### **2016 DRL and the ESH**

During the 2016 revision of the Derived Release Limits (DRL) document, the use of site-specific data was preferred where available.

The SRBT weather station collects data continuously regarding wind speed and direction; this information was used in determining the new DRLs.

The 2016 DRL noted that based on the latest triple-joint frequency wind data gathered through the weather station, the mean wind speed of relevance (to the NW) is 2.44 m/s.

In 2006, data from Environment Canada's Petawawa Weather Station was used to calculate the DRLs. An average wind speed of relevance was 2.2 m/s.

The use of the 2.44 m/s wind speed in calculating the DRL in 2016 was justified as it represents site-specific data, and was derived using only active operating hours (0700 – 1900h).

In applying the new mean wind speed to the calculation of the ESH, all other inputs being equal, the higher average wind speed will result in a decrease in the calculated average effective stack height.

If SRBT was to apply this mean value of 2.44 m/s into the equations used to calculate the weekly ESHs as part of our gaseous effluent monitoring program, the current physical configuration of the stack equipment would ultimately result in calculated weekly ESHs that on occasion may not reach the 27.8 m minimum.

**Minimum ESH – Is this the best way to define an OL&C for stack performance?**

Instead of defining a minimum effective stack height as an operating limit and condition within the SAR, a more logical approach would be to define a limit on the differential pressure measurement within the stack ducting, taken each day prior to operation.

The reasoning for this is as follows:

1. The 2016 DRL took into account revised exit velocities from the stacks, which are based over the last decade of differential pressure measurements and independent assessments by third parties.
2. The intent of the 2005 licence condition prescribing the minimum ESH for operation was to ensure the active ventilation systems were maintained and monitored in such a way that the characteristics of the equipment were in line with the assumptions made in the 1996 DEL.
3. For more than a decade, SRBT has monitored the differential pressure in each stack prior to beginning tritium processing operations at the start of the day. This is not a check of ESH – it is a check of equipment performance. The values obtained are averaged and a weekly ESH is calculated with the rest of the effluent and assumed environmental characteristics.
4. SRBT has a comprehensive Maintenance Program that ensures that the active ventilation systems are functioning to specification, through routine preventive maintenance and independent third party assessment of performance characteristics.
5. ESH is directly tied in with wind speed, which is beyond SRBT's control. By prescribing a requirement for ESH, it could be proposed that SRBT should cease operation when a certain wind speed threshold is reached, as the ESH would not be attained.

By instead applying minimum differential pressure readings as the OL&C (which is ultimately a proxy for a limit on minimum exit velocity of the gases being ejected), SRBT will ensure that:

- the stack / AHU equipment continues to meet a minimum standard of operation,
- that the impacts of SRBT operations on public and the environment are acceptable and as low as reasonably achievable, and
- that the models used in calculating the 2016 DRL continue to be an adequately reasonable representation of environmental conditions.

**Therefore, SRBT has changed the SAR, Section 10 (f), to read:**

*f. Minimum Differential Pressure Measurements for Tritium Processing*

*Tritium processing operations shall not occur unless the following differential pressures are achieved, as measured by the gauges on each of the active ventilation system stacks:*

- *Rig Stack: 0.27 inches of water column*
- *Bulk Stack: 0.38 inches of water column*

*These measurements correspond to an average effective stack height of 27.8 metres, assuming a wind speed of 2.2 m/s.*