Project	Calculation Number	Project Number
Hotspot Verification and Validation (V & V)	S-CLC-G-00080	KH15630.048.ESDEP0173
Title	Functional Classification	
Evaluation of the Hotspot Computer Code	NS	Sheet 1 of 113
	Discipline	
	Safety (Emergency Services)	

☐ Preliminary ☒ Confirmed

Computer Program No.	Version/Release No.
Hotspot	2.0

Purpose and Objective

Perform and document tests to verify that Hotspot 2.0 is acceptable for use during the performance of engineering calculations.

Summary of Conclusion

Hotspot may be used, in accordance with approved procedures, when performing engineering calculations with the following restriction: only the Atmospheric Dispersion Models were tested. Other modules (e.g., Special Purpose Programs, FIDLER) were not tested.

Revisions

Rev No.	Revision Description
0	Original Issue
1	New Version of Software Issued
2	New Version of Software Issued

Sign Off (signatures of previous revision on file)

Rev No.	Originator (Print) Sign/Date	Verification/Checking Method	Verifier/Checker (Print) Sign/Date	Manager (Print) Sign/Date
0	Marc L. Nadeau	Document Review	Dennis J Hadlock	James W. Lightner
1	Dennis J. Hadlock	Document Review	Bang V. Nguyen	James W. Lightner
2	Pauline Hang 4-30-02 Pauline Hang	Document Review	Wayne Davis 4-30-02	Eric Shogren 4/30/02

Release to Outside Agency – Design Authority (Print) Sign/Date
None

Security Classification of the Calculation

Unclassified Non-Sensitive
ADC/RO Review Not Required

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TABLE OF CONTENTS

SHEET

OPEN ITEMS 4

INTRODUCTION 4

INPUT 4

ANALYTICAL METHODS AND COMPUTATIONS 9

RESULTS 12

CONCLUSIONS 13

REFERENCES 13

APPENDICES:	Sheet
Appendix 1 - Hotspot Example Problems	14
Appendix 2 - Comparison of Mixture File Run to Individual Isotope Runs	25
Appendix 3 - Hotspot Runs for Mix Comparison	27
Appendix 4 - Hotspot Runs for Dry/Wet Deposition Comparison	101
Appendix 5 - Hotspot Runs for City/Standard Terrain Comparison	104
Appendix 6 - Hotspot Runs for Graphical and Printed Output Comparison	109
Appendix 7 - Hotspot Runs for Installation Testing	111

OPEN ITEMS
None

INTRODUCTION

The Hotspot 2.0 computer code consists of Atmospheric Dispersion Models and Special Purpose Programs. Only the Atmospheric Dispersion Models are being validated by this document. (Special Purpose Programs are not tested.)

This report documents the testing performed by the Emergency and Fire Technical Services (EFTS) Group. These tests verified that Atmospheric Dispersion Models within Hotspot are appropriate for use in engineering calculations.

INPUT

Verification Testing

Input for Atmospheric Dispersion Models is the same as that used in Revision 1 of this document and is as follows:

Note: For the following input data, Wind Input Height is 2 meters; Source Geometry is Standard.

Table 1
Hotspot Verification Input

Plutonium Explosion

Input Parameter	Value	Units
Total Release	1	kg
Deposition Velocity	1.0	cm/s
Specific Activity	0.081	Ci/g
High Explosive	133.0	lb. TNT
Airborne Fraction	1.0	
Respirable Fraction	0.2	
Stability	D	
Wind Speed	5.0	m/s

Plutonium Fire

Input Parameter	Value	Units
Total Release	3.0	kg
Deposition Velocity	1.0	cm/s
Specific Activity	0.081	Ci/g
Filter Mitigation	0	%
Airborne Fraction	1	
Respirable Fraction	5E-4	
Volume of Fuel	30.0	gal
Release Radius	10.0	m
Air Temp.	20	^{o}C
Burn Duration	14.0	min
Heat of Combustion	1.2E-04	cal/g
Physical Height of Fire	0	m
Stability	E	
Wind Speed	2.0	m/s

Plutonium Resuspension

Input Parameter	Value	Units
Deposition	150.0	μCi / m^2
Release Radius	100.0	m
Deposition Velocity	1.0	cm/s
Age	14.0	days
Resuspension Factor	5.7E-05	1/m
Stability	F	
Wind Speed	1.0	m / sec

Uranium Explosion

Input Parameter	Value	Units
Total Release	3.0	kg
Deposition Velocity	1.0	cm/s
Specific Activity	6.21E-5	Ci/g
High Explosive	40.0	lb. TNT
Airborne Fraction	1	
Respirable Fraction	0.2	
Stability	B	
Wind Speed	1.0	m/s

Uranium Fire

Input Parameter	Value	Units
Total Release	100.0	kg
Deposition Velocity	1.0	cm/s
Specific Activity	2.39E-06	Ci/g
Airborne Fraction	1	
Respirable Fraction	5.0E-04	
Filter Mitigation	0	%
Release Radius	50.0	m
Air Temperature	20	^{o}C
Heat Emission	1.0E+07	cal/s
Physical Height of Fire	0	m
Stability	D	
Wind Speed	9.0	m/s

Tritium Release

Input Parameter	Value	Units
Total Release	30,000	Ci
Percent Tritium oxide	100	%
Effective Release Height	30.0	m
Deposition Velocity	0	cm/s
Airborne Fraction	1	
Respirable Fraction	1	
Stability	B	
Wind Speed	1.0	m/sec

General Explosion

Input Parameter	Value	Units
Radionuclide	I-131	
Total Release	30.0	Ci
Deposition Velocity	1.0	cm/s
High Explosive	1.0	lb. TNT
Airborne Fraction	1	
Respirable Fraction	1	
Stability	C	
Wind Speed	2.0	m/s

General Fire

Input Parameter	Value	Units
Radionuclide	Am-241	
Total Release	50.0	Ci
Deposition Velocity	1.0	cm/s
Airborne Fraction	1	
Respirable Fraction	5.0E-04	
Filter Mitigation	0	%
Release Radius	20.0	m
Cloud Top	10	m
Stability	C	
Wind Speed	4.0	m/sec

General Resuspension

Input Parameter	Value	Units
Radionuclide	Cm-244	
Deposition	1,000	micro Ci / m^2
Release Radius	50.0	m
Deposition Velocity	1.0	cm/s
Resuspension Factor	1.0E-5	m^{-1}
Stability	A	
Wind Speed	3.0	m / sec

General Plume

Input Parameter	Value	Units
Radionuclide	Kr-85	
Total Release	20,000	Ci
Effective Release Height	10.0	m
Deposition Velocity	0	cm/s
Filter Mitigation	0	%
Airborne Fraction	1	
Respirable Fraction	1	
Stability	A	
Wind Speed	1.0	m/s

<u>Installation Testing</u>

Input for installation tests described in this report was based on a combination of Example problem information presented in Revision 1 of this document and default input procedurally required for EFTS consequence assessment calculations (Ref. 1). Installation testing uses Complex Source Geometry, dry deposition, and Standard Terrain for both tests. Specific input values are as follows:

Table 2
Hotspot Installation Test Input

General Plume

Input Parameter	Value	Units
Radionuclide	Kr-85	
Total Release	20,000	Ci
Effective Release Height	0	m
Deposition Velocity	0	m
Filter Mitigation	0	%
Airborne Fraction	1	
Respirable Fraction	1	
Release Geometry	Surface Area	
Horizontal Dimension	3.0	m
Vertical Dimension	3.0	m
Stability Class	C	
Wind Speed	2.5	m/s
Wind Input Height	2	m
Mixing Height	500	m
Sample Time	10	min

Tritium Release

Input Parameter	Value	Units
Radionuclide	Tritium	
Total Release	30,000	Ci
Percent Tritium oxide	100	%
Effective Release Height	15	m
Deposition Velocity	0	m
Airborne Fraction	1	
Respirable Fraction	1	
Release Geometry	Elevated Area	
Horizontal Dimension	3.0	m
Vertical Dimension	3.0	m
Stability Class	E	
Wind Speed	1.7	m/sec
Wind Input Height	10	m
Mixing Height	200	m
Sample Time	10	min

ANALYTICAL METHODS and COMPUTATIONS

Verification Testing
The following items were evaluated as part of the verification testing:

Proper execution of Example problems
Evaluation of Mixtures Option
Evaluation of Wet Deposition Option
Evaluation of City Terrain Option
Comparison of Graphical CEDE Output with Numeric Output

This section discusses the above evaluations.

a) Proper execution of Example Problems
A series of tests were developed to evaluate execution of each option available in Hotspot, using input discussed in the previous section. Tests are based on the example problem presented in Revision 1 of this document. Proper execution verifies that modules are operating correctly.

b) Evaluation of Hotspot's use of Mixture Files
Version 2.0 of Hotspot includes an option where multiple isotopes can be analyzed at one time by inputting required data into a Hotspot20/UserMix folder, one such file, ExampleMixture.mix is supplied as an example with the software. The crit_mix2.mix file contains information for 17 isotopes typically encountered during a criticality accident. Half-lives range from minutes to years. To evaluate the use of mixture files, a run was made using the crit_mix2.mix file. Individual runs were then performed for each of the 17 isotopes in the crit_mix2.mix files ensuring all other input data (meteorology, deposition velocity) were constant. Each individual isotope was run using the single isotope as a mixture file. Three receptors (0.1, 1.0, and 10.0 km) were chosen to compare results. The full results can be found in Appendix 2, a summary follows:

CEDE at Receptor of Interest

	0.100 km	1.000 km	10.00 km
Total CEDE:	6.89E+01	3.45E-01	2.47E-03
Total CEDE (Mix):	6.90E+01	3.50E-01	2.50E-03
% Difference:	1.29E-01	1.56E+00	1.24E+00

CDE at Receptor of Interest

	0.100 km	1.000 km	10.00 km
Total Thyroid Dose:	1.79E+01	9.43E-02	2.45E-04
Thyroid Dose (Mix):	1.80E+01	9.40E-02	2.50E-04
% Difference:	5.56E-01	-3.19E-01	1.88E+00

Small differences associated with the above results are attributed to rounding (resulting dose, half-life determinations, etc.) within the code.

c) Evaluation of the Wet Deposition Option

The wet deposition option of Hotspot 2.0 was tested qualitatively by verifying that invoking the option resulted in the expected results (decreased doses). As a release of particulate material is expected to be "washed out" during a rainstorm (enhanced deposition), two runs were performed (Appendix 4) for a ground release of 10 Ci Pu-238. Constant input values were used with the exception of the Wet Deposition option. Results at code default receptors are as follows:

Receptor (km)	Without Wet Dep (rem)	With Wet Dep (rem)
1.0E-01	7.8E+03	7.1E+03
2.0E-01	2.1E+03	1.7E+03
5.0E-01	3.4E+02	2.0E+02
1.0E+00	8.3E+01	3.0E+01
2.0E+00	2.1E+01	2.6E+00
5.0E+00	3.5E+00	2.0E-02
1.0E+01	9.9E-01	3.2E-05
2.0E+01	1.5E-01	1.6E-10
5.0E+01	3.4E-03	0.0E+00

Qualitative assessment of the above results shows the expected results of invoking the wet deposition option. Appendix 4 contains a graphical representation of the above results.

d) Evaluation of City Terrain Option

The city terrain option of Hotspot 2.0 was tested qualitatively by verifying that invoking the option resulted in the expected results (decreased doses). As a release of particulate material is expected to show enhanced dispersion of the material if dispersed over objects in the terrain (trees, buildings, etc), two runs were performed (Appendix 5) for a ground release of 10 Ci Pu-238. Constant input values were used with the exception of the terrain option. The results at the code default receptors are as follows:

Receptor (km)	Standard Terrain (rem)	City Terrain (rem)	%Difference
1.0E-01	7.8E+03	3.6E+03	5.4E+01
2.0E-01	2.1E+03	1.0E+03	5.2E+01
5.0E-01	3.4E+02	1.9E+02	4.4E+01
1.0E+00	8.3E+01	5.8E+01	3.0E+01
2.0E+00	2.1E+01	2.0E+01	4.8E+00
5.0E+00	3.5E+00	5.4E+00	-5.4E+01
1.0E+01	9.9E-01	2.3E+00	-1.3E+02
2.0E+01	1.5E-01	9.7E-01	-5.5E+02
5.0E+01	3.4E-03	3.5E-01	-1.0E+04

These results may not be what one would initially expect when using the City terrain option. Receptors close to the release show lower doses (when compared to Standard terrain) but distant receptors show an *increase* in projected dose. The effect of a non-zero deposition velocity is the reason. Obviously, use of City terrain results in increased turbulence in the plume. When the deposition velocity is zero, this results in increased dispersion and lower consequences for all downwind receptors. If the deposition velocity is greater than zero, there are somewhat offsetting

forces at work. With deposition, the lower turbulence associated with Standard terrain actually "scrubs" the lower part of the plume. Increased turbulence associated with City terrain increases mixing along the z-axis (i.e., between regions of lessor and greater altitude). This increased mixing allows material from the top of the plume to reach the receptor more readily than it would under the Standard terrain option. To negate this effect, the previous example was repeated with the deposition velocity set to zero:

Receptor (km)	Standard Terrain (rem)	City Terrain (rem)	%Difference
1.0E-01	1.5E+04	4.6E+03	6.9E+01
2.0E-01	4.9E+03	1.4E+03	7.1E+01
5.0E-01	1.0E+03	2.9E+02	7.1E+01
1.0E+00	3.1E+02	9.7E+01	6.9E+01
2.0E+00	1.0E+02	3.5E+01	6.5E+01
5.0E+00	2.9E+01	1.1E+01	6.2E+01
1.0E+01	1.3E+01	4.7E+00	6.4E+01
2.0E+01	7.2E+00	2.2E+00	6.9E+01
5.0E+01	3.7E+00	8.5E-01	7.7E+01

Based on the above results, the expected decrease in downwind dose at all receptor locations is realized when the deposition velocity is set to zero.

e) Comparison of Graphical CEDE Output with Numeric Output

This test was a straightforward comparison of the graphical CEDE output of Hotspot 2.0 to the printed output values (see appendix 6). Results at code default receptors ≤ 10 km are as follows:

Receptor (km)	Print Output (rem)	Graph Output (rem)	%Difference
1.0E-01	4.4E+00	4.4E+00	0.0E+00
2.0E-01	8.8E+00	9.0E+00	-2.3E+00
5.0E-01	2.7E+00	2.7E+00	0.0E+00
1.0E+00	7.5E-01	7.5E-01	0.0E+00
2.0E+00	3.0E-01	3.0E-01	0.0E+00
5.0E+00	1.3E-01	1.2E-01	7.7E+00
1.0E+01	7.4E-02	7.0E-02	5.4E+00

Agreement between graphical and numeric output is well within the expected error associated with interpreting graphical output.

Installation Testing

Tests are performed, prior to performing engineering calculations, in order to ensure that Hotspot works properly on the machine that it was installed. In all cases, the built in Hotspot QC program may be used directly when performing installation tests.

Specific installation tests have been developed for the "General Plume" and "Tritium Release" options, since these are the options specified for routine use by EFTS. Appendix 7 contains the resulting Hotspot 2.0 results for installation testing input. *Expected Results* are based upon a

summation of other values calculated by the module; therefore, agreement with the expected values indicates that installation of the module is satisfactory.

RESULTS

Verification Testing

1. Proper execution of Example Problems
   The appropriate example problem was executed for each option and test results are presented in Appendix 1. Test results are consistent with values presented in Revision 1 (considering that Dose Conversion Factors are different from those in Hotspot 8.03). Results for Hotspot 2.0 are within the "expected values". Small differences between the two sets of results are attributed to rounding within the code.

2. Evaluation of Mixtures Option
   The mixtures option tested satisfactory.

3. Evaluation of Wet Deposition Option
   The wet deposition option tested satisfactory.

4. Evaluation of City Terrain Option
   The evaluation of the city terrain option showed that relative "conservativeness" of this option is also dependent on the deposition velocity selected. Use of a non-zero particulate velocity results in higher doses farther downwind of the release (> about 2 km for adverse conditions). As such, the analyst should carefully consider use of this option in engineering calculations.

5. Graphical CEDE Output with Numeric Output
   It was shown that the agreement between the CEDE graphical output and the numeric output was satisfactory.

6. Installation Testing
   The following output values are consistent with the installation tests developed in this report:

Table 5
Hotspot Module Installation Test Results

Option	Parameter	Expected Results	Units
General Plume	0.100 km	1.0E-02	rem
	1.000 km	1.4E-04	rem
	10.00 km	3.5E-06	rem
Tritium Release	0.100 km	1.2E-03	rem
	1.000 km	9.1E-02	rem
	10.00 km	4.7E-03	rem

CONCLUSIONS

Based on the results of this report, Hotspot Version 2.0 may be used when performing engineering calculations.

REFERENCES

1. Hadlock, D. J., *Consequence Assessment for Emergency Preparedness Hazard Assessments*, TP-95-002, Rev. 3, Westinghouse Savannah River Company, Aiken, SC, January 20, 1997.

APPENDIX 1

Hotspot Example Problems

Plutonium Explosion

Hotspot Version 2.0 Plutonium Explosion
Mar 27, 2002 11:00 AM

Source Material	: Weapons Grade Pu
Source Term	: 1 kg
Airborne Fraction	: 1.000
Respirable Fraction	: 0.200
Respirable Release Fraction	: 0.200
Specific Activity	: 8.10E-02 Ci/g
Wind Speed (h=2 m)	: 5.0 m/s
Distance Coordinates	: All distances are on the Plume Centerline
High Explosive	: 113.00 Pounds of TNT
Debris Cloud Top	: 248 m
Stability Class	: D
Respirable Dep. Vel.	: 1.00 cm/s
Non-respirable Dep. Vel.	: 8.00 cm/s
Receptor Height	: 0.0 m
Inversion Layer Height	: None
Sample Time	: 10.000 min
Breathing Rate	: 3.33E-04 m3/sec
Maximum Dose Distance	: 0.010 km
MAXIMUM CEDE	: 10 rem

FGR-11 Dose Conversion Data

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	GROUND SURFACE DEPOSITION (uCi/m2)	ARRIVAL TIME (hour:min)
0.100	7.9E+00	7.7E-05	2.3E+01	<00:01
0.200	6.4E+00	6.3E-05	1.8E+01	<00:01
0.500	4.2E+00	4.1E-05	1.2E+01	00:01
1.000	2.8E+00	2.7E-05	7.7E+00	00:03
2.000	1.7E+00	1.7E-05	4.5E+00	00:06
5.000	8.2E-01	8.0E-06	1.8E+00	00:16
10.000	4.3E-01	4.2E-06	8.3E-01	00:33
20.000	2.1E-01	2.0E-06	2.5E-01	01:06
50.000	7.0E-02	6.9E-07	3.4E-02	02:46

Plutonium Fire

Hotspot Version 2.0 Plutonium Fire
Mar 27, 2002 11:11 AM

Source Material	: Weapons Grade Pu
Source Term	: 3 kg
Airborne Fraction	: 1.00E-02
Respirable Fraction	: 5.00E-02
Respirable Release Fraction	: 5.00E-04
Specific Activity	: 8.10E-02 Ci/g
Fuel	: 3.00E+01 gal
Fire Duration	: 1.40E+01 min
Release Radius	: 1.00E+01 m
Physical Height of Fire	: 0 m
Effective Release Height	: 40 m
Wind Speed (h=2 m)	: 2.0 m/s
Distance Coordinates	: All distances are on the Plume Centerline
Avg Wind Speed (h=H-eff)	: 5.72 m/s
Stability Class	: E
Respirable Dep. Vel.	: 1.00 cm/s
Non-respirable Dep. Vel.	: 8.00 cm/s
Receptor Height	: 0.0 m
Inversion Layer Height	: None
Sample Time	: 10.000 min
Breathing Rate	: 3.33E-04 m3/sec
Maximum Dose Distance	: 0.63 km
MAXIMUM CEDE	: 0.152 rem

FGR-11 Dose Conversion Data

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	GROUND SURFACE DEPOSITION (uCi/m2)	ARRIVAL TIME (hour:min)
0.100	5.2E-02	5.1E-07	7.8E-01	<00:01
0.200	9.0E-02	8.8E-07	1.3E+00	<00:01
0.500	1.5E-01	1.5E-06	2.1E+00	00:01
1.000	1.4E-01	1.3E-06	1.8E+00	00:02
2.000	8.0E-02	7.8E-07	6.6E-01	00:05
5.000	2.7E-02	2.7E-07	6.4E-02	00:14
10.000	1.2E-02	1.1E-07	7.6E-03	00:29
20.000	3.8E-03	3.7E-08	4.3E-04	00:58
50.000	4.9E-04	4.7E-09	4.7E-05	02:25

Plutonium Resuspension

```
Hotspot  Version 2.0 Plutonium Resuspension
Apr 18, 2002 02:55 PM
Source Material            : Weapons Grade Pu
Source Term                : 1.50E+02 uCi/m2
Resuspension Factor        : 5.7E-05   1/m
Effective Release Radius   : 100.0 m
Effective Source Term      : 2.0E-05 Ci/s
Contamination Age          : 1.40E+01 day
Wind Speed (h=2 m)         : 1.0 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : F
Respirable Dep. Vel.       : 1.00 cm/s
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 60.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   2.1 rem
FGR-11 Dose Conversion Data
```

DISTANCE km	C E D E PER 1-HR EXPOSURE TIME (rem)	AVERAGE AIR CONCENTRATION (Ci/m3)
0.100	6.1E-01	1.6E-09
0.200	3.9E-01	1.0E-09
0.500	1.8E-01	4.8E-10
1.000	8.1E-02	2.2E-10
2.000	2.8E-02	7.7E-11
5.000	5.0E-03	1.3E-11
10.000	1.2E-03	3.1E-12
20.000	7.4E-05	2.0E-13
50.000	1.3E-07	3.5E-16

Uranium Explosion

Hotspot Version 2.0 Uranium Explosion
Mar 27, 2002 11:30 AM

```
Source Material            : Uranium
Source Term                : 3 kg
Airborne Fraction          : 1.000
Respirable Fraction        : 0.200
Respirable Release Fraction: 0.200
Specific Activity          : 6.21E-05 Ci/g
Wind Speed (h=2 m)         : 1.0 m/s
Distance Coordinates       : All distances are on the Plume Centerline
High Explosive             : 40.00 Pounds of TNT
Debris Cloud Top           : 191 m
Stability Class            : B
Respirable Dep. Vel.       : 1.00 cm/s
Non-respirable Dep. Vel.   : 8.00 cm/s
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :  0.089 rem
FGR-11 Dose Conversion Data
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	GROUND SURFACE DEPOSITION (uCi/m2)	ARRIVAL TIME (hour:min)
0.100	5.7E-02	1.4E-06	4.3E-01	00:01
0.200	4.3E-02	1.1E-06	3.1E-01	00:03
0.500	2.3E-02	5.8E-07	1.6E-01	00:08
1.000	1.0E-02	2.7E-07	6.5E-02	00:16
2.000	3.6E-03	9.1E-08	1.8E-02	00:33
5.000	7.3E-04	1.8E-08	2.5E-03	01:23
10.000	2.1E-04	5.4E-09	5.4E-04	02:46
20.000	6.3E-05	1.6E-09	1.2E-04	05:33
50.000	1.4E-05	3.5E-10	1.8E-05	13:53

Uranium Fire

Hotspot Version 2.0 Uranium Fire
Mar 27, 2002 11:36 AM

Source Material	: Uranium
Source Term	: 100 kg
Airborne Fraction	: 1.00E-02
Respirable Fraction	: 5.00E-02
Respirable Release Fraction	: 5.00E-04
Specific Activity	: 2.39E-06 Ci/g
Heat Emission	: 1.00E+07 cal/s
Release Radius	: 5.00E+01 m
Physical Height of Fire	: 0 m
Effective Release Height	: 29 m
Wind Speed (h=2 m)	: 9.0 m/s
Distance Coordinates	: All distances are on the Plume Centerline
Avg Wind Speed (h=H-eff)	: 13.42 m/s
Stability Class	: D
Respirable Dep. Vel.	: 1.00 cm/s
Non-respirable Dep. Vel.	: 8.00 cm/s
Receptor Height	: 0.0 m
Inversion Layer Height	: None
Sample Time	: 10.000 min
Breathing Rate	: 3.33E-04 m3/sec
Maximum Dose Distance	: 0.010 km
MAXIMUM CEDE	: 9.00E-05 rem

FGR-11 Dose Conversion Data

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	GROUND SURFACE DEPOSITION (uCi/m2)	ARRIVAL TIME (hour:min)
0.100	7.2E-05	1.8E-09	2.8E-03	<00:01
0.200	5.8E-05	1.5E-09	2.2E-03	<00:01
0.500	3.4E-05	8.7E-10	1.3E-03	<00:01
1.000	1.9E-05	4.7E-10	6.6E-04	00:01
2.000	8.5E-06	2.2E-10	2.7E-04	00:02
5.000	2.7E-06	6.9E-11	6.8E-05	00:06
10.000	1.1E-06	2.8E-11	2.3E-05	00:12
20.000	4.7E-07	1.2E-11	6.7E-06	00:24
50.000	1.5E-07	3.9E-12	1.1E-06	01:02

General Plume

```
Hotspot  Version 2.0 General Plume
Mar 26, 2002 03:15 PM
Source Material            : Kr-85      10.72y
Source Term                : 2.0000E+04 Ci
Airborne Fraction          : 1.000
Respirable Fraction        : 1.000
Respirable Release Fraction: 1.000
Effective Release Height   : 10 m
Wind Speed (h=2 m)         : 1.0 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Wind Speed (h=H-eff)       : 1.12 m/s
Stability Class            : A
Respirable Dep. Vel.       : 0.00E+00 cm/s
Non-respirable Dep. Vel.   : 8.00 cm/s
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.035 km
MAXIMUM CEDE               : 0.017 rem
FGR-11 Dose Conversion Data
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	5.0E-03	1.1E+01	00:01
0.200	1.4E-03	3.2E+00	00:02
0.500	2.3E-04	5.3E-01	00:07
1.000	6.0E-05	1.4E-01	00:14
2.000	1.6E-05	3.5E-02	00:29
5.000	2.8E-06	6.3E-03	01:14
10.000	8.0E-07	1.8E-03	02:28
20.000	2.5E-07	5.6E-04	04:57
50.000	5.6E-08	1.3E-04	12:24

General Explosion

```
Hotspot  Version 2.0 General Explosion
Mar 26, 2002 04:08 PM
Source Material            : I-131   D    8.04d
Source Term                : 3.0000E+01 Ci
Airborne Fraction          : 1.000
Respirable Fraction        : 1.000
Respirable Release Fraction: 1.000
Wind Speed (h=2 m)         : 2.0 m/s
Distance Coordinates       : All distances are on the Plume Centerline
High Explosive             : 1.00 Pounds of TNT
Debris Cloud Top           : 76 m
Stability Class            : C
Respirable Dep. Vel.       : 1.00 cm/s
Non-respirable Dep. Vel.   : 8.00 cm/s
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :  0.060 rem
FGR-11 Dose Conversion Data
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	GROUND SURFACE DEPOSITION (uCi/m2)	GROUND SHINE DOSE RATE (rem/hr)	ARRIVAL TIME (hour:min)
0.100	3.2E-02	2.9E-03	2.9E+01	1.5E-04	<00:01
0.200	2.2E-02	2.0E-03	2.0E+01	9.8E-05	00:01
0.500	9.1E-03	8.3E-04	8.3E+00	4.2E-05	00:04
1.000	3.5E-03	3.2E-04	3.2E+00	1.6E-05	00:08
2.000	1.2E-03	1.0E-04	1.0E+00	5.2E-06	00:16
5.000	2.6E-04	2.3E-05	2.3E-01	1.2E-06	00:41
10.000	8.9E-05	8.1E-06	8.1E-02	4.0E-07	01:23
20.000	3.3E-05	3.0E-06	3.0E-02	1.5E-07	02:46
50.000	9.8E-06	8.9E-07	8.9E-03	4.5E-08	06:56

General Resuspension

```
Hotspot  Version 2.0 General Resuspension
Apr 19, 2002 02:17 PM
Source Material            : Cm-244  W   18.11y
Source Term                : 1.00E+03 uCi/m2
Resuspension Factor        : 1.0E-05   1/m
Effective Release Radius   : 5.00E+01 m
Effective Source Term      : 5.4E-05 Ci/s
Wind Speed (h=2 m)         : 3.0 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : A
Respirable Dep. Vel.       : 1.00 cm/s
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 60.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   1.8 rem
FGR-11 Dose Conversion Data
```

DISTANCE km	C E D E PER 1-HR EXPOSURE TIME (rem)	AVERAGE AIR CONCENTRATION (Ci/m3)
0.100	5.8E-01	1.9E-09
0.200	2.7E-01	9.0E-10
0.500	7.0E-02	2.3E-10
1.000	2.2E-02	7.2E-11
2.000	6.2E-03	2.1E-11
5.000	1.2E-03	3.9E-12
10.000	3.4E-04	1.2E-12
20.000	1.1E-04	3.5E-13
50.000	2.4E-05	8.0E-14

Tritium Release

```
Hotspot  Version 2.0 Tritium Release
Mar 26, 2002 09:05 AM
Source Material            : Tritium
Total Tritium Release      : 3.0000E+04 Ci  100 % Tritium Oxide
Airborne Fraction          : 1.000
Respirable Fraction        : 1.000
Respirable Release Fraction: 1.000
Effective Release Height   : 30 m
Wind Speed (h=2 m)         : 1.0 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Wind Speed (h=H-eff)       : 1.21 m/s
Stability Class            : B
Respirable Dep. Vel.       : 0.00E+00 cm/s
Non-respirable Dep. Vel.   : 8.00 cm/s
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.18 km
MAXIMUM CEDE               : 0.152 rem
FGR-11 Dose Conversion Data
Note: Dose Results Include HTO Skin Absorption
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	5.6E-02	1.8E+00	00:01
0.200	1.5E-01	4.8E+00	00:02
0.500	4.6E-02	1.5E+00	00:06
1.000	1.3E-02	4.2E-01	00:13
2.000	3.5E-03	1.1E-01	00:27
5.000	6.3E-04	2.0E-02	01:08
10.000	1.8E-04	5.8E-03	02:17
20.000	5.5E-05	1.8E-03	04:35
50.000	1.3E-05	4.0E-04	11:29

General Fire

Hotspot Version 2.0 General Fire
Mar 26, 2002 04:48 PM

Source Material	: Am-241 W 432.2y
Source Term	: 5.0000E+01 Ci
Airborne Fraction	: 1.00E-02
Respirable Fraction	: 5.00E-02
Respirable Release Fraction	: 5.00E-04
Release Radius	: 2.00E+01 m
Cloud Top	: 10 m
Physical Height of Fire	: 10 m
Effective Release Height	: 10 m
Wind Speed (h=2 m)	: 4.0 m/s
Distance Coordinates	: All distances are on the Plume Centerline
Avg Wind Speed (h=H-eff)	: 4.70 m/s
Stability Class	: C
Respirable Dep. Vel.	: 1.00 cm/s
Non-respirable Dep. Vel.	: 8.00 cm/s
Receptor Height	: 0.0 m
Inversion Layer Height	: None
Sample Time	: 10.000 min
Breathing Rate	: 3.33E-04 m3/sec
Maximum Dose Distance	: 0.010 km
MAXIMUM CEDE	: 1.4 rem

FGR-11 Dose Conversion Data

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	GROUND SURFACE DEPOSITION (uCi/m2)	GROUND SHINE DOSE RATE (rem/hr)	ARRIVAL TIME (hour:min)
0.100	5.7E-01	3.9E-06	5.7E+00	2.1E-06	<00:01
0.200	2.8E-01	1.9E-06	2.6E+00	9.6E-07	<00:01
0.500	7.9E-02	5.3E-07	6.3E-01	2.3E-07	00:01
1.000	2.5E-02	1.7E-07	1.8E-01	6.5E-08	00:03
2.000	7.8E-03	5.3E-08	4.8E-02	1.8E-08	00:07
5.000	1.7E-03	1.2E-08	8.6E-03	3.1E-09	00:17
10.000	6.0E-04	4.1E-09	2.5E-03	9.1E-10	00:35
20.000	2.3E-04	1.6E-09	7.5E-04	2.7E-10	01:10
50.000	7.3E-05	4.9E-10	1.5E-04	5.6E-11	02:57

APPENDIX 2

Comparison of Mixture File Run to Individual Isotope Runs

Isotope	Source Term (Ci)	CEDE at Receptor of Interest 0.100 km	1.000 km	10.00 km
Kr-83m	1.10E+02	1.40E-05	2.60E-07	4.10E-09
Kr-85m	7.10E+01	2.40E-02	4.80E-04	1.40E-05
Kr-85	8.10E-04	4.30E-09	9.00E-11	3.90E-12
Kr-87	4.30E+02	7.20E-01	1.30E-02	1.40E-04
Kr-88	2.30E+02	9.60E-01	1.90E-02	4.40E-04
Kr-89	1.30E+04	3.00E+01	2.20E-02	2.30E-18
Xe-133m	2.20E+00	1.10E-04	2.20E-06	9.30E-08
Xe-133	2.70E+01	1.90E-03	4.00E-05	1.70E-06
Xe-135m	3.30E+03	2.30E+00	4.80E-02	1.70E-03
Xe-135	4.10E+02	2.20E-01	4.50E-03	1.60E-04
Xe-137	4.90E+04	1.10E+01	1.40E-02	3.00E-16
Xe-138	1.10E+04	2.30E+01	2.20E-01	5.00E-06
I-131	2.80E+00	9.50E-02	5.10E-04	1.70E-06
I-132	3.00E+02	1.00E-01	5.20E-04	7.80E-07
I-133	4.00E+01	2.30E-01	1.20E-03	3.60E-06
I-134	1.10E+03	1.20E-01	5.50E-04	2.30E-07
I-135	1.20E+02	1.40E-01	7.30E-04	1.80E-06

Total CEDE:	6.89E+01	3.45E-01	2.47E-03
Total CEDE (Mix):	6.90E+01	3.50E-01	2.50E-03
% Difference:	1.29E-01	1.56E+00	1.24E+00

Isotope	Source Term (Ci)	CDE at Receptor of Interest 0.100 km	1.000 km	10.0 km
I-131	2.80E+00	3.20E+00	1.70E-02	5.70E-05
I-132	3.00E+02	2.00E+00	9.80E-03	1.50E-05
I-133	4.00E+01	7.60E+00	4.10E-02	1.20E-04
I-134	1.10E+03	1.20E+00	5.50E-03	2.30E-06
I-135	1.20E+02	3.90E+00	2.10E-02	5.10E-05

Total Thyroid Dose:	1.79E+01	9.43E-02	2.45E-04
Thyroid Dose (Mix):	1.80E+01	9.40E-02	2.50E-04
% Difference:	5.56E-01	-3.19E-01	1.88E+00

APPENDIX 3 -

Hotspot Runs for Mix Comparison

Evaluation of Mixtures Option in Hotspot 2.0
(Mixture of 17 radionuclides)

```
Hotspot  Version 2.0 General Plume
Source Term                : crit_mix2.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   1.06E+03 rem
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	GROUND SURFACE DEPOSITION (uCi/m2)	ARRIVAL TIME (hour:min)
0.100	6.9E+01	6.8E+02	9.7E+04	00:01

Target Organ Committed Equivalent Dose (rem), at Location 0.100 km

Skin.....[0.0E+00] Lung.....[2.0E-01] Thyroid.....[1.8E+01]

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	GROUND SURFACE DEPOSITION (uCi/m2)	ARRIVAL TIME (hour:min)
1.000	3.5E-01	2.8E+00	4.5E+02	00:17

Target Organ Committed Equivalent Dose (rem), at Location 1.000 km

Skin.....[0.0E+00] Lung.....[1.1E-03] Thyroid.....[9.4E-02]

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	GROUND SURFACE DEPOSITION (uCi/m2)	ARRIVAL TIME (hour:min)
10.000	2.5E-03	3.4E-02	4.1E-01	02:52

Target Organ Committed Equivalent Dose (rem), at Location 10.000 km

Skin.....[0.0E+00] Lung.....[2.7E-06] Thyroid.....[2.5E-04]

Evaluation of Mixtures Option in Hotspot 2.0
(Kr-83m)

```
Hotspot  Version 2.0 General Plume
Apr 15, 2002 11:25 AM
Source Term                : crit_mix_Kr-83M.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   1.64E-04 rem
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	1.4E-05	1.2E+00	00:01
1.000	2.6E-07	2.3E-02	00:17
10.000	4.1E-09	3.7E-04	02:52

Evaluation of Mixtures Option in Hotspot 2.0
(Kr-85m)

```
Hotspot  Version 2.0 General Plume
Apr 15, 2002 02:06 PM
Source Term                : crit_mix Kr-85M.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :  0.290 rem
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	2.4E-02	8.0E-01	00:01
1.000	4.8E-04	1.6E-02	00:17
10.000	1.4E-05	4.7E-04	02:52

Evaluation of Mixtures Option in Hotspot 2.0
(Kr-85)

```
Hotspot  Version 2.0 General Plume
Apr 15, 2002 02:09 PM
Source Term                : crit_mix kr-85.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   5.18E-08 rem
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	4.3E-09	9.2E-06	00:01
1.000	9.0E-11	1.9E-07	00:17
10.000	3.9E-12	8.4E-09	02:52

Evaluation of Mixtures Option in Hotspot 2.0
(Kr-87)

```
Hotspot  Version 2.0 General Plume
Apr 15, 2002 02:15 PM
Source Term                : crit_mix kr-87.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   8.8 rem
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	7.2E-01	4.8E+00	00:01
1.000	1.3E-02	8.7E-02	00:17
10.000	1.4E-04	9.2E-04	02:52

Evaluation of Mixtures Option in Hotspot 2.0
(Kr-88)

```
Hotspot  Version 2.0 General Plume
Apr 15, 2002 02:17 PM
Source Term                : crit_mix Kr-88.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   12 rem
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	9.6E-01	2.6E+00	00:01
1.000	1.9E-02	5.1E-02	00:17
10.000	4.4E-04	1.2E-03	02:52

Evaluation of Mixtures Option in Hotspot 2.0
(Kr-89)

```
Hotspot  Version 2.0 General Plume
Apr 15, 2002 04:12 PM
Source Term                : crit_mix Kr-89.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   5.12E+02 rem
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	3.0E+01	1.0E+02	00:01
1.000	2.2E-02	7.3E-02	00:17
10.000	2.3E-18	7.7E-18	02:52

Evaluation of Mixtures Option in Hotspot 2.0
(Xe-133m)

```
Hotspot  Version 2.0 General Plume
Apr 15, 2002 04:15 PM
Source Term                : crit_mix Xe-133M.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   1.29E-03 rem
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	1.1E-04	2.5E-02	00:01
1.000	2.2E-06	5.2E-04	00:17
10.000	9.3E-08	2.2E-05	02:52

Evaluation of Mixtures Option in Hotspot 2.0
(Xe-133)

```
Hotspot  Version 2.0 General Plume
Apr 15, 2002 04:17 PM
Source Term                : crit_mix Xe-133.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :  0.023 rem
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	1.9E-03	3.1E-01	00:01
1.000	4.0E-05	6.4E-03	00:17
10.000	1.7E-06	2.7E-04	02:52

Evaluation of Mixtures Option in Hotspot 2.0
(Xe-135m)

```
Hotspot  Version 2.0 General Plume
Apr 15, 2002 04:20 PM
Source Term                : crit_mix Xe-135M.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   28 rem
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	2.3E+00	3.7E+01	00:01
1.000	4.8E-02	7.7E-01	00:17
10.000	1.7E-03	2.7E-02	02:52

Evaluation of Mixtures Option in Hotspot 2.0
(Xe-135)

```
Hotspot  Version 2.0 General Plume
Apr 15, 2002 04:22 PM
Source Term                : crit_mix Xe-135.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   2.6 rem
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	2.2E-01	4.6E+00	00:01
1.000	4.5E-03	9.5E-02	00:17
10.000	1.6E-04	3.4E-03	02:52

Evaluation of Mixtures Option in Hotspot 2.0
(Xe-137)

```
Hotspot  Version 2.0 General Plume
Apr 15, 2002 04:37 PM
Source Term                : crit_mix Xe-137.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   1.75E+02 rem
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	1.1E+01	4.1E+02	00:01
1.000	1.4E-02	5.0E-01	00:17
10.000	3.0E-16	1.1E-14	02:52

Evaluation of Mixtures Option in Hotspot 2.0
(Xe-138)

```
Hotspot  Version 2.0 General Plume
Apr 15, 2002 04:38 PM
Source Term                : crit_mix Xe-138.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   2.97E+02 rem
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	2.3E+01	1.1E+02	00:01
1.000	2.2E-01	1.1E+00	00:17
10.000	5.0E-06	2.5E-05	02:52

Evaluation of Mixtures Option in Hotspot 2.0
(I-131)

```
Hotspot  Version 2.0 General Plume
Apr 24, 2002 04:49 PM
Source Term                : crit_mix I-131.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   4.1 rem

 DISTANCE      C E D E     TIME-INTEGRATED   GROUND SURFACE    ARRIVAL
                          AIR CONCENTRATION    DEPOSITION       TIME
    km          (rem)        (Ci-sec)/m3        (uCi/m2)     (hour:min)
 ____________________________________________________________________
   0.100        9.5E-02         8.9E-03          1.8E+02         00:01
 ---------------------------------------------------------------------------
  Target Organ Committed Equivalent Dose (rem), at Location    0.100       km
  Skin.........[0.0E+00]  Lung.........[0.0E+00]  Thyroid......[3.2E+00]
-----------------------------------------------------------------------------

 DISTANCE      C E D E     TIME-INTEGRATED   GROUND SURFACE    ARRIVAL
                          AIR CONCENTRATION    DEPOSITION       TIME
    km          (rem)        (Ci-sec)/m3        (uCi/m2)     (hour:min)
 ____________________________________________________________________
   1.000        5.1E-04         4.8E-05          9.6E-01         00:17
 ---------------------------------------------------------------------------
  Target Organ Committed Equivalent Dose (rem), at Location    1.000       km
  Skin.........[0.0E+00]  Lung.........[0.0E+00]  Thyroid......[1.7E-02]
-----------------------------------------------------------------------------

 DISTANCE      C E D E     TIME-INTEGRATED   GROUND SURFACE    ARRIVAL
                          AIR CONCENTRATION    DEPOSITION       TIME
    km          (rem)        (Ci-sec)/m3        (uCi/m2)     (hour:min)
 ____________________________________________________________________
  10.000        1.7E-06         1.6E-07          3.1E-03         02:52
 ---------------------------------------------------------------------------
  Target Organ Committed Equivalent Dose (rem), at Location   10.000       km
  Skin.........[0.0E+00]  Lung.........[0.0E+00]  Thyroid......[5.7E-05]
-----------------------------------------------------------------------------
```

Evaluation of Mixtures Option in Hotspot 2.0
(I-132)

```
Hotspot  Version 2.0 General Plume
Apr 24, 2002 04:53 PM
Source Term                : crit_mix I-132.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   4.5 rem

 DISTANCE      C E D E     TIME-INTEGRATED   GROUND SURFACE    ARRIVAL
                          AIR CONCENTRATION    DEPOSITION       TIME
    km          (rem)        (Ci-sec)/m3        (uCi/m2)     (hour:min)
 ____________________________________________________________________________
   0.100        1.0E-01         9.4E-01          1.9E+04         00:01
 ----------------------------------------------------------------------------
  Target Organ Committed Equivalent Dose (rem), at Location    0.100       km
  Skin.........[0.0E+00]  Lung.........[3.1E-03]  Thyroid......[2.0E+00]
-----------------------------------------------------------------------------

 DISTANCE      C E D E     TIME-INTEGRATED   GROUND SURFACE    ARRIVAL
                          AIR CONCENTRATION    DEPOSITION       TIME
    km          (rem)        (Ci-sec)/m3        (uCi/m2)     (hour:min)
 ____________________________________________________________________________
   1.000        5.2E-04         4.7E-03          9.4E+01         00:17
 ----------------------------------------------------------------------------
  Target Organ Committed Equivalent Dose (rem), at Location    1.000       km
  Skin.........[0.0E+00]  Lung.........[1.6E-05]  Thyroid......[9.8E-03]
-----------------------------------------------------------------------------

 DISTANCE      C E D E     TIME-INTEGRATED   GROUND SURFACE    ARRIVAL
                          AIR CONCENTRATION    DEPOSITION       TIME
    km          (rem)        (Ci-sec)/m3        (uCi/m2)     (hour:min)
 ____________________________________________________________________________
  10.000        7.8E-07         7.1E-06          1.4E-01         02:52
 ----------------------------------------------------------------------------
  Target Organ Committed Equivalent Dose (rem), at Location   10.000       km
  Skin.........[0.0E+00]  Lung.........[2.3E-08]  Thyroid......[1.5E-05]
-----------------------------------------------------------------------------
```

Evaluation of Mixtures Option in Hotspot 2.0
(I-133)

```
Hotspot  Version 2.0 General Plume
Apr 24, 2002 04:56 PM
Source Term                : crit_mix I-133.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   9.8 rem

 DISTANCE      C E D E     TIME-INTEGRATED   GROUND SURFACE    ARRIVAL
                          AIR CONCENTRATION    DEPOSITION       TIME
    km          (rem)        (Ci-sec)/m3        (uCi/m2)     (hour:min)
 ____________________________________________________________________
   0.100        2.3E-01         1.3E-01          2.5E+03         00:01
 ---------------------------------------------------------------------------
  Target Organ Committed Equivalent Dose (rem), at Location    0.100       km
  Skin.........[0.0E+00]  Lung.........[0.0E+00]  Thyroid......[7.6E+00]
---------------------------------------------------------------------------

 DISTANCE      C E D E     TIME-INTEGRATED   GROUND SURFACE    ARRIVAL
                          AIR CONCENTRATION    DEPOSITION       TIME
    km          (rem)        (Ci-sec)/m3        (uCi/m2)     (hour:min)
 ____________________________________________________________________
   1.000        1.2E-03         6.8E-04          1.4E+01         00:17
 ---------------------------------------------------------------------------
  Target Organ Committed Equivalent Dose (rem), at Location    1.000       km
  Skin.........[0.0E+00]  Lung.........[0.0E+00]  Thyroid......[4.1E-02]
---------------------------------------------------------------------------

 DISTANCE      C E D E     TIME-INTEGRATED   GROUND SURFACE    ARRIVAL
                          AIR CONCENTRATION    DEPOSITION       TIME
    km          (rem)        (Ci-sec)/m3        (uCi/m2)     (hour:min)
 ____________________________________________________________________
  10.000        3.6E-06         2.0E-06          4.1E-02         02:52
 ---------------------------------------------------------------------------
  Target Organ Committed Equivalent Dose (rem), at Location   10.000       km
  Skin.........[0.0E+00]  Lung.........[0.0E+00]  Thyroid......[1.2E-04]
---------------------------------------------------------------------------
```

Evaluation of Mixtures Option in Hotspot 2.0
(I-134)

```
Hotspot  Version 2.0 General Plume
Apr 24, 2002 04:58 PM
Source Term                : crit_mix I-134.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   5.5 rem

 DISTANCE      C E D E     TIME-INTEGRATED   GROUND SURFACE    ARRIVAL
                          AIR CONCENTRATION    DEPOSITION       TIME
    km          (rem)        (Ci-sec)/m3        (uCi/m2)     (hour:min)
 ____________________________________________________________________
   0.100        1.2E-01         3.4E+00          6.8E+04         00:01
 ---------------------------------------------------------------------------
  Target Organ Committed Equivalent Dose (rem), at Location    0.100       km
  Skin.........[0.0E+00]  Lung.........[0.0E+00]  Thyroid......[1.2E+00]
 ---------------------------------------------------------------------------

 DISTANCE      C E D E     TIME-INTEGRATED   GROUND SURFACE    ARRIVAL
                          AIR CONCENTRATION    DEPOSITION       TIME
    km          (rem)        (Ci-sec)/m3        (uCi/m2)     (hour:min)
 ____________________________________________________________________
   1.000        5.5E-04         1.5E-02          3.0E+02         00:17
 ---------------------------------------------------------------------------
  Target Organ Committed Equivalent Dose (rem), at Location    1.000       km
  Skin.........[0.0E+00]  Lung.........[0.0E+00]  Thyroid......[5.5E-03]
---------------------------------------------------------------------------

 DISTANCE      C E D E     TIME-INTEGRATED   GROUND SURFACE    ARRIVAL
                          AIR CONCENTRATION    DEPOSITION       TIME
    km          (rem)        (Ci-sec)/m3        (uCi/m2)     (hour:min)
 ____________________________________________________________________
  10.000        2.3E-07         6.3E-06          1.3E-01         02:52
 ---------------------------------------------------------------------------
  Target Organ Committed Equivalent Dose (rem), at Location   10.000       km
  Skin.........[0.0E+00]  Lung.........[0.0E+00]  Thyroid......[2.3E-06]
---------------------------------------------------------------------------
```

Evaluation of Mixtures Option in Hotspot 2.0
(I-135)

```
Hotspot  Version 2.0 General Plume
Apr 24, 2002 05:01 PM
Source Term                : crit_mix I-135.mix (Mixture Scale Factor = 1.0000E+00)
                             Example of Hotspot Mixture File
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   6.0 rem

 DISTANCE      C E D E     TIME-INTEGRATED   GROUND SURFACE    ARRIVAL
                          AIR CONCENTRATION    DEPOSITION       TIME
    km          (rem)        (Ci-sec)/m3        (uCi/m2)     (hour:min)
 ____________________________________________________________________________
   0.100        1.4E-01         3.8E-01          7.6E+03         00:01
 ----------------------------------------------------------------------------
  Target Organ Committed Equivalent Dose (rem), at Location    0.100       km
  Skin.........[0.0E+00]  Lung.........[2.0E-01]  Thyroid......[3.9E+00]
-------------------------------------------------------------------------------

 DISTANCE      C E D E     TIME-INTEGRATED   GROUND SURFACE    ARRIVAL
                          AIR CONCENTRATION    DEPOSITION       TIME
    km          (rem)        (Ci-sec)/m3        (uCi/m2)     (hour:min)
 ____________________________________________________________________________
   1.000        7.3E-04         2.0E-03          4.0E+01         00:17
 ----------------------------------------------------------------------------
  Target Organ Committed Equivalent Dose (rem), at Location    1.000       km
  Skin.........[0.0E+00]  Lung.........[1.1E-03]  Thyroid......[2.1E-02]
-------------------------------------------------------------------------------

 DISTANCE      C E D E     TIME-INTEGRATED   GROUND SURFACE    ARRIVAL
                          AIR CONCENTRATION    DEPOSITION       TIME
    km          (rem)        (Ci-sec)/m3        (uCi/m2)     (hour:min)
 ____________________________________________________________________________
  10.000        1.8E-06         5.0E-06          9.9E-02         02:52
 ----------------------------------------------------------------------------
  Target Organ Committed Equivalent Dose (rem), at Location   10.000       km
  Skin.........[0.0E+00]  Lung.........[2.6E-06]  Thyroid......[5.1E-05]
-------------------------------------------------------------------------------
```

The crit_mix2 File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix2.mix
Example of Hotspot Mixture File
Mixture Scale Factor                        : 1.0000E+00
_____________________________________________________________________
Nuclide [01] : Kr-83M      2.053E-04y
Halflife                            (Years): 2.05E-04
Inhalation        50-yr CEDE        (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 2.97E-18
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation            (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation            (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation            (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation            (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation            (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation            (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation            (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation            (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation            (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation            (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation            (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation            (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation            (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation            (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation            (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation            (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation            (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation            (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation            (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
```

```
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 1.10E+02
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
_____________________________________________________________________
Nuclide [02] : Kr-85M      5.114E-04y
Halflife                           (Years): 5.11E-04
Inhalation        50-yr CEDE       (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 8.11E-15
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation             (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation             (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation             (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation             (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation             (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation             (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation             (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation             (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation             (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation             (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation             (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation             (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation             (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation             (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation             (Sv/Bq): 0.00E+00
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LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation              (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation              (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation              (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation              (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation              (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation              (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation              (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation              (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released              (Ci)   : 7.10E+01
Airborne Fraction                           : 1.00E+00
Respirable Fraction                         : 1.00E+00
Respirable Deposition Velocity (cm/sec)     : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)     : 8.00E+00
_____________________________________________________________________________
Nuclide [03] : Kr-85      1.072E+01y
Halflife                             (Years): 1.07E+01
Inhalation        50-yr CEDE         (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 1.27E-16
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation              (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation              (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation              (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation              (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation              (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation              (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation              (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation              (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation              (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation              (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
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ULI Wall     Inhalation             (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation             (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation             (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation             (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation             (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation             (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation             (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation             (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation             (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 8.10E-04
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
_____________________________________________________________________________
Nuclide [04] : Kr-87      1.4520E-04y
Halflife                            (Years): 1.45E-04
Inhalation        50-yr CEDE        (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 4.05E-14
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation             (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation             (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation             (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation             (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation             (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation             (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
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Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation             (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation             (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation             (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation             (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation             (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation             (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation             (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation             (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation             (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation             (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation             (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation             (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation             (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 4.30E+02
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
_____________________________________________________________________________
Nuclide [05] : Kr-88      3.242E-04y
Halflife                            (Years): 3.24E-04
Inhalation        50-yr CEDE        (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 1.00E-13
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation             (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation             (Sv/Bq): 0.00E+00
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Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation             (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation             (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation             (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation             (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation             (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation             (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation             (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation             (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation             (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation             (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation             (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation             (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation             (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation             (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation             (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation             (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation             (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 2.30E+02
Airborne Fraction                          : 1.00E+00
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Respirable Fraction                          : 1.00E+00
Respirable Deposition Velocity (cm/sec)      : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)      : 0.00E+00
_____________________________________________________________________
Nuclide [06] : Kr-89      6.084E-06y
Halflife                              (Years): 6.08E-06
Inhalation        50-yr CEDE          (Sv/Bq): 0.00E+00
Submersion                  (Sv-m3)/(Bq-sec): 8.11E-14
Ground Shine                (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation               (Sv/Bq): 0.00E+00
Skin         Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground          Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation               (Sv/Bq): 0.00E+00
Lung         Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground          Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation               (Sv/Bq): 0.00E+00
Thyroid      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation               (Sv/Bq): 0.00E+00
Surface Bone Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground          Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation               (Sv/Bq): 0.00E+00
Red Marrow   Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground          Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation               (Sv/Bq): 0.00E+00
Liver        Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground          Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation               (Sv/Bq): 0.00E+00
Spleen       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation               (Sv/Bq): 0.00E+00
Ovaries      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation               (Sv/Bq): 0.00E+00
Adrenals     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation               (Sv/Bq): 0.00E+00
Breast       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground          Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation               (Sv/Bq): 0.00E+00
ULI Wall     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation               (Sv/Bq): 0.00E+00
Thymus       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation               (Sv/Bq): 0.00E+00
Bladder Wall Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground          Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation               (Sv/Bq): 0.00E+00
Esophagus    Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground          Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation               (Sv/Bq): 0.00E+00
LLI Wall     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation               (Sv/Bq): 0.00E+00
Muscle       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation               (Sv/Bq): 0.00E+00
Stomach Wall Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground          Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation               (Sv/Bq): 0.00E+00
Kidneys      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation               (Sv/Bq): 0.00E+00
Testes       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation               (Sv/Bq): 0.00E+00
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Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 1.30E+04
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
_____________________________________________________________________________
Nuclide [07] : Xe-133M      5.476E-03y
Halflife                            (Years): 5.48E-03
Inhalation        50-yr CEDE        (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 1.16E-15
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation             (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation             (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation             (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation             (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation             (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation             (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation             (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation             (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation             (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation             (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation             (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation             (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation             (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation             (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation             (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
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Muscle       Inhalation             (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation             (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation             (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation             (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 2.20E+00
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
_____________________________________________________________________________
Nuclide [08] : Xe-133      1.437E-02y
Halflife                            (Years): 1.44E-02
Inhalation        50-yr CEDE        (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 1.70E-15
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation             (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation             (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation             (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation             (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation             (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation             (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation             (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation             (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation             (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation             (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation             (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
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ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation             (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation             (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation             (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation             (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation             (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation             (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation             (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation             (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 2.70E+01
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
_____________________________________________________________________________
Nuclide [09] : Xe-135M      1.038E-03y
Halflife                            (Years): 1.04E-03
Inhalation        50-yr CEDE        (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 1.68E-14
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation             (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation             (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation             (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation             (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation             (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation             (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation             (Sv/Bq): 0.00E+00
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Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation              (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation              (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation              (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation              (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation              (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation              (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation              (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation              (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation              (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation              (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation              (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation              (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation              (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation              (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation              (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation              (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 3.30E+03
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
_____________________________________________________________________________
Nuclide [10] : Xe-135      1.038E-02y
Halflife                            (Years): 1.04E-03
Inhalation        50-yr CEDE        (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 1.27E-14
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation              (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation              (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
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Thyroid      Inhalation             (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation             (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation             (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation             (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation             (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation             (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation             (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation             (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation             (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation             (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation             (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation             (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation             (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation             (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation             (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation             (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation             (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 4.10E+02
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
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Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
_____________________________________________________________________________
Nuclide [11] : Xe-137      7.225E-06y
Halflife                              (Years): 7.23E-06
Inhalation        50-yr CEDE          (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 7.30E-15
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation              (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation              (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation              (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation              (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation              (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation              (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation              (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation              (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation              (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation              (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation              (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation              (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation              (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation              (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation              (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation              (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation              (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation              (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation              (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation              (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
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Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 4.90E+04
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
_____________________________________________________________________________
Nuclide [12] : Xe-138      2.700E-05y
Halflife                            (Years): 2.70E-05
Inhalation        50-yr CEDE        (Sv/Bq): 0.00E+00
Submersion                    (Sv-m3)/(Bq-sec): 5.41E-14
Ground Shine                  (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation             (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation             (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation             (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation             (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation             (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation             (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation             (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation             (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation             (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation             (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation             (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation             (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation             (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation             (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation             (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation             (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
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Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation             (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation             (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation             (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 1.10E+04
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 0.00E+00
_____________________________________________________________________________
Nuclide [13] : I-131      2.203E-02y
Halflife                            (Years): 2.20E-02
Inhalation        50-yr CEDE        (Sv/Bq): 8.65E-09
Submersion                 (Sv-m3)/(Bq-sec): 0.00E+00
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation             (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation             (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation             (Sv/Bq): 2.97E-07
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation             (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation             (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation             (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation             (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation             (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation             (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation             (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation             (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation             (Sv/Bq): 0.00E+00
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Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation             (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation             (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation             (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation             (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation             (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation             (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation             (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 2.80E+00
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 2.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
_____________________________________________________________________________
Nuclide [14] : I-132      2.626E-04y
Halflife                            (Years): 2.63E-04
Inhalation        50-yr CEDE        (Sv/Bq): 8.92E-11
Submersion                 (Sv-m3)/(Bq-sec): 0.00E+00
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation             (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation             (Sv/Bq): 2.70E-12
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation             (Sv/Bq): 1.70E-09
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation             (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation             (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation             (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation             (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
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Ovaries      Inhalation             (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation             (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation             (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation             (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation             (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation             (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation             (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation             (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation             (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation             (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation             (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation             (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 3.00E+02
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 2.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
_____________________________________________________________________________
Nuclide [15] : I-133      2.374E-03y
Halflife                            (Years): 2.37E-03
Inhalation        50-yr CEDE        (Sv/Bq): 1.46E-09
Submersion                 (Sv-m3)/(Bq-sec): 0.00E+00
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation             (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation             (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation             (Sv/Bq): 4.86E-08
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
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Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation             (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation             (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation             (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation             (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation             (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation             (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation             (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation             (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation             (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation             (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation             (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation             (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation             (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation             (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation             (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation             (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 4.00E+01
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 2.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
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Nuclide [16] : I-134      1.001E-04y
Halflife                              (Years): 1.00E-04
Inhalation        50-yr CEDE          (Sv/Bq): 2.97E-11
Submersion                 (Sv-m3)/(Bq-sec): 0.00E+00
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation              (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation              (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation              (Sv/Bq): 2.97E-10
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation              (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation              (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation              (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation              (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation              (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation              (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation              (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation              (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation              (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation              (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation              (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation              (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation              (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation              (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation              (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation              (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation              (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation              (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
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Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 1.10E+03
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 2.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
_____________________________________________________________________________
Nuclide [17] : I-135      7.546E-04y
Halflife                           (Years): 7.55E-04
Inhalation        50-yr CEDE       (Sv/Bq): 2.97E-10
Submersion                (Sv-m3)/(Bq-sec): 0.00E+00
Ground Shine              (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation             (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation             (Sv/Bq): 4.32E-10
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation             (Sv/Bq): 8.39E-09
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation             (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation             (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation             (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation             (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation             (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation             (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation             (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation             (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation             (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation             (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation             (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation             (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation             (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation             (Sv/Bq): 0.00E+00
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Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation             (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation             (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 1.20E+02
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 2.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
```

1. The crit_mix_Kr-83M File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix_Kr-83M.mix
Example of Hotspot Mixture File
Mixture Scale Factor                        : 1.0000E+00
_____________________________________________________________________
Nuclide [01] : Kr-83M      2.053E-04y
Halflife                            (Years): 2.05E-04
Inhalation        50-yr CEDE        (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 2.97E-18
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation            (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation            (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation            (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation            (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation            (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation            (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation            (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation            (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation            (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation            (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation            (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation            (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation            (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation            (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation            (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation            (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation            (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation            (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation            (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
```

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Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 1.10E+02
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
```

2. The crit_mix_Kr-85M File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix_Kr-85M.mix
Example of Hotspot Mixture File
Mixture Scale Factor                        : 1.0000E+00
_____________________________________________________________________________
Nuclide [01] : Kr-85M      5.114E-04y
Halflife                              (Years): 5.11E-04
Inhalation        50-yr CEDE          (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 8.11E-15
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation              (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation              (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation              (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation              (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation              (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation              (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation              (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation              (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation              (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation              (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation              (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation              (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation              (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation              (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation              (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation              (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation              (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation              (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation              (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
```

```
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 7.10E+01
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
```

3. The crit_mix_Kr-85 File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix_Kr-85.mix
Example of Hotspot Mixture File
Mixture Scale Factor                        : 1.0000E+00
_____________________________________________________________________________
Nuclide [01] : Kr-85      1.072E+01y
Halflife                              (Years): 1.07E+01
Inhalation        50-yr CEDE          (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 1.27E-16
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation              (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation              (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation              (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation              (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation              (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation              (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation              (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation              (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation              (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation              (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation              (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation              (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation              (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation              (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation              (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation              (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation              (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation              (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation              (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
```

```
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 8.10E-04
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
```

4. The crit_mix_Kr-87 File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix_Kr-87.mix
Example of Hotspot Mixture File
Mixture Scale Factor                        : 1.0000E+00
_____________________________________________________________________________
Nuclide [01] : Kr-87      1.4520E-04y
Halflife                            (Years): 1.45E-04
Inhalation        50-yr CEDE        (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 4.05E-14
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation            (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation            (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation            (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation            (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation            (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation            (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation            (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation            (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation            (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation            (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation            (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation            (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation            (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation            (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation            (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation            (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation            (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation            (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation            (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
```

```
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 4.30E+02
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
```

5. The crit_mix_Kr-88 File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix_Kr-88.mix
Example of Hotspot Mixture File
Mixture Scale Factor                      : 1.0000E+00
_____________________________________________________________________________
Nuclide [01] : Kr-88      3.242E-04y
Halflife                            (Years): 3.24E-04
Inhalation        50-yr CEDE        (Sv/Bq): 0.00E+00
Submersion                (Sv-m3)/(Bq-sec): 1.00E-13
Ground Shine              (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation             (Sv/Bq): 0.00E+00
Skin         Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground        Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation             (Sv/Bq): 0.00E+00
Lung         Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground        Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation             (Sv/Bq): 0.00E+00
Thyroid      Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground        Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation             (Sv/Bq): 0.00E+00
Surface Bone Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground        Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation             (Sv/Bq): 0.00E+00
Red Marrow   Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground        Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation             (Sv/Bq): 0.00E+00
Liver        Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground        Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation             (Sv/Bq): 0.00E+00
Spleen       Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground        Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation             (Sv/Bq): 0.00E+00
Ovaries      Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground        Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation             (Sv/Bq): 0.00E+00
Adrenals     Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground        Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation             (Sv/Bq): 0.00E+00
Breast       Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground        Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation             (Sv/Bq): 0.00E+00
ULI Wall     Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground        Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation             (Sv/Bq): 0.00E+00
Thymus       Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground        Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation             (Sv/Bq): 0.00E+00
Bladder Wall Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground        Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation             (Sv/Bq): 0.00E+00
Esophagus    Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground        Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation             (Sv/Bq): 0.00E+00
LLI Wall     Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground        Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation             (Sv/Bq): 0.00E+00
Muscle       Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground        Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation             (Sv/Bq): 0.00E+00
Stomach Wall Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground        Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation             (Sv/Bq): 0.00E+00
Kidneys      Submersion   (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground        Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation             (Sv/Bq): 0.00E+00
```

```
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation              (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation              (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation              (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation              (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released              (Ci)   : 2.30E+02
Airborne Fraction                           : 1.00E+00
Respirable Fraction                         : 1.00E+00
Respirable Deposition Velocity (cm/sec)     : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)     : 8.00E+00
```

6. The crit_mix_Kr-89 File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix_Kr-89.mix
Example of Hotspot Mixture File
Mixture Scale Factor                        : 1.0000E+00
_____________________________________________________________________________
Nuclide [01] : Kr-89      6.084E-06y
Halflife                              (Years): 6.08E-06
Inhalation        50-yr CEDE          (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 8.11E-14
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation               (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation               (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation               (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation               (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation               (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation               (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation               (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation               (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation               (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation               (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation               (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation               (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation               (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation               (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation               (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation               (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation               (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation               (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation               (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
```

```
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 1.30E+04
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
```

7. The crit_mix_Xe-133M File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix_Xe-133M.mix
Example of Hotspot Mixture File
Mixture Scale Factor                        : 1.0000E+00
_____________________________________________________________________________
Nuclide [01] : Xe-133M      5.476E-03y
Halflife                              (Years): 5.48E-03
Inhalation        50-yr CEDE          (Sv/Bq): 0.00E+00
Submersion                  (Sv-m3)/(Bq-sec): 1.16E-15
Ground Shine                (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation               (Sv/Bq): 0.00E+00
Skin         Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground          Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation               (Sv/Bq): 0.00E+00
Lung         Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground          Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation               (Sv/Bq): 0.00E+00
Thyroid      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation               (Sv/Bq): 0.00E+00
Surface Bone Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground          Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation               (Sv/Bq): 0.00E+00
Red Marrow   Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground          Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation               (Sv/Bq): 0.00E+00
Liver        Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground          Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation               (Sv/Bq): 0.00E+00
Spleen       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation               (Sv/Bq): 0.00E+00
Ovaries      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation               (Sv/Bq): 0.00E+00
Adrenals     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation               (Sv/Bq): 0.00E+00
Breast       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground          Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation               (Sv/Bq): 0.00E+00
ULI Wall     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation               (Sv/Bq): 0.00E+00
Thymus       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation               (Sv/Bq): 0.00E+00
Bladder Wall Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground          Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation               (Sv/Bq): 0.00E+00
Esophagus    Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground          Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation               (Sv/Bq): 0.00E+00
LLI Wall     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation               (Sv/Bq): 0.00E+00
Muscle       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation               (Sv/Bq): 0.00E+00
Stomach Wall Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground          Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation               (Sv/Bq): 0.00E+00
Kidneys      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation               (Sv/Bq): 0.00E+00
```

```
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation              (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation              (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation              (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation              (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released              (Ci)   : 2.20E+00
Airborne Fraction                           : 1.00E+00
Respirable Fraction                         : 1.00E+00
Respirable Deposition Velocity (cm/sec)     : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)     : 8.00E+00
```

8. The crit_mix_Xe-133 File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix_Xe-133.mix
Example of Hotspot Mixture File
Mixture Scale Factor                        : 1.0000E+00
_____________________________________________________________________________
Nuclide [01] : Xe-133      1.437E-02y
Halflife                              (Years): 1.44E-02
Inhalation        50-yr CEDE          (Sv/Bq): 0.00E+00
Submersion                  (Sv-m3)/(Bq-sec): 1.70E-15
Ground Shine                (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation               (Sv/Bq): 0.00E+00
Skin         Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground          Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation               (Sv/Bq): 0.00E+00
Lung         Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground          Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation               (Sv/Bq): 0.00E+00
Thyroid      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation               (Sv/Bq): 0.00E+00
Surface Bone Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground          Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation               (Sv/Bq): 0.00E+00
Red Marrow   Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground          Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation               (Sv/Bq): 0.00E+00
Liver        Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground          Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation               (Sv/Bq): 0.00E+00
Spleen       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation               (Sv/Bq): 0.00E+00
Ovaries      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation               (Sv/Bq): 0.00E+00
Adrenals     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation               (Sv/Bq): 0.00E+00
Breast       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground          Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation               (Sv/Bq): 0.00E+00
ULI Wall     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation               (Sv/Bq): 0.00E+00
Thymus       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation               (Sv/Bq): 0.00E+00
Bladder Wall Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground          Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation               (Sv/Bq): 0.00E+00
Esophagus    Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground          Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation               (Sv/Bq): 0.00E+00
LLI Wall     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation               (Sv/Bq): 0.00E+00
Muscle       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation               (Sv/Bq): 0.00E+00
Stomach Wall Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground          Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation               (Sv/Bq): 0.00E+00
Kidneys      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation               (Sv/Bq): 0.00E+00
Testes       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
```

```
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 2.70E+01
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
```

9. The crit_mix_Xe-135M File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix_Xe-135M.mix
Example of Hotspot Mixture File
Mixture Scale Factor                        : 1.0000E+00
_____________________________________________________________________________
Nuclide [01] : Xe-135M      1.038E-03y
Halflife                              (Years): 1.04E-03
Inhalation        50-yr CEDE          (Sv/Bq): 0.00E+00
Submersion                  (Sv-m3)/(Bq-sec): 1.68E-14
Ground Shine                (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation               (Sv/Bq): 0.00E+00
Skin         Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground          Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation               (Sv/Bq): 0.00E+00
Lung         Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground          Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation               (Sv/Bq): 0.00E+00
Thyroid      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation               (Sv/Bq): 0.00E+00
Surface Bone Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground          Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation               (Sv/Bq): 0.00E+00
Red Marrow   Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground          Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation               (Sv/Bq): 0.00E+00
Liver        Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground          Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation               (Sv/Bq): 0.00E+00
Spleen       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation               (Sv/Bq): 0.00E+00
Ovaries      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation               (Sv/Bq): 0.00E+00
Adrenals     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation               (Sv/Bq): 0.00E+00
Breast       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground          Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation               (Sv/Bq): 0.00E+00
ULI Wall     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation               (Sv/Bq): 0.00E+00
Thymus       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation               (Sv/Bq): 0.00E+00
Bladder Wall Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground          Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation               (Sv/Bq): 0.00E+00
Esophagus    Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground          Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation               (Sv/Bq): 0.00E+00
LLI Wall     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation               (Sv/Bq): 0.00E+00
Muscle       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation               (Sv/Bq): 0.00E+00
Stomach Wall Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground          Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation               (Sv/Bq): 0.00E+00
Kidneys      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation               (Sv/Bq): 0.00E+00
Testes       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
```

```
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 3.30E+03
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
```

10. The crit_mix_Xe-135 File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix_Xe-135.mix
Example of Hotspot Mixture File
Mixture Scale Factor                        : 1.0000E+00
_____________________________________________________________________________
Nuclide [1] : Xe-135      1.038E-02y
Halflife                              (Years): 1.04E-03
Inhalation        50-yr CEDE          (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 1.27E-14
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation              (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation              (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation              (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation              (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation              (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation              (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation              (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation              (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation              (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation              (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation              (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation              (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation              (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation              (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation              (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation              (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation              (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation              (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation              (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
```

```
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 4.10E+02
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
```

11. The crit_mix_Xe-137 File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix_Xe-137.mix
Example of Hotspot Mixture File
Mixture Scale Factor                        : 1.0000E+00
_____________________________________________________________________________
Nuclide [1] : Xe-137      7.225E-06y
Halflife                              (Years): 7.23E-06
Inhalation        50-yr CEDE          (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 7.30E-15
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation              (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation              (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation              (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation              (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation              (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation              (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation              (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation              (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation              (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation              (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation              (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation              (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation              (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation              (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation              (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation              (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation              (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation              (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation              (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
```

```
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 4.90E+04
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
```

12. The crit_mix_Xe-138 File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix_Xe-138.mix
Example of Hotspot Mixture File
Mixture Scale Factor                        : 1.0000E+00
_____________________________________________________________________________
Nuclide [1] : Xe-138      2.700E-05y
Halflife                              (Years): 2.70E-05
Inhalation        50-yr CEDE          (Sv/Bq): 0.00E+00
Submersion                 (Sv-m3)/(Bq-sec): 5.41E-14
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation              (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation              (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation              (Sv/Bq): 0.00E+00
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation              (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation              (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation              (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation              (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation              (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation              (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation              (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation              (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation              (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation              (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation              (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation              (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation              (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation              (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation              (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation              (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
```

```
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 1.10E+04
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 0.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
```

13. The crit_mix_I-131 File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix_I-131.mix
Example of Hotspot Mixture File
Mixture Scale Factor                        : 1.0000E+00
_____________________________________________________________________________
Nuclide [1] : I-131      2.203E-02y
Halflife                              (Years): 2.20E-02
Inhalation        50-yr CEDE          (Sv/Bq): 8.65E-09
Submersion                 (Sv-m3)/(Bq-sec): 0.00E+00
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation              (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation              (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation              (Sv/Bq): 2.97E-07
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation              (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation              (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation              (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation              (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation              (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation              (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation              (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation              (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation              (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation              (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation              (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation              (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation              (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation              (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation              (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation              (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
```

```
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 2.80E+00
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 2.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
```

14. The crit_mix_I-132 File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix_I-132.mix
Example of Hotspot Mixture File
Mixture Scale Factor                        : 1.0000E+00
_____________________________________________________________________________
Nuclide [1] : I-132      2.626E-04y
Halflife                              (Years): 2.63E-04
Inhalation        50-yr CEDE          (Sv/Bq): 8.92E-11
Submersion                 (Sv-m3)/(Bq-sec): 0.00E+00
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation              (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation              (Sv/Bq): 2.70E-12
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation              (Sv/Bq): 1.70E-09
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation              (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation              (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation              (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation              (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation              (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation              (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation              (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation              (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation              (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation              (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation              (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation              (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation              (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation              (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation              (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation              (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
```

```
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 3.00E+02
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 2.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
```

15. The crit_mix_I-133 File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix_I-133.mix
Example of Hotspot Mixture File
Mixture Scale Factor                        : 1.0000E+00
_____________________________________________________________________________
Nuclide [1] : I-133      2.374E-03y
Halflife                              (Years): 2.37E-03
Inhalation        50-yr CEDE          (Sv/Bq): 1.46E-09
Submersion                  (Sv-m3)/(Bq-sec): 0.00E+00
Ground Shine                (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation               (Sv/Bq): 0.00E+00
Skin         Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground          Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation               (Sv/Bq): 0.00E+00
Lung         Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground          Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation               (Sv/Bq): 4.86E-08
Thyroid      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation               (Sv/Bq): 0.00E+00
Surface Bone Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground          Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation               (Sv/Bq): 0.00E+00
Red Marrow   Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground          Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation               (Sv/Bq): 0.00E+00
Liver        Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground          Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation               (Sv/Bq): 0.00E+00
Spleen       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation               (Sv/Bq): 0.00E+00
Ovaries      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation               (Sv/Bq): 0.00E+00
Adrenals     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation               (Sv/Bq): 0.00E+00
Breast       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground          Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation               (Sv/Bq): 0.00E+00
ULI Wall     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation               (Sv/Bq): 0.00E+00
Thymus       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation               (Sv/Bq): 0.00E+00
Bladder Wall Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground          Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation               (Sv/Bq): 0.00E+00
Esophagus    Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground          Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation               (Sv/Bq): 0.00E+00
LLI Wall     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation               (Sv/Bq): 0.00E+00
Muscle       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation               (Sv/Bq): 0.00E+00
Stomach Wall Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground          Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation               (Sv/Bq): 0.00E+00
Kidneys      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation               (Sv/Bq): 0.00E+00
Testes       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
```

```
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 4.00E+01
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 2.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
```

16. The crit_mix_I-134 File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix_I-134.mix
Example of Hotspot Mixture File
Mixture Scale Factor                        : 1.0000E+00
_____________________________________________________________________________
Nuclide [1] : I-134      1.001E-04y
Halflife                              (Years): 1.00E-04
Inhalation        50-yr CEDE          (Sv/Bq): 2.97E-11
Submersion                 (Sv-m3)/(Bq-sec): 0.00E+00
Ground Shine               (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation               (Sv/Bq): 0.00E+00
Skin         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation               (Sv/Bq): 0.00E+00
Lung         Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation               (Sv/Bq): 2.97E-10
Thyroid      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation               (Sv/Bq): 0.00E+00
Surface Bone Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground         Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation               (Sv/Bq): 0.00E+00
Red Marrow   Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground         Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation               (Sv/Bq): 0.00E+00
Liver        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground         Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation               (Sv/Bq): 0.00E+00
Spleen       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation               (Sv/Bq): 0.00E+00
Ovaries      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation               (Sv/Bq): 0.00E+00
Adrenals     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation               (Sv/Bq): 0.00E+00
Breast       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground         Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation               (Sv/Bq): 0.00E+00
ULI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation               (Sv/Bq): 0.00E+00
Thymus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation               (Sv/Bq): 0.00E+00
Bladder Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation               (Sv/Bq): 0.00E+00
Esophagus    Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground         Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation               (Sv/Bq): 0.00E+00
LLI Wall     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation               (Sv/Bq): 0.00E+00
Muscle       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation               (Sv/Bq): 0.00E+00
Stomach Wall Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground         Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation               (Sv/Bq): 0.00E+00
Kidneys      Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground         Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation               (Sv/Bq): 0.00E+00
Testes       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
```

```
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 1.10E+03
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 2.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
```

17. The crit_mix_I-135 File

```
Hotspot User Mixture Database
User Mixture Name  : crit_mix_I-135.mix
Example of Hotspot Mixture File
Mixture Scale Factor                        : 1.0000E+00
_____________________________________________________________________________
Nuclide [1] : I-135      7.546E-04y
Halflife                              (Years): 7.55E-04
Inhalation        50-yr CEDE          (Sv/Bq): 2.97E-10
Submersion                  (Sv-m3)/(Bq-sec): 0.00E+00
Ground Shine                (Sv-m2)/(Bq-sec): 0.00E+00
Skin         Inhalation               (Sv/Bq): 0.00E+00
Skin         Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Skin         Ground          Sv-m2)/(Bq-sec): 0.00E+00
Lung         Inhalation               (Sv/Bq): 4.32E-10
Lung         Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Lung         Ground          Sv-m2)/(Bq-sec): 0.00E+00
Thyroid      Inhalation               (Sv/Bq): 8.39E-09
Thyroid      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Thyroid      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Surface Bone Inhalation               (Sv/Bq): 0.00E+00
Surface Bone Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Surface Bone Ground          Sv-m2)/(Bq-sec): 0.00E+00
Red Marrow   Inhalation               (Sv/Bq): 0.00E+00
Red Marrow   Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Red Marrow   Ground          Sv-m2)/(Bq-sec): 0.00E+00
Liver        Inhalation               (Sv/Bq): 0.00E+00
Liver        Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Liver        Ground          Sv-m2)/(Bq-sec): 0.00E+00
Spleen       Inhalation               (Sv/Bq): 0.00E+00
Spleen       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Spleen       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Ovaries      Inhalation               (Sv/Bq): 0.00E+00
Ovaries      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Ovaries      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Adrenals     Inhalation               (Sv/Bq): 0.00E+00
Adrenals     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Adrenals     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Breast       Inhalation               (Sv/Bq): 0.00E+00
Breast       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Breast       Ground          Sv-m2)/(Bq-sec): 0.00E+00
ULI Wall     Inhalation               (Sv/Bq): 0.00E+00
ULI Wall     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
ULI Wall     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Thymus       Inhalation               (Sv/Bq): 0.00E+00
Thymus       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Thymus       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Bladder Wall Inhalation               (Sv/Bq): 0.00E+00
Bladder Wall Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Bladder Wall Ground          Sv-m2)/(Bq-sec): 0.00E+00
Esophagus    Inhalation               (Sv/Bq): 0.00E+00
Esophagus    Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Esophagus    Ground          Sv-m2)/(Bq-sec): 0.00E+00
LLI Wall     Inhalation               (Sv/Bq): 0.00E+00
LLI Wall     Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
LLI Wall     Ground          Sv-m2)/(Bq-sec): 0.00E+00
Muscle       Inhalation               (Sv/Bq): 0.00E+00
Muscle       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Muscle       Ground          Sv-m2)/(Bq-sec): 0.00E+00
Stomach Wall Inhalation               (Sv/Bq): 0.00E+00
Stomach Wall Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Stomach Wall Ground          Sv-m2)/(Bq-sec): 0.00E+00
Kidneys      Inhalation               (Sv/Bq): 0.00E+00
Kidneys      Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
Kidneys      Ground          Sv-m2)/(Bq-sec): 0.00E+00
Testes       Inhalation               (Sv/Bq): 0.00E+00
Testes       Submersion     (Sv-m3)/(Bq-sec): 0.00E+00
```

```
Testes       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Uterus       Inhalation             (Sv/Bq): 0.00E+00
Uterus       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Uterus       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Brain        Inhalation             (Sv/Bq): 0.00E+00
Brain        Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Brain        Ground         Sv-m2)/(Bq-sec): 0.00E+00
SIWall       Inhalation             (Sv/Bq): 0.00E+00
SIWall       Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
SIWall       Ground         Sv-m2)/(Bq-sec): 0.00E+00
Pancreas     Inhalation             (Sv/Bq): 0.00E+00
Pancreas     Submersion    (Sv-m3)/(Bq-sec): 0.00E+00
Pancreas     Ground         Sv-m2)/(Bq-sec): 0.00E+00
Total Activity Released             (Ci)   : 1.20E+02
Airborne Fraction                          : 1.00E+00
Respirable Fraction                        : 1.00E+00
Respirable Deposition Velocity (cm/sec)    : 2.00E+00
Non-resp.  Deposition Velocity (cm/sec)    : 8.00E+00
```

APPENDIX 4

Hotspot Runs for Dry/Wet Deposition Comparison

General Plume with Dry Deposition

```
Hotspot  Version 2.0 General Plume
Apr 17, 2002 01:50 PM
Source Material            : Pu-238  W   87.74y
Source Term                : 1.0000E+01 Ci
Airborne Fraction          : 1.000
Respirable Fraction        : 1.000
Respirable Release Fraction: 1.000
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Respirable Dep. Vel.       : 1.00 cm/s
Non-respirable Dep. Vel.   : 8.00 cm/s
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   1.78E+05 rem
FGR-11 Dose Conversion Data
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	GROUND SURFACE DEPOSITION (uCi/m2)	GROUND SHINE DOSE RATE (rem/hr)	ARRIVAL TIME (hour:min)
0.100	7.8E+03	6.0E-02	6.0E+02	6.7E-06	00:01
0.200	2.1E+03	1.6E-02	1.6E+02	1.8E-06	00:03
0.500	3.4E+02	2.6E-03	2.6E+01	2.9E-07	00:08
1.000	8.3E+01	6.4E-04	6.4E+00	7.1E-08	00:17
2.000	2.1E+01	1.6E-04	1.6E+00	1.8E-08	00:34
5.000	3.5E+00	2.7E-05	2.7E-01	3.0E-09	01:26
10.000	9.9E-01	7.6E-06	7.6E-02	8.5E-10	02:52
20.000	1.5E-01	1.2E-06	1.2E-02	1.3E-10	05:44
50.000	3.4E-03	2.6E-08	2.6E-04	2.9E-12	14:21

General Plume with Wet Deposition

```
Hotspot  Version 2.0 General Plume
Apr 17, 2002 01:57 PM
Source Material            : Pu-238  W   87.74y
Source Term                : 1.0000E+01 Ci
Airborne Fraction          : 1.000
Respirable Fraction        : 1.000
Respirable Release Fraction: 1.000
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Respirable Dep. Vel.       : 1.00 cm/s
Non-respirable Dep. Vel.   : 8.00 cm/s
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Washout Coefficient        : 1.00E-03    1/s
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   1.76E+05 rem
FGR-11 Dose Conversion Data
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	GROUND SURFACE DEPOSITION (uCi/m2)	GROUND SHINE DOSE RATE (rem/hr)	ARRIVAL TIME (hour:min)
0.100	7.1E+03	5.4E-02	8.3E+02	9.3E-06	00:01
0.200	1.7E+03	1.3E-02	2.5E+02	2.8E-06	00:03
0.500	2.0E+02	1.5E-03	4.3E+01	4.7E-07	00:08
1.000	3.0E+01	2.3E-04	9.1E+00	1.0E-07	00:17
2.000	2.6E+00	2.0E-05	1.2E+00	1.3E-08	00:34
5.000	2.0E-02	1.5E-07	1.3E-02	1.4E-10	01:26
10.000	3.2E-05	2.5E-10	2.6E-05	2.9E-13	02:52
20.000	1.6E-10	1.3E-15	1.5E-10	1.6E-18	05:44
50.000	0.0E+00	0.0E+00	0.0E+00	0.0E+00	14:21

APPENDIX 5

Hotspot Runs for City/Standard Terrain Comparison

General Plume for Standard Terrain with 1 cm/s Deposition Velocity

```
Hotspot  Version 2.0 General Plume
Apr 17, 2002 01:50 PM
Source Material            : Pu-238  W   87.74y
Source Term                : 1.0000E+01 Ci
Airborne Fraction          : 1.000
Respirable Fraction        : 1.000
Respirable Release Fraction: 1.000
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Respirable Dep. Vel.       : 1.00 cm/s
Non-respirable Dep. Vel.   : 8.00 cm/s
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   1.78E+05 rem
FGR-11 Dose Conversion Data
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	GROUND SURFACE DEPOSITION (uCi/m2)	GROUND SHINE DOSE RATE (rem/hr)	ARRIVAL TIME (hour:min)
0.100	7.8E+03	6.0E-02	6.0E+02	6.7E-06	00:01
0.200	2.1E+03	1.6E-02	1.6E+02	1.8E-06	00:03
0.500	3.4E+02	2.6E-03	2.6E+01	2.9E-07	00:08
1.000	8.3E+01	6.4E-04	6.4E+00	7.1E-08	00:17
2.000	2.1E+01	1.6E-04	1.6E+00	1.8E-08	00:34
5.000	3.5E+00	2.7E-05	2.7E-01	3.0E-09	01:26
10.000	9.9E-01	7.6E-06	7.6E-02	8.5E-10	02:52
20.000	1.5E-01	1.2E-06	1.2E-02	1.3E-10	05:44
50.000	3.4E-03	2.6E-08	2.6E-04	2.9E-12	14:21

General Plume for City Terrain with 1 cm/s Deposition Velocity

```
Hotspot  Version 2.0 General Plume
Apr 17, 2002 02:59 PM
Source Material            : Pu-238  W   87.74y
Source Term                : 1.0000E+01 Ci
Airborne Fraction          : 1.000
Respirable Fraction        : 1.000
Respirable Release Fraction: 1.000
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class (City)     : E
Respirable Dep. Vel.       : 1.00 cm/s
Non-respirable Dep. Vel.   : 8.00 cm/s
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   1.11E+05 rem
FGR-11 Dose Conversion Data
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	GROUND SURFACE DEPOSITION (uCi/m2)	GROUND SHINE DOSE RATE (rem/hr)	ARRIVAL TIME (hour:min)
0.100	3.6E+03	2.8E-02	2.8E+02	3.1E-06	00:01
0.200	1.0E+03	7.7E-03	7.7E+01	8.6E-07	00:03
0.500	1.9E+02	1.4E-03	1.4E+01	1.6E-07	00:09
1.000	5.8E+01	4.4E-04	4.4E+00	4.9E-08	00:18
2.000	2.0E+01	1.5E-04	1.5E+00	1.7E-08	00:37
5.000	5.4E+00	4.2E-05	4.2E-01	4.6E-09	01:33
10.000	2.3E+00	1.7E-05	1.7E-01	1.9E-09	03:06
20.000	9.7E-01	7.5E-06	7.5E-02	8.3E-10	06:13
50.000	3.5E-01	2.7E-06	2.7E-02	3.0E-10	15:33

General Plume for Standard Terrain with Zero Deposition

```
Hotspot  Version 2.0 General Plume
Apr 17, 2002 03:05 PM
Source Material            : Pu-238  W   87.74y
Source Term                : 1.0000E+01 Ci
Airborne Fraction          : 1.000
Respirable Fraction        : 1.000
Respirable Release Fraction: 1.000
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : E
Respirable Dep. Vel.       : 0.00E+00 cm/s
Non-respirable Dep. Vel.   : 8.00 cm/s
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   1.78E+05 rem
FGR-11 Dose Conversion Data
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	1.5E+04	1.1E-01	00:01
0.200	4.9E+03	3.7E-02	00:03
0.500	1.0E+03	7.7E-03	00:08
1.000	3.1E+02	2.4E-03	00:17
2.000	1.0E+02	7.8E-04	00:34
5.000	2.9E+01	2.2E-04	01:26
10.000	1.3E+01	1.0E-04	02:52
20.000	7.2E+00	5.5E-05	05:44
50.000	3.7E+00	2.9E-05	14:21

General Plume for City Terrain with Zero Deposition

```
Hotspot  Version 2.0 General Plume
Apr 17, 2002 03:07 PM
Source Material            : Pu-238  W   87.74y
Source Term                : 1.0000E+01 Ci
Airborne Fraction          : 1.000
Respirable Fraction        : 1.000
Respirable Release Fraction: 1.000
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class (City)     : E
Respirable Dep. Vel.       : 0.00E+00 cm/s
Non-respirable Dep. Vel.   : 8.00 cm/s
Receptor Height            : 0.0 m
Inversion Layer Height     :  None
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :   1.11E+05 rem
FGR-11 Dose Conversion Data
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	4.6E+03	3.5E-02	00:01
0.200	1.4E+03	1.1E-02	00:03
0.500	2.9E+02	2.3E-03	00:09
1.000	9.7E+01	7.4E-04	00:18
2.000	3.5E+01	2.7E-04	00:37
5.000	1.1E+01	8.2E-05	01:33
10.000	4.7E+00	3.6E-05	03:06
20.000	2.2E+00	1.7E-05	06:13
50.000	8.5E-01	6.5E-06	15:33

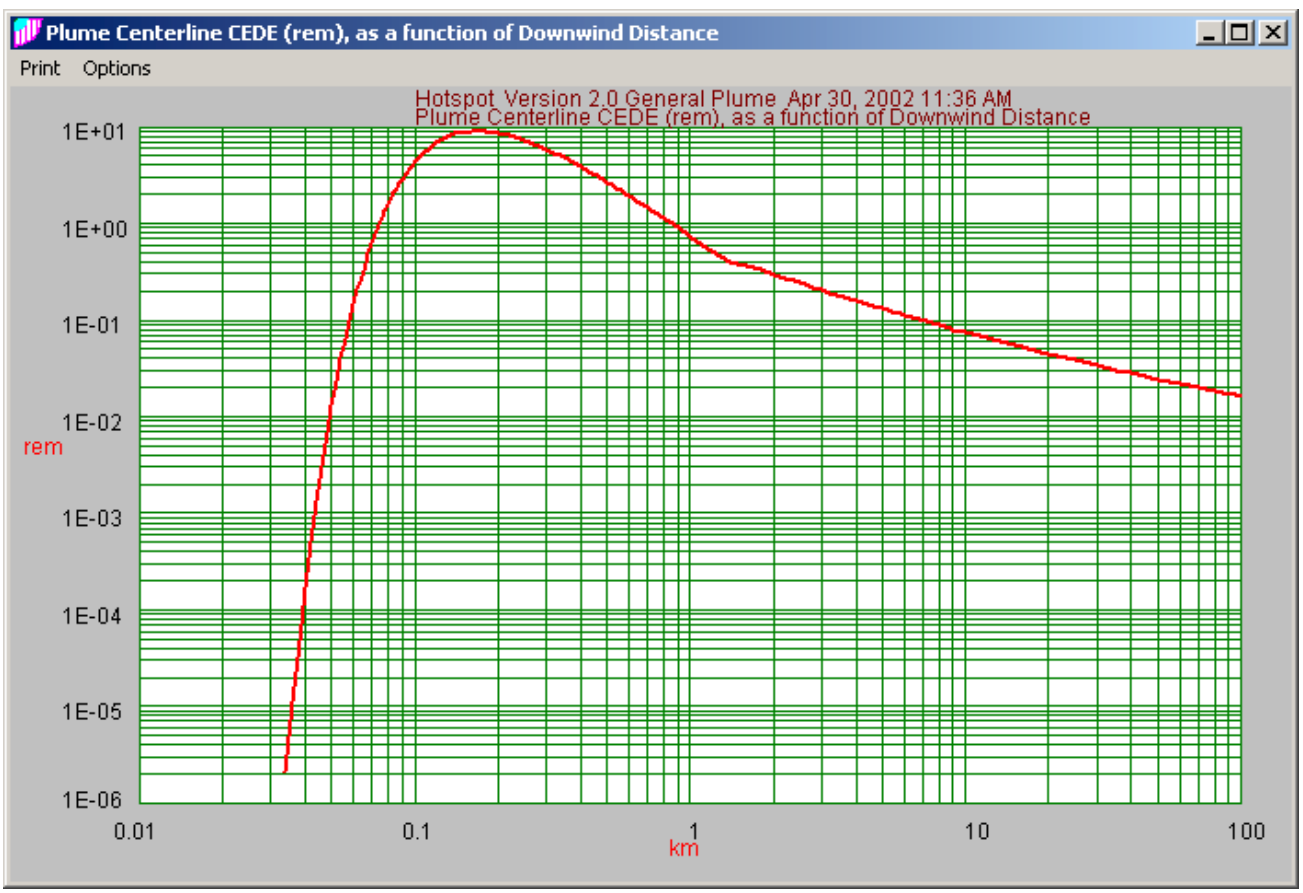
APPENDIX 6

Hotspot Runs for Graphical and Printed Output Comparison

Comparison of Graphical CEDE Output with Numeric Output

```
Hotspot  Version 2.0 General Plume       Apr 23, 2002 11:48 AM
Source Material: Pu-238  W   87.74y      Source Term: 1.0000E+00 Ci
Airborne Fraction: 1.000                 Respirable Fraction: 1.000
Respirable Release Fraction: 1.000
Vertical Width: 3.00E+00 m               Horizontal Width: 3.00E+00 m
Effective Release Height: 30 m           Wind Speed (h=10 m): 2.6 m/s
Distance Coordinates: All distances are on the Plume Centerline
Wind Speed (h=H-eff): 2.81 m/s           Stability Class: B
Respirable Dep. Vel.: 1.00 cm/s          Non-respirable Dep. Vel.: 8.00 cm/s
Receptor Height: 0.0 m                   Inversion Layer Height: 200 m
Sample Time: 10.000 min                  Breathing Rate: 3.33E-04 m3/sec
Maximum Dose Distance:   0.17 km         MAXIMUM CEDE: 9.2 rem
FGR-11 Dose Conversion Data
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	GROUND SURFACE DEPOSITION (uCi/m2)	GROUND SHINE DOSE RATE (rem/hr)	ARRIVAL TIME (hour:min)
0.100	4.4E+00	3.3E-05	3.3E-01	3.7E-09	<00:01
0.200	8.8E+00	6.7E-05	6.7E-01	7.5E-09	00:01
0.500	2.7E+00	2.0E-05	2.0E-01	2.3E-09	00:02
1.000	7.5E-01	5.7E-06	5.7E-02	6.4E-10	00:05
2.000	3.0E-01	2.3E-06	2.3E-02	2.6E-10	00:11
5.000	1.3E-01	1.0E-06	1.0E-02	1.1E-10	00:29
10.000	7.4E-02	5.7E-07	5.7E-03	6.3E-11	00:59
20.000	4.4E-02	3.4E-07	3.4E-03	3.8E-11	01:58
50.000	2.4E-02	1.9E-07	1.9E-03	2.1E-11	04:56



APPENDIX 7

Hotspot Runs for Installation Testing

General Plume Installation Testing –Kr-85

```
Hotspot  Version 2.0 General Plume
Apr 22, 2002 04:52 PM
Source Material            : Kr-85      10.72y
Source Term                : 2.0000E+04 Ci
Airborne Fraction          : 1.000
Respirable Fraction        : 1.000
Respirable Release Fraction: 1.000
Vertical Height            : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 0.00 m
Wind Speed (h=2 m)         : 2.5 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Stability Class            : C
Respirable Dep. Vel.       : 0.00E+00 cm/s
Non-respirable Dep. Vel.   : 8.00 cm/s
Receptor Height            : 0.0 m
Inversion Layer Height     : 500 m
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.010 km
MAXIMUM CEDE               :  0.264 rem
FGR-11 Dose Conversion Data
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	1.0E-02	2.3E+01	<00:01
0.200	2.9E-03	6.6E+00	00:01
0.500	5.2E-04	1.2E+00	00:03
1.000	1.4E-04	3.2E-01	00:06
2.000	4.1E-05	9.3E-02	00:13
5.000	8.8E-06	2.0E-02	00:33
10.000	3.5E-06	7.9E-03	01:06
20.000	2.2E-06	5.0E-03	02:13
50.000	1.3E-06	2.9E-03	05:33

Tritium Release Installation Testing

```
Hotspot  Version 2.0 Tritium Release
Apr 22, 2002 04:59 PM
Source Material            : Tritium
Total Tritium Release      : 3.0000E+04 Ci  100 % Tritium Oxide
Airborne Fraction          : 1.000
Respirable Fraction        : 1.000
Respirable Release Fraction: 1.000
Vertical Width             : 3.00E+00 m
Horizontal Width           : 3.00E+00 m
Effective Release Height   : 15 m
Wind Speed (h=10 m)        : 1.7 m/s
Distance Coordinates       : All distances are on the Plume Centerline
Wind Speed (h=H-eff)       : 1.96 m/s
Stability Class            : E
Respirable Dep. Vel.       : 0.00E+00 cm/s
Non-respirable Dep. Vel.   : 8.00 cm/s
Receptor Height            : 0.0 m
Inversion Layer Height     : 200 m
Sample Time                : 10.000 min
Breathing Rate             : 3.33E-04 m3/sec
Maximum Dose Distance      :   0.36 km
MAXIMUM CEDE               : 0.233 rem
FGR-11 Dose Conversion Data
Note: Dose Results Include HTO Skin Absorption
```

DISTANCE km	C E D E (rem)	TIME-INTEGRATED AIR CONCENTRATION (Ci-sec)/m3	ARRIVAL TIME (hour:min)
0.100	1.2E-03	3.7E-02	<00:01
0.200	1.1E-01	3.7E+00	00:01
0.500	2.0E-01	6.5E+00	00:04
1.000	9.1E-02	2.9E+00	00:08
2.000	3.4E-02	1.1E+00	00:17
5.000	9.9E-03	3.2E-01	00:42
10.000	4.7E-03	1.5E-01	01:25
20.000	2.5E-03	8.1E-02	02:50
50.000	1.3E-03	4.2E-02	07:05