

**Derived Concentration Guideline Levels
for Embedded and Buried Piping in Support
of the Final Status Survey at HBPP**

Revision 1

Approval Date July 16, 2014



***Pacific Gas and
Electric Company®***

**Derived Concentration Guideline Levels for Embedded and
Buried Piping in Support of the Final Status Survey at HBPP,
Revision 1**

**July, 2014
D. Randall and J. Bisson**

Reviewed By: *Mark C. Smith* Date: *7/16/14*

Approved By: *W.A. Barley* Date: *7/16/14*

1.0 SCOPE

This TBD was developed to determine appropriate Derived Concentration Guideline Levels (DCGLs) for embedded and buried piping; it was revised in response to the United States Nuclear Regulatory Commission's (NRC) Request for Additional Information (RAI) RAI #47. RAI #47 questioned why a non-probabilistic methodology was used and whether it was conservative. This revision is a total rewrite and therefore contains no revision bars.

2.0 DISCUSSION

The objective of this calculation is to determine DCGLs for embedded and buried piping.

Embedded piping: Includes piping that is encased in the basement concrete walls or floors and may include penetrations through anchor blocks for some piping systems.

Buried piping: Are remaining below grade piping systems with a minimum of three feet of cover material at license termination.

As discussed, RAI #47 covered the following:

RAI #47

What is the reason for the use of a different approach for the pipe DCGLs? Also, provide information on whether the use of mean values from the probabilistic distributions in a deterministic assessment may be non-conservative.

Response: DCGLs for buried piping was re-assessed using the probabilistic mode in RESRAD. The new assessment:

- Accounts for all buried pipes currently identified to remain in place;
- Accounts for initial soil activities based on the surface area of all buried pipes currently identified to remain in place,
- Includes a contaminated zone equal to 100m² in area and 1m in thickness, which adds approximately 20% conservatism to the size of a contaminated zone based on the dimensions of all buried pipes currently identified to remain in place;
- Addresses RESRAD parameters identified as sensitive in ENG-HB-001 through the use of 25th and/or 75th percentile values as appropriate for Am-241, Co-60, Cs-137, and Sr-90;
- Uses the distributions from NUREG/CR-6697 as input for RESRAD parameters not identified as sensitive in ENG-HB-001; and
- Uses input values for contaminated fractions for plant food, meat, and milk that are consistent with the area-adjusted values in ENG-HB-005.

The peak of the mean dose resulting from the current assessment for buried pipe is 9.67e-4 mrem/y. The dose results from the current assessment demonstrate that a DCGL value equal to 100,000 dpm/100 cm² ensures compliance with 10CFR20.1402. The dose associated with all buried pipes currently identified to remain in place will be taken into account during FSS activities (see response to RAI 45).

A limited amount of embedded and buried piping (less than 500 linear feet) is expected to remain post decommissioning. DCGLs for embedded and buried piping are necessary to account for any dose contribution made the survey unit in which the piping is located. Since the end state for the Humboldt Bay Power plant decommissioning will leave a large open soil footprint with only a few site buildings remaining, it made sense to try to connect the residual activity left in piping systems to a volumetric (soil) DCGL. To further this objective, the following assumptions were made:

- The integrity of all the embedded and buried piping is completely degraded in year zero.
- The activity formerly internal to piping systems is uniformly dispersed in the volume of soil of the piping.

3.0 CALCULATION

Piping DCGLs:

The DCGL is arbitrarily set to 100,000 dpm/100 cm². Experience has shown that this is a level that is readily detectable without requiring highly specialized instrumentation.

The dose impact of leaving the contaminated piping in the soil was estimated using the RASRAD code developed for the US Department of Energy (USDOE) at Argonne National Laboratory (ANL).

This was done by determining the volume of piping now scheduled to remain, as shown in Table 1.

Table 1 Dimensions of Piping to Remain

Piping Segment	Dia. (ft)	Length (ft)	Area (ft ²)	Volume (ft ³)	Area (m ²)	Volume (m ³)
Under Building 6	1	30	9.42E+01	8.75E+00	2.36E+01	6.67E-01
Under Machine Shop	3	100	9.42E+02	8.75E+01	7.07E+02	2.00E+01
Unit 1 discharge inside HPGS	3	150	1.41E+03	1.31E+02	1.06E+03	3.00E+01
Unit 1 discharge inside HPGS	3	150	1.41E+03	1.31E+02	1.06E+03	3.00E+01
Total			3.86E+03	3.59E+02	2.85E+03	8.07E+01

The total activity remaining in the soil may be calculated by multiplying the total surface area of the pipe by the DCGL.

Total activity (A):

$$A = \text{Area} \times \text{DCGL} =$$

$$= 2,850 \text{ m}^2 \times 1\text{E}5 \text{ dpm/100cm}^2 \times (100\text{cm}^2/.01\text{m}^2) \times (1\text{pCi}/2.22\text{dpm})$$

$$= 1.28\text{E}10 \text{ pCi}$$

The total volumetric activity in pCi/g may be calculated by setting the soil density (ρ) to 1.56 g/cm³. The volumetric soil activity (C) in the contaminated zone is given by the total activity (A), divided by the total soil mass (M):

Soil activity concentration (C):

$$C = A/M$$

$$= 1.28\text{E}10 \text{ pCi} / [80.7 \text{ m}^3 \times (1\text{E}6 \text{ cm}^3/\text{m}^3) \times 1.56 \text{ g/cm}^3]$$

$$= 102 \text{ pCi/g}$$

3.1 RESRAD

Note: The sample taken in the off-gas tunnel is one of the higher activity samples. This sample was selected because the beta and alpha activities were sufficiently present to allow for development of ratios from positive data. Buried piping to be surveyed will have analyses performed on scrapings/sediment present in the piping so as to assess that the ratios used are still representative.

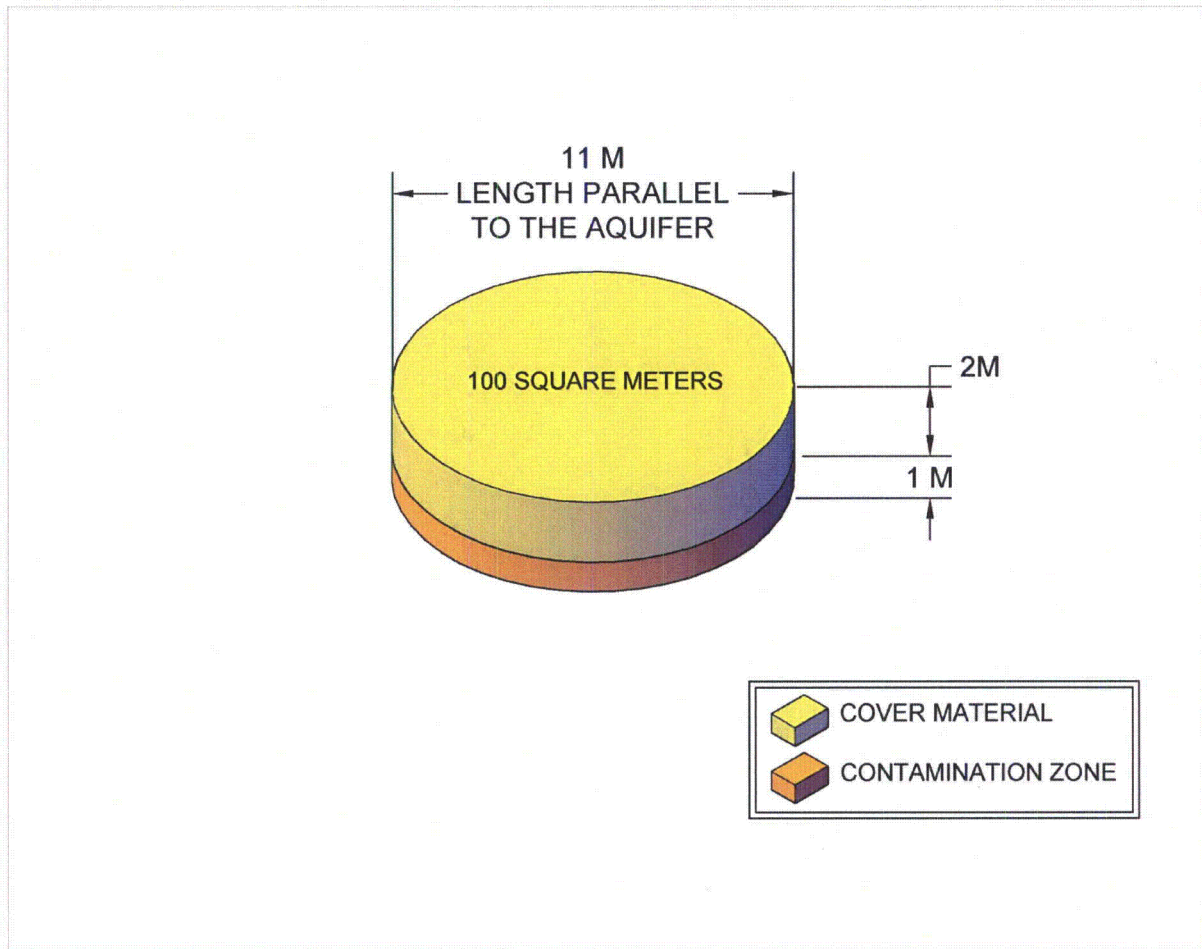
A typical nuclide fraction (based on results from the off-gas tunnel) Attachment 1 was used as the input to the RESRAD run. The resultant dose consequence per nuclide is listed below:

Table 1 Nuclide fractions and RESRAD input

Nuclide	Fraction	Activity (pCi/g)
Am-241	0.000722	7.36E-02
Co-60	0.00435	4.44E-01
Cs-137	0.9902	1.01E+02
Sr-90	0.00474	4.83E-01
Total	1.00E+00	1.02E2

The piping was conservatively assumed to be buried with a 2 meter thick cover of approximate density 1.56 g/cm³ soil. This matches the density assumed present in the 2 meter thick contaminated zone. As shown in Figure 1.

Figure 1 Contaminated Zone



Note: For calculation purposes, the calculated total volume was then increased by approximately 20 percent to 100 m³.

RESRAD reported a peak of the mean dose resulting from this assessment for buried pipe of 9.67e-4 mrem/y. The RESRAD Summary and detailed reports are included as Attachments 2 and 3 respectively.

4.0 CONCLUSION

The DCGL presented for embedded and buried piping (100,000 dpm/100cm²) provides a conservative estimate of the dose consequence of leaving the piping in place after license termination. The constraints of the conceptual model, i.e., requiring a minimum of 1 meter of cover material above the contaminated zone, render the DCGL only applicable to sub-grade piping.

The calculated dose contribution from the piping will be subtracted from the dose limit (25 mrem/y TEDE) for the survey units that lay atop of the piping system/segment being evaluated.

5.0 REFERENCES

1. NUREG- 1575, MARSSIM "Multi-Agency Radiation Site Survey and Investigation Manual", Rev 1, August, 2000.
2. HBPP License Termination Plan, Revision 0, (May 3, 2013)
3. ENG-HB-003 "Humboldt Bay Soil Derived Concentration Guideline Levels", Rev 0, 2-29-12

6.0 ATTACHMENTS

1. **Nuclide Fraction Determination**
2. **RESRAD Summary Report**
3. **RESRAD Detailed Report**

Attachment 1

Nuclide Fraction Determination

Sample	Location	Cs-137 (pCi/g)	Co-60 (pCi/g)	Sr-90 (pCi/g)	Am-241 (pCi/g)	WAC Ratio
OGT01-SR-0	Floor	196000	862	939	143	

	pCi/g	f
Cs-137	196000	0.9902
Co-60	862	0.00435
Sr-90	939	0.00474
Am-241	143	0.000722
	197944	1.0000

***** G A M M A S P E C T R U M A N A L Y S I S *****

Detector DET01

Report Generated On : 3/5/2013 3:47:47 PM

Sample Identification : FSS-2013-0155
Sample Title : OGT01-SR-001
Sample Information : For Shipping Purpose Only
:
Sample Type : Concrete
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 100 - 4096
Peak Area Range (in channels) : 100 - 4096
Identification Energy Tolerance : 1.000 keV

Sample Size : 1.280E+001 g

Sample Taken On : 3/5/2013 11:05:00 AM
Acquisition Started : 3/5/2013 2:35:39 PM

Live Time : 3000.0 seconds
Real Time : 3215.5 seconds

Dead Time : 6.70 %

Energy Calibration Used Done On : 11/15/2010
Efficiency Calibration Used Done On : 1/19/2012
Efficiency ID : D1 Petri 3 cm

Performed by  Date 3-5-13

Reviewed by  Date 3-5-13

***** P E A K L O C A T E R E P O R T *****

Detector Name: DET01

Sample Title: OGT01-SR-001

Peak Locate Performed on: 3/5/2013 3:47:47 PM

Peak Locate From Channel: 100

Peak Locate To Channel: 4096

Peak Search Sensitivity: 3.00

Peak No.	Centroid Channel	Centroid Uncertainty	Energy (keV)	Peak Significance
1	119.60	0.1977	59.74	13.30
2	145.75	0.2677	72.99	9.81
3	150.48	0.1872	75.18	14.73
4	170.13	0.2545	85.07	7.72
5	175.54	0.3899	87.68	3.54
6	947.70	0.2002	475.46	4.25
7	1302.70	0.2096	651.87	7.40
8	1322.50	0.0175	661.86	1103.90
9	1386.44	0.1716	693.78	11.87
10	1395.86	0.2796	698.50	4.23
11	2345.51	0.0731	1173.38	57.60
12	2645.19	0.1072	1323.14	26.55
13	2664.11	0.0729	1332.64	55.79

? = Adjacent peak noted

Errors quoted at 2.000 sigma

***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: DET01

Sample Title: OGT01-SR-001

Peak Analysis Performed on: 3/5/2013 3:47:47 PM

Peak Analysis From Channel: 100

Peak Analysis To Channel: 4096

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
F	1	110-	125	119.65	59.74	1.01	4.71E+003	488.64	1.74E+005
M	2	141-	157	146.10	72.99	1.05	3.50E+003	378.18	9.69E+004
m	3	141-	157	150.46	75.18	1.06	6.57E+003	462.30	1.07E+005
M	4	161-	178	170.22	85.07	1.16	3.26E+003	465.85	1.27E+005
m	5	161-	178	175.44	87.68	1.17	1.23E+003	378.99	1.17E+005
F	6	937-	961	950.03	475.46	5.20	3.27E+004	804.90	2.68E+005
F	7	1295-	1307	1302.62	651.87	1.78	9.97E+002	147.91	1.05E+004
F	8	1308-	1337	1322.58	661.86	1.41	2.90E+006	3144.03	1.42E+004
M	9	1376-	1400	1386.39	693.78	1.56	5.58E+002	56.85	8.26E+002
m	10	1376-	1400	1395.83	698.50	1.56	1.24E+002	40.68	8.24E+002
F	11	2338-	2352	2345.55	1173.38	1.83	8.61E+003	176.05	3.24E+002
F	12	2637-	2653	2645.20	1323.14	1.85	1.53E+003	75.57	5.80E+001
F	13	2655-	2674	2664.20	1332.64	1.92	7.57E+003	165.06	6.33E+001

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample Title: OGT01-SR-001
 Nuclide Library Used: C:\GENIE2K\CAMFILES\HBPP.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
Pb-xRay	0.994	72.80*	55.00	6.89291E-005	9.04308E-006
		74.97*	100.00	7.11464E-005	7.42521E-006
Co-60	0.996	1173.22*	100.00	8.65833E-004	4.71762E-005
		1332.49*	100.00	8.58432E-004	4.95702E-005
Cs-137	0.993	661.65*	85.12	1.96152E-001	1.10130E-002
Cs137sum	0.996	1323.30*	100.00	1.72751E-004	1.25500E-005
Am-241	0.993	59.54*	35.90	1.43712E-004	1.78966E-005

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy Tolerance : 1.000 keV

Nuclide confidence index threshold = 0.30

Errors quoted at 2.000 sigma

 ***** I N T E R F E R E N C E C O R R E C T E D R E P O R T *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty
Pb-xRay	0.994	7.025347E-005	5.738599E-006
✓ Co-60	0.996	8.623155E-004	3.417360E-005
✓ Cs-137	0.993	1.961518E-001	1.101304E-002
Cs137sum	0.996	1.727510E-004	1.255001E-005
✓ Am-241	0.993	1.437123E-004	1.789659E-005

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000 sigma

***** U N I D E N T I F I E D P E A K S *****

Peak Locate Performed on: 3/5/2013 3:47:47 PM
 Peak Locate From Channel: 100
 Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
M 4	85.07	1.0850E+000	14.31	Tl-208/Bi-212	
m 5	87.68	4.0880E-001	30.90	Pb-212/214 Bi-212	
F 6	475.46	1.0912E+001	2.46	Cs-137 Compton Edge	
F 7	651.87	3.3242E-001	14.83	Cs-137 Ge escape pk	
M 9	693.78	1.8607E-001	10.18	Bi-214	
m 10	698.50	4.1264E-002	32.86	Bi-214	

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000 sigma

 ***** N U C L I D E M D A R E P O R T *****

Detector Name: DET01
 Sample Geometry:
 Sample Title: OGT01-SR-001
 Nuclide Library Used: C:\GENIE2K\CAMFILES\HBPP.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/g)	Nuclide MDA (uCi/g)	Activity (uCi/g)	Dec.Level (uCi/g)
	K-40	1460.81	10.67	3.81E-005	3.81E-005	-5.11E-006	1.75E-005
+	Co-60	1173.22*	100.00	1.04E-005	5.82E-006	8.66E-004	5.05E-006
		1332.49*	100.00	5.82E-006		8.58E-004	2.76E-006
	Nb-94	702.63	100.00	1.15E-005	1.15E-005	-5.64E-006	5.64E-006
		871.10	100.00	1.52E-005		8.58E-007	7.48E-006
	Ag-108m	79.20	7.10	2.88E-004	1.22E-005	3.56E-005	1.44E-004
		433.93	89.90	9.71E-005		-3.52E-005	4.85E-005
		614.37	90.40	4.43E-005		-4.29E-007	2.21E-005
		722.95	90.50	1.22E-005		-2.47E-006	6.01E-006
	Cs-134	569.31	15.43	2.98E-004	1.45E-005	-1.83E-004	1.49E-004
		604.70	97.60	4.16E-005		3.09E-006	2.07E-005
		795.84	85.40	1.45E-005		4.23E-006	7.13E-006
+	Cs-137	661.65*	85.12	5.75E-005	5.75E-005	1.96E-001	2.86E-005
	Eu-152	121.78	28.40	8.97E-005	1.90E-005	4.00E-005	4.48E-005
		244.69	7.49	6.02E-004		-3.05E-004	3.00E-004
		344.27	26.50	2.16E-004		1.07E-004	1.08E-004
		778.89	12.74	9.42E-005		1.73E-005	4.64E-005
		867.32	4.16	3.60E-004		9.79E-005	1.78E-004
		964.01	14.40	1.18E-004		-2.88E-005	5.81E-005
		1085.78	10.00	1.66E-004		2.67E-005	8.17E-005
		1112.02	13.30	1.32E-004		1.41E-004	6.50E-005
		1407.95	20.70	1.90E-005		9.19E-006	8.70E-006
	Eu-154	123.07	40.50	6.33E-005	1.76E-005	4.65E-005	3.16E-005
		247.94	6.60	6.86E-004		2.34E-004	3.43E-004
		723.30	19.70	5.61E-005		-1.46E-005	2.76E-005
		873.19	11.50	1.33E-004		8.23E-005	6.56E-005
		996.32	10.30	1.50E-004		-8.90E-005	7.39E-005
		1004.76	17.90	8.66E-005		1.13E-006	4.26E-005
		1274.45	35.50	1.76E-005		-3.46E-006	8.37E-006
	Eu-155	105.31	20.70	1.05E-004	1.05E-004	-7.55E-005	5.23E-005
	Pb-206	803.10	100.00	1.25E-005	1.25E-005	5.26E-006	6.18E-006
	Ac-228	338.32	11.40	4.93E-004	5.85E-005	-4.12E-004	2.46E-004
		911.07	27.70	5.85E-005		-3.36E-005	2.89E-005
		969.11	16.60	9.90E-005		-7.63E-005	4.88E-005
	Th-234	63.29	3.80	5.42E-004	3.84E-004	-6.76E-005	2.70E-004
		92.59	5.41	3.84E-004		-4.03E-004	1.92E-004
	U-235	143.76	10.50	2.62E-004	7.20E-005	-5.30E-005	1.31E-004
		163.35	4.70	6.59E-004		-5.49E-004	3.29E-004
		185.72	54.00	7.20E-005		4.83E-004	3.60E-005
		205.31	4.70	8.76E-004		-8.37E-004	4.38E-004
	Np-237	311.98	38.60	1.30E-004	1.30E-004	2.60E-006	6.49E-005
+	Am-241	59.54*	35.90	7.26E-005	7.26E-005	1.44E-004	3.63E-005

Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/g)	Nuclide MDA (uCi/g)	Activity (uCi/g)	Dec. Leve (uCi/g
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+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region or
the region is outside the spectrum

@ = Half-life too short to be able to perform the decay correction



March 26, 2013

Ms. Dee Anderson
Pacific Gas and Electric, Humboldt Bay Power Plant
1000 King Salmon Avenue
Eureka, California 95503

Re: Final Status Survey
Work Order: 321577

Dear Ms. Anderson:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on March 08, 2013. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4504.

Sincerely,

Erin Trent
Project Manager

Purchase Order: 3500953353, Line item #4
Enclosures



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Case Narrative

**Case Narrative
for
Pacific Gas and Electric Company
SDG: 321577**

March 26, 2013

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample Receipt The sample arrived at GEL Laboratories LLC, Charleston, South Carolina on March 08, 2013 for analysis. The sample was delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Sample Identification The laboratory received the following sample:


<u>Laboratory ID</u>	<u>Client ID</u>
321577001	FSS 2013-0155

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: Radiochemistry.



Erin Trent
Project Manager

Chain of Custody and Supporting Documentation

Lab: GEL Chain of Custody and Analytical Request

Contract #
Vendor #
Line Item # 004
Work Order #SMS# 2013-0012

Laboratory Number
Individual sampled:
Excavation Permit #

[illegible]

TAT Requested: Normal: <input type="checkbox"/> Rush: <input type="checkbox"/> Specify: _____ (Subject to Surcharge)			Fax Results: Yes / No	Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4
--	--	--	-----------------------	---

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards. Thank you PG&E (Samples can be discarded appropriately) In case of emergency please call 707-444-0809

Chain of Custody Signatures						Sample Shipping and Delivery Details	
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time		
1 Oliver / <i>[Signature]</i>	3/7/13	1010	1 <i>[Signature]</i>	3-8-13	0250	GEL PM:	
2			2			Method of Shipment:	Date Shipped:
3			3			Airbill #:	

- 1.) Chain of Custody Number = Client Determined
- 2.) Codes: **N** = Normal Sample, **TB** = Trip Blank, **FD** = Field Duplicate, **EB** = Equipment Blank, **MS** = Matrix Spike Sample, **MSD** = Matrix Spike Duplicate, **G** = Grab, **C** = Composite
- 3.) Field Filtered: For liquid matrices, indicate with a - **Y** - for yes the sample was field filtered or - **N** - for sample was not field filtered.
- 4.) Matrix Codes: **DW** = Drinking Water, **GW** = Groundwater, **SW** = Surface Water, **WW** = Waste Water, **W** = Water, **SO** = Soil, **SD** = Sediment, **SL** = Sludge, **SS** = Solid Waste, **O** = Oil, **F** = Filter, **P** = Wipe, **U** = Urine, **F** = Fecal, **N** = Nasal
- 5.) Sample Analysis Requested: Analytical method requested (i.e. **8260B**, **6010B/7470A**) and number of containers provided for each (i.e. **8260B - 3**, **6010B/7470A - 1**).
- 6.) Preservative Type: **HA** = Hydrochloric Acid, **NI** = Nitric Acid, **SH** = Sodium Hydroxide, **SA** = Sulfuric Acid, **AA** = Ascorbic Acid, **HX** = Hexane, **ST** = Sodium Thiosulfate, **If no preservative is added = leave field blank**

For Lab Receiving Use Only

Custody Seal Intact?
YES NO

Cooler Temp: 27 C

WHITE = LABORATORY

YELLOW = FILE

PINK = CLIENT



SAMPLE RECEIPT & REVIEW FORM

Client: <u>PCGE/HBPP</u>		SDG/AR/COC/Work Order: <u>321577</u>	
Received By: <u>MK</u>		Date Received: <u>3-8-13</u>	
Suspected Hazard Information	Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
COC/Samples marked as radioactive?	<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>MR/HR = 1.1</u>	
Classified Radioactive II or III by RSO?	<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?	
COC/Samples marked containing PCBs?	<input checked="" type="checkbox"/>		
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.	
Shipped as a DOT Hazardous?	<input checked="" type="checkbox"/>	Hazard Class Shipped:	UN#:
Samples identified as Foreign Soil?	<input checked="" type="checkbox"/>		

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Preservation Method: Ice bags Blue ice Dry ice <u>None</u> Other (describe) <u>20°C</u> *all temperatures are recorded in Celsius
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Temperature Device Serial #: <u>4504131</u> Secondary Temperature Device Serial # (If Applicable):
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample ID's and containers affected:
7 Are Encore containers present?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample ID's affected:
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
4 Carrier and tracking number.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other <u>4659 7996 5400</u>

Comments (Use Continuation Form if needed):

Laboratory Certifications

List of current GEL Certifications as of 26 March 2013

State	Certification
Arkansas	88-0651
CLIA	42D0904046
California NELAP	01151CA
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP A2LA ISO 17025	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-12-00283, P330-12-00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA130005
Maryland	270
Massachusetts	M-SC012
Nevada	SC000122011-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68-00485
Plant Material Permit	PDEP-12-00260
South Carolina Chemistry	10120001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-13-8
Utah NELAP	SC000122013-8
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12
Wisconsin	999887790

GEL Laboratories LLC

problem solved

P.O. Box 30712~Charleston, S.C. 29417~2040 Savage Road~29407
(843)556-8171~Fax(843)766-1178

Invoice for Analytical Services

Accounts Payable—PG&E
Pacific Gas and Electric Company
P.O. Box 7760
San Francisco, California 94120

PO: 3500953353, Line item #4

Invoice #: 264252
Invoice Date: 26-MAR-13
Terms: Net 30
Client: Pacific Gas and Electric Company
Description (Order): Final Status Survey
Workorder/SDG: 321577
Project: PCGE00606
Project Manager: Erin Trent

GELID: 321577001 Test	Matrix: MISC SOLID Description	ClientID: FSS 2013-0155 Methods	Collected: 05-MAR-13 Turn Days	Received: 08-MAR-13 Charge
GFCTOSRS	GFPC, Total Sr, Solid High Rad	EPA 905.0 Modified	21 (Receive)	\$166.95
Sample Total:				\$166.95

Miscellaneous Charge	Description	Charge
-----------------------------	--------------------	---------------

Invoice Total: \$166.95

Radiological Analysis

**Radiochemistry Case Narrative
Pacific Gas and Electric Company (PCGE)
SDG 321577**

Method/Analysis Information

Product: GFPC, Total Sr, Solid High Rad

Analytical Method: EPA 905.0 Modified

Analytical Batch Number: 1287667

Sample ID	Client ID
321577001	FSS 2013-0155
1202840563	Method Blank (MB)
1202840564	321577001(FSS 2013-0155) Sample Duplicate (DUP)
1202840565	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-004 REV# 16.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 321577001 (FSS 2013-0155).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Chemical Recoveries

All chemical recoveries meet the required acceptance limits for this sample set.

Miscellaneous Information:**Data Exception (DER) Documentation**

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Manual Integration

No manual integrations were performed on data in this batch.

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report for

PCGE006 Pacific Gas and Electric Company

Client SDG: 321577 GEL Work Order: 321577

The Qualifiers in this report are defined as follows:

U Result is < LLD and < MDC

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Heather McCarty

Date: 21 MAR 2013

Title: Analyst II

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

GEL Sample ID: 321577001 Client: Pacific Gas and Electric Company
Client Sample ID: FSS 2013-0155 Collect Date: March 05, 2013
Client Matrix: Misc Solid Receive Date: March 08, 2013
Amount of Sample Received: Report Date: March 21, 2013
Sample Description: concrete sample from off gas tunnel

Isotope	Run Date	Qualifier	Activity	2 Sigma Uncertainty	MDC	LLD	2 Sigma TPU	Units
Total Strontium	03/20/13		9.39E+02	8.15E+00	4.11E-01	5.00E-01	2.37E+02	pCi/g

Notes: 1. LLDs are a-priori values.

2. MDCs are calculated a-posteriori values.

3. Gamma spectroscopy analysis results are calculated from a measurement using only one gamma energy line.

4. Air sample volumes are received in units of ft³. GEL converts the units and reports them as m³.

Qualifiers: U Target isotope was analyzed for but not detected above the MDC and LLD.

UI Uncertain identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

M Reported result is less than the LLD and greater than the MDC.

Quality Control Data

GEL LABORATORIES LLC

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QC Summary

Report Date: March 21, 2013

Page 1 of 1

Client : Pacific Gas and Electric,
Humboldt Bay Power Plant
1000 King Salmon Avenue

Contact: Eureka, California
Ms. Dee Anderson

Workorder: 321577

Paramname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
High Rad Testing									
Batch	1287667								
QC1202840564	321577001 DUP								
Total Strontium		9.39E+02	9.38E+02	pCi/g	.0887		(0% - 20%)	JXC5	03/20/1317:3
		Uncert: +/-8.15E+00	+/-8.47E+00						
		TPU: +/-2.37E+02	+/-2.37E+02						
QC1202840565	LCS								
Total Strontium	2.44E+01		2.75E+01	pCi/g		113	(75%-125%)	JXC5	03/20/1317:3
		Uncert:	+/-1.57E+00						
		TPU:	+/-7.15E+00						
QC1202840563	MB								
Total Strontium		U -1.10E-01		pCi/g				JXC5	03/20/1317:3
		Uncert:	+/-2.13E-01						
		TPU:	+/-2.13E-01						

Notes:

The Qualifiers in this report are defined as follows:

- M Result is < LLD and > MDC
- U Result is < LLD and < MDC
- UI Uncertain identification for gamma spectroscopy
- X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details
- X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

** Indicates analyte is a surrogate/tracer compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Attachment 2

RESRAD Summary Report

ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ

Part I: Mixture Sums and Single Radionuclide Guidelines

Dose Conversion Factor (and Related) Parameter Summary ...	2
Site-Specific Parameter Summary	4
Summary of Pathway Selections	9
Contaminated Zone and Total Dose Summary	10
Total Dose Components	
Time = 0.000E+00	11
Time = 1.000E+00	12
Time = 3.000E+00	13
Time = 1.000E+01	14
Time = 3.000E+01	15
Time = 1.000E+02	16
Time = 3.000E+02	17
Time = 1.000E+03	18
Dose/Source Ratios Summed Over All Pathways	19
Single Radionuclide Soil Guidelines	19
Dose Per Nuclide Summed Over All Pathways	20
Soil Concentration Per Nuclide	20

Dose Library: HB buried pipe Plus FGR 12 & FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(2)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(3)
A-1	Ba-137m (Source: FGR 12)	3.606E+00	3.606E+00	DCF1(4)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(5)
A-1	Co-60 (Source: FGR 12)	1.622E+01	1.622E+01	DCF1(6)
A-1	Cs-137 (Source: FGR 12)	7.510E-04	7.510E-04	DCF1(7)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(8)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(9)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(10)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(11)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(12)

HB DCGL buried pipe_2m cover_revised activities.REP

A-1	3	Ra-225	(Source: FGR 12)	3	1.102E-02	3	1.102E-02	3	DCF1(13)
A-1	3	Sr-90	(Source: FGR 12)	3	7.043E-04	3	7.043E-04	3	DCF1(14)
A-1	3	Th-229	(Source: FGR 12)	3	3.213E-01	3	3.213E-01	3	DCF1(15)
A-1	3	Tl-209	(Source: FGR 12)	3	1.293E+01	3	1.293E+01	3	DCF1(16)
A-1	3	U-233	(Source: FGR 12)	3	1.397E-03	3	1.397E-03	3	DCF1(17)
A-1	3	Y-90	(Source: FGR 12)	3	2.391E-02	3	2.391E-02	3	DCF1(18)
B-1	3	Dose conversion factors for inhalation, mrem/pCi:			3		3		3
B-1	3	Am-241		3	4.440E-01	3	4.440E-01	3	DCF2(1)
B-1	3	Co-60		3	2.190E-04	3	2.190E-04	3	DCF2(2)
B-1	3	Cs-137+D		3	3.190E-05	3	3.190E-05	3	DCF2(3)
B-1	3	Np-237+D		3	5.400E-01	3	5.400E-01	3	DCF2(4)
B-1	3	Sr-90+D		3	1.308E-03	3	1.300E-03	3	DCF2(5)
B-1	3	Th-229+D		3	2.169E+00	3	2.150E+00	3	DCF2(6)
B-1	3	U-233		3	1.350E-01	3	1.350E-01	3	DCF2(7)
D-1	3	Dose conversion factors for ingestion, mrem/pCi:			3		3		3
D-1	3	Am-241		3	3.640E-03	3	3.640E-03	3	DCF3(1)
D-1	3	Co-60		3	2.690E-05	3	2.690E-05	3	DCF3(2)
D-1	3	Cs-137+D		3	5.000E-05	3	5.000E-05	3	DCF3(3)
D-1	3	Np-237+D		3	4.444E-03	3	4.440E-03	3	DCF3(4)
D-1	3	Sr-90+D		3	1.528E-04	3	1.420E-04	3	DCF3(5)
D-1	3	Th-229+D		3	4.027E-03	3	3.530E-03	3	DCF3(6)
D-1	3	U-233		3	2.890E-04	3	2.890E-04	3	DCF3(7)
D-34	3	Food transfer factors:			3		3		3
D-34	3	Am-241	, plant/soil concentration ratio, dimensionless	3	1.830E-03	3	1.000E-03	3	RTF(1,1)
D-34	3	Am-241	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3	5.000E-05	3	5.000E-05	3	RTF(1,2)
D-34	3	Am-241	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3	2.000E-06	3	2.000E-06	3	RTF(1,3)
D-34	3				3		3		3
D-34	3	Co-60	, plant/soil concentration ratio, dimensionless	3	1.460E-01	3	8.000E-02	3	RTF(2,1)
D-34	3	Co-60	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3	5.860E-02	3	2.000E-02	3	RTF(2,2)
D-34	3	Co-60	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3	2.000E-03	3	2.000E-03	3	RTF(2,3)
D-34	3				3		3		3
D-34	3	Cs-137+D	, plant/soil concentration ratio, dimensionless	3	7.820E-01	3	4.000E-02	3	RTF(3,1)
D-34	3	Cs-137+D	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3	6.520E-02	3	3.000E-02	3	RTF(3,2)
D-34	3	Cs-137+D	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3	1.390E-02	3	8.000E-03	3	RTF(3,3)

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Summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: HB buried pipe Plus FGR 12 & FGR 11

0	3		3	Current	3	Base	3	Parameter
Menu	3	Parameter	3	Value#	3	Case*	3	Name
AA								
D-34	3	Np-237+D , plant/soil concentration ratio, dimensionless	3	2.000E-02	3	2.000E-02	3	RTF(4,1)
D-34	3	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3	1.000E-03	3	1.000E-03	3	RTF(4,2)

HB DCGL buried pipe_2m cover_revised activities.REP

D-34	³	Np-237+D	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	³	5.000E-06	³	5.000E-06	³	RTF(4,3)
D-34	³			³		³		³	
D-34	³	Sr-90+D	, plant/soil concentration ratio, dimensionless	³	5.900E-01	³	3.000E-01	³	RTF(5,1)
D-34	³	Sr-90+D	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	³	8.000E-03	³	8.000E-03	³	RTF(5,2)
D-34	³	Sr-90+D	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	³	2.000E-03	³	2.000E-03	³	RTF(5,3)
D-34	³			³		³		³	
D-34	³	Th-229+D	, plant/soil concentration ratio, dimensionless	³	1.000E-03	³	1.000E-03	³	RTF(6,1)
D-34	³	Th-229+D	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	³	1.000E-04	³	1.000E-04	³	RTF(6,2)
D-34	³	Th-229+D	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	³	5.000E-06	³	5.000E-06	³	RTF(6,3)
D-34	³			³		³		³	
D-34	³	U-233	, plant/soil concentration ratio, dimensionless	³	2.500E-03	³	2.500E-03	³	RTF(7,1)
D-34	³	U-233	, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	³	3.400E-04	³	3.400E-04	³	RTF(7,2)
D-34	³	U-233	, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	³	6.000E-04	³	6.000E-04	³	RTF(7,3)
D-5	³			³		³		³	
D-5	³	Bioaccumulation factors, fresh water, L/kg:		³		³		³	
D-5	³	Am-241	, fish	³	3.000E+01	³	3.000E+01	³	BIOFAC(1,1)
D-5	³	Am-241	, crustacea and mollusks	³	1.000E+03	³	1.000E+03	³	BIOFAC(1,2)
D-5	³			³		³		³	
D-5	³	Co-60	, fish	³	3.000E+02	³	3.000E+02	³	BIOFAC(2,1)
D-5	³	Co-60	, crustacea and mollusks	³	2.000E+02	³	2.000E+02	³	BIOFAC(2,2)
D-5	³			³		³		³	
D-5	³	Cs-137+D	, fish	³	2.000E+03	³	2.000E+03	³	BIOFAC(3,1)
D-5	³	Cs-137+D	, crustacea and mollusks	³	1.000E+02	³	1.000E+02	³	BIOFAC(3,2)
D-5	³			³		³		³	
D-5	³	Np-237+D	, fish	³	3.000E+01	³	3.000E+01	³	BIOFAC(4,1)
D-5	³	Np-237+D	, crustacea and mollusks	³	4.000E+02	³	4.000E+02	³	BIOFAC(4,2)
D-5	³			³		³		³	
D-5	³	Sr-90+D	, fish	³	6.000E+01	³	6.000E+01	³	BIOFAC(5,1)
D-5	³	Sr-90+D	, crustacea and mollusks	³	1.000E+02	³	1.000E+02	³	BIOFAC(5,2)
D-5	³			³		³		³	
D-5	³	Th-229+D	, fish	³	1.000E+02	³	1.000E+02	³	BIOFAC(6,1)
D-5	³	Th-229+D	, crustacea and mollusks	³	5.000E+02	³	5.000E+02	³	BIOFAC(6,2)
D-5	³			³		³		³	
D-5	³	U-233	, fish	³	1.000E+01	³	1.000E+01	³	BIOFAC(7,1)
D-5	³	U-233	, crustacea and mollusks	³	6.000E+01	³	6.000E+01	³	BIOFAC(7,2)

 #For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Site-Specific Parameter Summary			
0	³	³	³
	Parameter	User	Used by RESRAD
Menu	Parameter	Input	Default
input)	Name		(If different from user

HB DCLG buried pipe_2m cover_revised activities.REP

[illegible]

R011	Area of contaminated zone (m**2)	3	1.000E+02	3	1.000E+04	3	---
	AREA						
R011	Thickness of contaminated zone (m)	3	1.000E+00	3	2.000E+00	3	---
	THICK0						
R011	Fraction of contamination that is submerged	3	0.000E+00	3	0.000E+00	3	---
	SUBMFRACT						
R011	Length parallel to aquifer flow (m)	3	1.100E+01	3	1.000E+02	3	---
	LCZPAQ						
R011	Basic radiation dose limit (mrem/yr)	3	2.500E+01	3	3.000E+01	3	---
	BRDL						
R011	Time since placement of material (yr)	3	0.000E+00	3	0.000E+00	3	---
	TI						
R011	Times for calculations (yr)	3	1.000E+00	3	1.000E+00	3	---
	T(2)						
R011	Times for calculations (yr)	3	3.000E+00	3	3.000E+00	3	---
	T(3)						
R011	Times for calculations (yr)	3	1.000E+01	3	1.000E+01	3	---
	T(4)						
R011	Times for calculations (yr)	3	3.000E+01	3	3.000E+01	3	---
	T(5)						
R011	Times for calculations (yr)	3	1.000E+02	3	1.000E+02	3	---
	T(6)						
R011	Times for calculations (yr)	3	3.000E+02	3	3.000E+02	3	---
	T(7)						
R011	Times for calculations (yr)	3	1.000E+03	3	1.000E+03	3	---
	T(8)						
R011	Times for calculations (yr)	3	not used	3	0.000E+00	3	---
	T(9)						
R011	Times for calculations (yr)	3	not used	3	0.000E+00	3	---
	T(10)						
		3		3		3	
R012	Initial principal radionuclide (pCi/g): Am-241	3	7.360E-02	3	0.000E+00	3	---
	S1(1)						
R012	Initial principal radionuclide (pCi/g): Co-60	3	4.440E-01	3	0.000E+00	3	---
	S1(2)						
R012	Initial principal radionuclide (pCi/g): Cs-137	3	1.010E+02	3	0.000E+00	3	---
	S1(3)						
R012	Initial principal radionuclide (pCi/g): Sr-90	3	4.830E-01	3	0.000E+00	3	---
	S1(5)						
R012	Concentration in groundwater (pCi/L): Am-241	3	not used	3	0.000E+00	3	---
	W1(1)						
R012	Concentration in groundwater (pCi/L): Co-60	3	not used	3	0.000E+00	3	---
	W1(2)						
R012	Concentration in groundwater (pCi/L): Cs-137	3	not used	3	0.000E+00	3	---

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R012	³ w1(3) ³ Concentration in groundwater (pCi/L): Sr-90	³ not used	³ 0.000E+00	³	---
	³ w1(5)	³	³	³	
R013	³ Cover depth (m)	³ 2.000E+00	³ 0.000E+00	³	---
	³ COVER0				
R013	³ Density of cover material (g/cm**3)	³ 1.564E+00	³ 1.500E+00	³	---
	³ DENSCV				
R013	³ Cover depth erosion rate (m/yr)	³ 2.200E-03	³ 1.000E-03	³	---
	³ VCV				
R013	³ Density of contaminated zone (g/cm**3)	³ 1.564E+00	³ 1.500E+00	³	---
	³ DENSCZ				
R013	³ Contaminated zone erosion rate (m/yr)	³ 2.200E-03	³ 1.000E-03	³	---
	³ VCZ				
R013	³ Contaminated zone total porosity	³ 4.100E-01	³ 4.000E-01	³	---
	³ TPCZ				
R013	³ Contaminated zone field capacity	³ 9.500E-02	³ 2.000E-01	³	---
	³ FCCZ				
R013	³ Contaminated zone hydraulic conductivity (m/yr)	³ 3.900E+00	³ 1.000E+01	³	---
	³ HCCZ				
R013	³ Contaminated zone b parameter	³ 5.600E+00	³ 5.300E+00	³	---
	³ BCZ				
R013	³ Average annual wind speed (m/sec)	³ 3.040E+00	³ 2.000E+00	³	---
	³ WIND				
R013	³ Humidity in air (g/m**3)	³ not used	³ 8.000E+00	³	---
	³ HUMID				
R013	³ Evapotranspiration coefficient	³ 6.250E-01	³ 5.000E-01	³	---
	³ EVAPTR				
R013	³ Precipitation (m/yr)	³ 9.100E-01	³ 1.000E+00	³	---
	³ PRECIP				
R013	³ Irrigation (m/yr)	³ 5.600E-01	³ 2.000E-01	³	---
	³ RI				
R013	³ Irrigation mode	³ overhead	³ overhead	³	---
	³ IDITCH				
R013	³ Runoff coefficient	³ 5.000E-01	³ 2.000E-01	³	---
	³ RUNOFF				
R013	³ Watershed area for nearby stream or pond (m**2)	³ 2.520E+07	³ 1.000E+06	³	---
	³ WAREA				
R013	³ Accuracy for water/soil computations	³ 1.000E-03	³ 1.000E-03	³	---
	³ EPS	³	³	³	
R014	³ Density of saturated zone (g/cm**3)	³ 1.510E+00	³ 1.500E+00	³	---
	³ DENSAQ				
R014	³ Saturated zone total porosity	³ 4.300E-01	³ 4.000E-01	³	---
	³ TPSZ				
R014	³ Saturated zone effective porosity	³ 3.420E-01	³ 2.000E-01	³	---

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R014	³ EPSZ								
R014	³ Saturated zone field capacity	³ 8.800E-02	³ 2.000E-01	³					---
R014	³ FCSZ								
R014	³ Saturated zone hydraulic conductivity (m/yr)	³ 2.880E+01	³ 1.000E+02	³					---
R014	³ HCSZ								
R014	³ Saturated zone hydraulic gradient	³ 2.000E-03	³ 2.000E-02	³					---
	³ HGWT								
1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 5									
Summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe									
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Site-Specific Parameter Summary (continued)

0	3	3	3	3	3	3	3
Parameter	Menu	Parameter	User	Input	Default	Used by RESRAD	(If different from user
Name	input)	Name					

AA				
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R014	3 Saturated zone b parameter	3 7.100E+00	3 5.300E+00	3 ---
	3 BSZ			
R014	3 water table drop rate (m/yr)	3 1.000E-03	3 1.000E-03	3 ---
	3 VWT			
R014	3 well pump intake depth (m below water table)	3 1.000E+01	3 1.000E+01	3 ---
	3 DWIBWT			
R014	3 Model: Nondispersion (ND) or Mass-Balance (MB)	3 ND	3 ND	3 ---
	3 MODEL			
R014	3 well pumping rate (m**3/yr)	3 1.573E+03	3 2.500E+02	3 ---
	3 UW			
	3	3	3	
	3			
R015	3 Number of unsaturated zone strata	3 1	3 1	3 ---
	3 NS			
R015	3 Unsat. zone 1, thickness (m)	3 4.040E+00	3 4.000E+00	3 ---
	3 H(1)			
R015	3 Unsat. zone 1, soil density (g/cm**3)	3 1.564E+00	3 1.500E+00	3 ---
	3 DENSUZ(1)			
R015	3 Unsat. zone 1, total porosity	3 4.100E-01	3 4.000E-01	3 ---
	3 TPUZ(1)			
R015	3 Unsat. zone 1, effective porosity	3 3.150E-01	3 2.000E-01	3 ---
	3 EPUZ(1)			
R015	3 Unsat. zone 1, field capacity	3 9.500E-02	3 2.000E-01	3 ---
	3 FCUZ(1)			
R015	3 Unsat. zone 1, soil-specific b parameter	3 5.600E+00	3 5.300E+00	3 ---
	3 BUZ(1)			
R015	3 Unsat. zone 1, hydraulic conductivity (m/yr)	3 3.900E+00	3 1.000E+01	3 ---
	3 HCUZ(1)			
	3	3	3	

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R016	³ Distribution coefficients for Am-241	³	³	³	
R016	³ Contaminated zone (cm**3/g)	³	2.000E+01	³ 2.000E+01	³ ---
	³ DCNUCC(1)				
R016	³ Unsaturated zone 1 (cm**3/g)	³	2.000E+01	³ 2.000E+01	³ ---
	³ DCNUCU(1,1)				
R016	³ Saturated zone (cm**3/g)	³	2.000E+01	³ 2.000E+01	³ ---
	³ DCNUCS(1)				
R016	³ Leach rate (/yr)	³	0.000E+00	³ 0.000E+00	³ 1.204E-02
	³ ALEACH(1)				
R016	³ Solubility constant	³	0.000E+00	³ 0.000E+00	³ not used
	³ SOLUBK(1)				
	³	³	³	³	
R016	³ Distribution coefficients for Co-60	³	³	³	
R016	³ Contaminated zone (cm**3/g)	³	1.000E+03	³ 1.000E+03	³ ---
	³ DCNUCC(2)				
R016	³ Unsaturated zone 1 (cm**3/g)	³	1.000E+03	³ 1.000E+03	³ ---
	³ DCNUCU(2,1)				
R016	³ Saturated zone (cm**3/g)	³	1.000E+03	³ 1.000E+03	³ ---
	³ DCNUCS(2)				
R016	³ Leach rate (/yr)	³	0.000E+00	³ 0.000E+00	³ 2.434E-04
	³ ALEACH(2)				
R016	³ Solubility constant	³	0.000E+00	³ 0.000E+00	³ not used
	³ SOLUBK(2)				
	³	³	³	³	
R016	³ Distribution coefficients for Cs-137	³	³	³	
R016	³ Contaminated zone (cm**3/g)	³	4.600E+03	³ 4.600E+03	³ ---
	³ DCNUCC(3)				
R016	³ Unsaturated zone 1 (cm**3/g)	³	4.600E+03	³ 4.600E+03	³ ---
	³ DCNUCU(3,1)				
R016	³ Saturated zone (cm**3/g)	³	4.600E+03	³ 4.600E+03	³ ---
	³ DCNUCS(3)				
R016	³ Leach rate (/yr)	³	0.000E+00	³ 0.000E+00	³ 5.292E-05
	³ ALEACH(3)				
R016	³ Solubility constant	³	0.000E+00	³ 0.000E+00	³ not used
	³ SOLUBK(3)				
	³	³	³	³	
R016	³ Distribution coefficients for Sr-90	³	³	³	
R016	³ Contaminated zone (cm**3/g)	³	3.000E+01	³ 3.000E+01	³ ---
	³ DCNUCC(5)				
R016	³ Unsaturated zone 1 (cm**3/g)	³	3.000E+01	³ 3.000E+01	³ ---

Variable	Units	Value	Units	Value	Units	Value
DCNUCU(5,1)		3.000E+01		3.000E+01		---
Saturated zone (cm**3/g)						
DCNUCS(5)		0.000E+00		0.000E+00		8.055E-03
Leach rate (/yr)						
ALEACH(5)		0.000E+00		0.000E+00		not used
Solubility constant						
SOLUBK(5)						
Distribution coefficients for daughter Np-237						
Contaminated zone (cm**3/g)		-1.000E+00		-1.000E+00		2.574E+02
DCNUCC(4)		-1.000E+00		-1.000E+00		2.574E+02
Unsaturated zone 1 (cm**3/g)		-1.000E+00		-1.000E+00		2.574E+02
DCNUCU(4,1)		-1.000E+00		-1.000E+00		2.574E+02
Saturated zone (cm**3/g)		0.000E+00		0.000E+00		9.449E-04
DCNUCS(4)		0.000E+00		0.000E+00		not used
Leach rate (/yr)						
ALEACH(4)						
Solubility constant						
SOLUBK(4)						

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File    : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD
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0	3	3	3	3	3	3	3
Menu	Parameter	Parameter	User	Input	Default	(If different from user	Used by RESRAD
input)	Name						

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R016	Contaminated zone (cm**3/g)	3	5.000E+01	3	5.000E+01	3	---
	DCNUCC(7)						
R016	Unsaturated zone 1 (cm**3/g)	3	5.000E+01	3	5.000E+01	3	---
	DCNUCU(7,1)						
R016	Saturated zone (cm**3/g)	3	5.000E+01	3	5.000E+01	3	---
	DCNUCS(7)						
R016	Leach rate (/yr)	3	0.000E+00	3	0.000E+00	3	4.847E-03
	ALEACH(7)						
R016	Solubility constant	3	0.000E+00	3	0.000E+00	3	not used
	SOLUBK(7)						
		3		3		3	
R017	Inhalation rate (m**3/yr)	3	8.400E+03	3	8.400E+03	3	---
	INHALR						
R017	Mass loading for inhalation (g/m**3)	3	1.000E-04	3	1.000E-04	3	---
	MLINH						
R017	Exposure duration	3	3.000E+01	3	3.000E+01	3	---
	ED						
R017	Shielding factor, inhalation	3	5.500E-01	3	4.000E-01	3	---
	SHF3						
R017	Shielding factor, external gamma	3	2.725E-01	3	7.000E-01	3	---
	SHF1						
R017	Fraction of time spent indoors	3	6.571E-01	3	5.000E-01	3	---
	FIND						
R017	Fraction of time spent outdoors (on site)	3	1.181E-01	3	2.500E-01	3	---
	FOTD						
R017	Shape factor flag, external gamma	3	1.000E+00	3	1.000E+00	3	>0 shows circular
AREA.	FS						
R017	Radii of shape factor array (used if FS = -1):	3		3		3	
		3					
R017	Outer annular radius (m), ring 1:	3	not used	3	5.000E+01	3	---
	RAD_SHAPE(1)						
R017	Outer annular radius (m), ring 2:	3	not used	3	7.071E+01	3	---
	RAD_SHAPE(2)						
R017	Outer annular radius (m), ring 3:	3	not used	3	0.000E+00	3	---
	RAD_SHAPE(3)						
R017	Outer annular radius (m), ring 4:	3	not used	3	0.000E+00	3	---
	RAD_SHAPE(4)						
R017	Outer annular radius (m), ring 5:	3	not used	3	0.000E+00	3	---
	RAD_SHAPE(5)						
R017	Outer annular radius (m), ring 6:	3	not used	3	0.000E+00	3	---
	RAD_SHAPE(6)						
R017	Outer annular radius (m), ring 7:	3	not used	3	0.000E+00	3	---
	RAD_SHAPE(7)						
R017	Outer annular radius (m), ring 8:	3	not used	3	0.000E+00	3	---
	RAD_SHAPE(8)						
R017	Outer annular radius (m), ring 9:	3	not used	3	0.000E+00	3	---

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3	RAD_SHAPE(9)				
R017	3 Outer annular radius (m), ring 10:	3	not used	3	0.000E+00 3 ---
3	RAD_SHAPE(10)				
R017	3 Outer annular radius (m), ring 11:	3	not used	3	0.000E+00 3 ---
3	RAD_SHAPE(11)				
R017	3 Outer annular radius (m), ring 12:	3	not used	3	0.000E+00 3 ---
3	RAD_SHAPE(12)				
3		3		3	
3					
R017	3 Fractions of annular areas within AREA:	3		3	
3					
R017	3 Ring 1	3	not used	3	1.000E+00 3 ---
3	FRACA(1)				
R017	3 Ring 2	3	not used	3	2.732E-01 3 ---
3	FRACA(2)				
R017	3 Ring 3	3	not used	3	0.000E+00 3 ---
3	FRACA(3)				
R017	3 Ring 4	3	not used	3	0.000E+00 3 ---
3	FRACA(4)				
R017	3 Ring 5	3	not used	3	0.000E+00 3 ---
3	FRACA(5)				
R017	3 Ring 6	3	not used	3	0.000E+00 3 ---
3	FRACA(6)				
R017	3 Ring 7	3	not used	3	0.000E+00 3 ---
3	FRACA(7)				
R017	3 Ring 8	3	not used	3	0.000E+00 3 ---
3	FRACA(8)				
R017	3 Ring 9	3	not used	3	0.000E+00 3 ---
3	FRACA(9)				
R017	3 Ring 10	3	not used	3	0.000E+00 3 ---
3	FRACA(10)				
R017	3 Ring 11	3	not used	3	0.000E+00 3 ---
3	FRACA(11)				
R017	3 Ring 12	3	not used	3	0.000E+00 3 ---
3	FRACA(12)				
3		3		3	

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Site-Specific Parameter Summary (continued)

0	3		3	User	3	3	Used by RESRAD
Menu	3	Parameter		3	Input	3	Default 3 (If different from user
input)	3	Name		3		3	

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R018	³ Fruits, vegetables and grain consumption (kg/yr)	³ 1.120E+02	³ 1.600E+02	³	---
	³ DIET(1)				
R018	³ Leafy vegetable consumption (kg/yr)	³ 2.140E+01	³ 1.400E+01	³	---
	³ DIET(2)				
R018	³ Milk consumption (L/yr)	³ 2.330E+02	³ 9.200E+01	³	---
	³ DIET(3)				
R018	³ Meat and poultry consumption (kg/yr)	³ 6.510E+01	³ 6.300E+01	³	---
	³ DIET(4)				
R018	³ Fish consumption (kg/yr)	³ 2.060E+01	³ 5.400E+00	³	---
	³ DIET(5)				
R018	³ Other seafood consumption (kg/yr)	³ 9.000E-01	³ 9.000E-01	³	---
	³ DIET(6)				
R018	³ Soil ingestion rate (g/yr)	³ 1.826E+01	³ 3.650E+01	³	---
	³ SOIL				
R018	³ Drinking water intake (L/yr)	³ 4.785E+02	³ 5.100E+02	³	---
	³ DWI				
R018	³ Contamination fraction of drinking water	³ 1.000E+00	³ 1.000E+00	³	---
	³ FDW				
R018	³ Contamination fraction of household water	³ not used	³ 1.000E+00	³	---
	³ FHHW				
R018	³ Contamination fraction of livestock water	³ 1.000E+00	³ 1.000E+00	³	---
	³ FLW				
R018	³ Contamination fraction of irrigation water	³ 1.000E+00	³ 1.000E+00	³	---
	³ FIRW				
R018	³ Contamination fraction of aquatic food	³ 1.000E+00	³ 5.000E-01	³	---
	³ FR9				
R018	³ Contamination fraction of plant food	³ 1.000E-01	³ -1	³	---
	³ FPLANT				
R018	³ Contamination fraction of meat	³ 5.000E-03	³ -1	³	---
	³ FMEAT				
R018	³ Contamination fraction of milk	³ 5.000E-03	³ -1	³	---
	³ FMILK				
	³	³	³	³	
	³				
R019	³ Livestock fodder intake for meat (kg/day)	³ 2.710E+01	³ 6.800E+01	³	---
	³ LFI5				
R019	³ Livestock fodder intake for milk (kg/day)	³ 6.320E+01	³ 5.500E+01	³	---
	³ LFI6				
R019	³ Livestock water intake for meat (L/day)	³ 5.060E+01	³ 5.000E+01	³	---
	³ LWI5				
R019	³ Livestock water intake for milk (L/day)	³ 6.000E+01	³ 1.600E+02	³	---
	³ LWI6				
R019	³ Livestock soil intake (kg/day)	³ 5.000E-01	³ 5.000E-01	³	---
	³ LSI				
R019	³ Mass loading for foliar deposition (g/m**3)	³ 4.000E-04	³ 1.000E-04	³	---
	³ MLFD				
R019	³ Depth of soil mixing layer (m)	³ 2.300E-01	³ 1.500E-01	³	---

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³ DM				
R019 ³ Depth of roots (m)	³ 1.220E+00	³ 9.000E-01	³	---
³ DROOT				
R019 ³ Drinking water fraction from ground water	³ 1.000E+00	³ 1.000E+00	³	---
³ FGWDW				
R019 ³ Household water fraction from ground water	³ not used	³ 1.000E+00	³	---
³ FGWHH				
R019 ³ Livestock water fraction from ground water	³ 1.000E+00	³ 1.000E+00	³	---
³ FGWLW				
R019 ³ Irrigation fraction from ground water	³ 1.000E+00	³ 1.000E+00	³	---
³ FGWIR				
³	³	³	³	
³				
R19B ³ Wet weight crop yield for Non-Leafy (kg/m**2)	³ 1.750E+00	³ 7.000E-01	³	---
³ YV(1)				
R19B ³ Wet weight crop yield for Leafy (kg/m**2)	³ 2.889E+00	³ 1.500E+00	³	---
³ YV(2)				
R19B ³ Wet weight crop yield for Fodder (kg/m**2)	³ 1.887E+00	³ 1.100E+00	³	---
³ YV(3)				
R19B ³ Growing Season for Non-Leafy (years)	³ 2.460E-01	³ 1.700E-01	³	---
³ TE(1)				
R19B ³ Growing Season for Leafy (years)	³ 1.230E-01	³ 2.500E-01	³	---
³ TE(2)				
R19B ³ Growing Season for Fodder (years)	³ 8.200E-02	³ 8.000E-02	³	---
³ TE(3)				
R19B ³ Translocation Factor for Non-Leafy	³ 1.000E-01	³ 1.000E-01	³	---
³ TIV(1)				
R19B ³ Translocation Factor for Leafy	³ 1.000E+00	³ 1.000E+00	³	---
³ TIV(2)				
R19B ³ Translocation Factor for Fodder	³ 1.000E+00	³ 1.000E+00	³	---
³ TIV(3)				
R19B ³ Dry Foliar Interception Fraction for Non-Leafy	³ 3.500E-01	³ 2.500E-01	³	---
³ RDRY(1)				
R19B ³ Dry Foliar Interception Fraction for Leafy	³ 3.500E-01	³ 2.500E-01	³	---
³ RDRY(2)				
R19B ³ Dry Foliar Interception Fraction for Fodder	³ 3.500E-01	³ 2.500E-01	³	---
³ RDRY(3)				
R19B ³ Wet Foliar Interception Fraction for Non-Leafy	³ 3.500E-01	³ 2.500E-01	³	---
³ RWET(1)				
R19B ³ Wet Foliar Interception Fraction for Leafy	³ 5.800E-01	³ 2.500E-01	³	---
³ RWET(2)				
R19B ³ Wet Foliar Interception Fraction for Fodder	³ 3.500E-01	³ 2.500E-01	³	---
³ RWET(3)				
R19B ³ Weathering Removal Constant for Vegetation	³ 3.300E+01	³ 2.000E+01	³	---
³ WLAM				
³	³	³	³	
³				
C14 ³ C-12 concentration in water (g/cm**3)	³ not used	³ 2.000E-05	³	---

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³ C12WTR
 C14 ³ C-12 concentration in contaminated soil (g/g) ³ not used ³ 3.000E-02 ³ ---
³ C12CZ
 C14 ³ Fraction of vegetation carbon from soil ³ not used ³ 2.000E-02 ³ ---
³ CSOIL

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 Summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
 File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Site-Specific Parameter Summary (continued)

0	³ Parameter	³ User	³ Default	³ Used by RESRAD
Menu input)	Name	Parameter	Input	Default (If different from user

AA
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C14	³ Fraction of vegetation carbon from air	³ not used	³ 9.800E-01	³ ---
	³ CAIR			
C14	³ C-14 evasion layer thickness in soil (m)	³ not used	³ 3.000E-01	³ ---
	³ DMC			
C14	³ C-14 evasion flux rate from soil (1/sec)	³ not used	³ 7.000E-07	³ ---
	³ EVSN			
C14	³ C-12 evasion flux rate from soil (1/sec)	³ not used	³ 1.000E-10	³ ---
	³ REVSN			
C14	³ Fraction of grain in beef cattle feed	³ not used	³ 8.000E-01	³ ---
	³ AVFG4			
C14	³ Fraction of grain in milk cow feed	³ not used	³ 2.000E-01	³ ---
	³ AVFG5			
STOR	³ Storage times of contaminated foodstuffs (days):			
	³ Fruits, non-leafy vegetables, and grain	³ 1.400E+01	³ 1.400E+01	³ ---
	³ STOR_T(1)			
STOR	³ Leafy vegetables	³ 1.000E+00	³ 1.000E+00	³ ---
	³ STOR_T(2)			
STOR	³ Milk	³ 1.000E+00	³ 1.000E+00	³ ---
	³ STOR_T(3)			
STOR	³ Meat and poultry	³ 2.000E+01	³ 2.000E+01	³ ---
	³ STOR_T(4)			
STOR	³ Fish	³ 7.000E+00	³ 7.000E+00	³ ---
	³ STOR_T(5)			
STOR	³ Crustacea and mollusks	³ 7.000E+00	³ 7.000E+00	³ ---
	³ STOR_T(6)			
STOR	³ Well water	³ 1.000E+00	³ 1.000E+00	³ ---
	³ STOR_T(7)			
STOR	³ Surface water	³ 1.000E+00	³ 1.000E+00	³ ---

HB DCGL buried pipe_2m cover_revised activities.REP

³ STOR_T(8)				
STOR ³ Livestock fodder	³ 4.500E+01	³ 4.500E+01	³	---
³ STOR_T(9)				
³	³	³	³	
³				
R021 ³ Thickness of building foundation (m)	³ not used	³ 1.500E-01	³	---
³ FLOOR1				
R021 ³ Bulk density of building foundation (g/cm**3)	³ not used	³ 2.400E+00	³	---
³ DENSFL				
R021 ³ Total porosity of the cover material	³ not used	³ 4.000E-01	³	---
³ TPCV				
R021 ³ Total porosity of the building foundation	³ not used	³ 1.000E-01	³	---
³ TPFL				
R021 ³ Volumetric water content of the cover material	³ not used	³ 5.000E-02	³	---
³ PH2OCV				
R021 ³ Volumetric water content of the foundation	³ not used	³ 3.000E-02	³	---
³ PH2OFL				
R021 ³ Diffusion coefficient for radon gas (m/sec):	³	³	³	
³				
R021 ³ in cover material	³ not used	³ 2.000E-06	³	---
³ DIFCV				
R021 ³ in foundation material	³ not used	³ 3.000E-07	³	---
³ DIFFL				
R021 ³ in contaminated zone soil	³ not used	³ 2.000E-06	³	---
³ DIFCZ				
R021 ³ Radon vertical dimension of mixing (m)	³ not used	³ 2.000E+00	³	---
³ HMIX				
R021 ³ Average building air exchange rate (1/hr)	³ not used	³ 5.000E-01	³	---
³ REXG				
R021 ³ Height of the building (room) (m)	³ not used	³ 2.500E+00	³	---
³ HRM				
R021 ³ Building interior area factor	³ not used	³ 0.000E+00	³	---
³ FAI				
R021 ³ Building depth below ground surface (m)	³ not used	³ -1.000E+00	³	---
³ DMFL				
R021 ³ Emanating power of Rn-222 gas	³ not used	³ 2.500E-01	³	---
³ EMANA(1)				
R021 ³ Emanating power of Rn-220 gas	³ not used	³ 1.500E-01	³	---
³ EMANA(2)				
³	³	³	³	
³				
TITL ³ Number of graphical time points	³ 32	³ ---	³	---
³ NPTS				
TITL ³ Maximum number of integration points for dose	³ 17	³ ---	³	---
³ LYMAX				
TITL ³ Maximum number of integration points for risk	³ 1	³ ---	³	---
³ KYMAX				

HB DCGL buried pipe_2m cover_revised activities.REP

```

1RESRAD, Version 6.5      T« Limit = 30 days      07/15/2014  18:44  Page   9
Summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
File    : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

```

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

```

1RESRAD, Version 6.5      T« Limit = 30 days      07/15/2014  18:44  Page  10
Summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
File    : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

```

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 100.00 square meters	Am-241 7.360E-02
Thickness: 1.00 meters	Co-60 4.440E-01
Cover Depth: 2.00 meters	Cs-137 1.010E+02
	Sr-90 4.830E-01

0

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	5.993E-11	5.527E-11	4.733E-11	2.997E-11	1.800E-11	3.104E-11	4.275E-04	3.558E-04
M(t):	2.397E-12	2.211E-12	1.893E-12	1.199E-12	7.200E-13	1.242E-12	1.710E-05	1.423E-05

HB DCGL buried pipe_2m cover_revised activities.REP

Maximum TDOSE(t): 1.584E-03 mrem/yr at t = 407.1 ± 0.8 years

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

(p)

As mrem/yr and Fraction of Total Dose At t = 4.071E+02 years

0

0

Milk

Ground

Inhalation

Radon

Plant

Meat

Soil

Radio-

AAAAA

AAAAA

Nuclide

fract.

Nuclide

AAAAA

AAAAA

Am-241

0.0000

Co-60

0.0000

Cs-137

0.0194

Sr-90

0.0000

iiiiiii

iiiiiii

Total

0.0194

0

AAAAA

AAAAA

mrem/yr

fract.

mrem/yr

fract.

AAAAA

AAAAA

5.180E-16

0.0000

0.0000

1.347E-29

0.0000

5.777E-10

0.0000

1.032E-17

0.0000

0.0000

5.777E-10

0.0000

0.0000

AAAAA

AAAAA

mrem/yr

fract.

mrem/yr

fract.

AAAAA

AAAAA

0.000E+00

0.0000

0.000E+00

0.0000

0.000E+00

0.0000

0.000E+00

0.0000

iiiiiii

iiiiiii

0.000E+00

0.0000

0.000E+00

0.0000

AAAAA

AAAAA

mrem/yr

fract.

mrem/yr

fract.

AAAAA

AAAAA

0.000E+00

0.0000

0.000E+00

0.0000

0.000E+00

0.0000

iiiiiii

iiiiiii

0.000E+00

0.0000

0.000E+00

0.0000

0.000E+00

0.0000

AAAAA

AAAAA

mrem/yr

fract.

mrem/yr

fract.

AAAAA

AAAAA

2.551E-06

0.0016

1.056E-26

0.0000

4.006E-04

0.2529

1.273E-07

0.0001

iiiiiii

iiiiiii

4.033E-04

0.2546

0.000E+00

0.0000

AAAAA

AAAAA

mrem/yr

fract.

mrem/yr

fract.

AAAAA

AAAAA

1.745E-10

0.0000

4.081E-28

0.0000

1.722E-05

0.0109

6.726E-10

0.0000

iiiiiii

iiiiiii

1.723E-05

0.0109

0.000E+00

0.0000

AAAAA

AAAAA

mrem/yr

fract.

mrem/yr

fract.

AAAAA

AAAAA

3.053E-11

1.164E-28

3.068E-05

1.404E-09

iiiiiii

iiiiiii

3.068E-05

iiiiiii

iiiiiii

iiiiiii

iiiiiii

iiiiiii

iiiiiii

iiiiiii

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

(p)

As mrem/yr and Fraction of Total Dose At t = 4.071E+02 years

0

0

Milk

Water

Fish

Radon

Plant

Meat

All Pathways*

Radio-

AAAAA

AAAAA

Nuclide

fract.

Nuclide

AAAAA

AAAAA

Am-241

0.0000

Co-60

0.0000

Cs-137

0.0000

Sr-90

AAAAA

AAAAA

mrem/yr

fract.

mrem/yr

fract.

AAAAA

AAAAA

1.103E-03

0.6965

1.135E-03

0.7167

0.000E+00

1.110E-26

0.0000

0.000E+00

0.0000

AAAAA

AAAAA

mrem/yr

fract.

mrem/yr

fract.

AAAAA

AAAAA

4.171E-06

0.0026

0.000E+00

0.0000

0.000E+00

0.0000

0.000E+00

0.0000

0.000E+00

0.0000

AAAAA

AAAAA

mrem/yr

fract.

mrem/yr

fract.

AAAAA

AAAAA

0.000E+00

0.0000

0.000E+00

0.0000

0.000E+00

0.0000

0.000E+00

0.0000

0.000E+00

0.0000

AAAAA

AAAAA

mrem/yr

fract.

mrem/yr

fract.

AAAAA

AAAAA

2.529E-05

0.0160

0.000E+00

0.0000

0.000E+00

0.0000

0.000E+00

0.0000

0.000E+00

0.0000

AAAAA

AAAAA

mrem/yr

fract.

mrem/yr

fract.

AAAAA

AAAAA

4.884E-09

0.0000

0.000E+00

0.0000

0.000E+00

0.0000

0.000E+00

0.0000

0.000E+00

0.0000

AAAAA

AAAAA

mrem/yr

fract.

mrem/yr

fract.

AAAAA

AAAAA

1.319E-09

0.000E+00

0.000E+00

0.000E+00

0.000E+00

HB DCGL buried pipe_2m cover_revised activities.REP

0.0000 1.294E-07 0.0001
 0.0000 1.584E-03 1.0000
 Total 1.103E-03 0.6965 4.171E-06 0.0026 0.000E+00 0.0000 2.529E-05 0.0160 4.884E-09 0.0000 1.319E-09

0*Sum of all water independent and dependent pathways.

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Summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

(p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years
 water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat
Milk	Soil				
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
Am-241	3.227E-25 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Co-60	4.795E-11 0.8001	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Cs-137	1.198E-11 0.1999	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Sr-90	2.952E-19 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Total	5.993E-11 1.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

(p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years
 Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat
Milk	All Pathways*				
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
Am-241	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000

HB DCGL buried pipe_2m cover_revised activities.REP

0.0000	3.227E-25	0.0000									
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	4.795E-11	0.8001									
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	1.198E-11	0.1999									
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	2.952E-19	0.0000									
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
iiiiiii	iiiiiii	iiiiiii									
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	5.993E-11	1.0000									

0*Sum of all water independent and dependent pathways.
 1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 12
 Summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
 File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

(p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years
 Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat	
	Soil									
0										
0										
Milk										
Radio-	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA									
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
fract.	mrem/yr	fract.								mrem/yr
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	AAAAAAA	AAAAAAA								
Am-241	9.972E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.000E+00
0.0000	0.000E+00	0.0000								
Co-60	4.318E-11	0.7812	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.000E+00
0.0000	0.000E+00	0.0000								
Cs-137	1.210E-11	0.2188	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.000E+00
0.0000	0.000E+00	0.0000								
Sr-90	2.978E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.000E+00
0.0000	0.000E+00	0.0000								
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
iiiiiii	iiiiiii	iiiiiii								
Total	5.527E-11	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.000E+00
0.0000	0.000E+00	0.0000								

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

(p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years
 Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat
	All Pathways*				
0					
0					
Milk					
Radio-	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA

HB DCGL buried pipe_2m cover_revised activities.REP

HB DCGL buried pipe_2m cover_revised activities.REP											
Nuclide mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract.											
fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract.											
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00

0*Sum of all water independent and dependent pathways.

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Summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

(p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years											
Water Independent Pathways (Inhalation excludes radon)											
Ground Inhalation Radon Plant Meat											
Radio- mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract.											
fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract. mrem/yr fract.											
Am-241	2.485E-24	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Co-60	3.500E-11	0.7395	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Cs-137	1.233E-11	0.2605	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Sr-90	3.031E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Total	4.733E-11	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

HB DCGL buried pipe_2m cover_revised activities.REP

(p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

AS mrem/yr and Fraction of Total Dose At 1 = 51000E+00 years											
Water			Fish		Radon		Plant		Meat		
All Pathways*											
Radio-	Nuclide										
mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	2.485E-24	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	3.500E-11	0.7395	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	1.233E-11	0.2605	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000	0.000E+00	0.000E+00
0.0000	3.031E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000	0.000E+00	0.000E+00
0.0000	4.733E-11	1.0000									

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 14

Summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

(p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)											
Ground			Inhalation		Radon		Plant		Meat		
Milk	Soil										
Radio-	AAAAA		AAAAA		AAAAA		AAAAA		AAAAA		
AAAAA	AAAAA										
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
fract.	mrem/yr	fract.									
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
AAAAAA	AAAAAA	AAAAAA									
Am-241	9.414E-24	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	0.000E+00	0.0000									
Co-60	1.679E-11	0.5603	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	0.000E+00	0.0000									
Cs-137	1.318E-11	0.4397	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	0.000E+00	0.0000									
Sr-90	3.222E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	0.000E+00	0.0000									

HB DCGL buried pipe_2m cover_revised activities.REP

iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.997E-11	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	0.000E+00	0.0000									

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

(p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

0	Water Dependent Pathways									
0	Water		Fish		Radon		Plant		Meat	
Milk	All Pathways*									
Radio-	AAAAA		AAAAA		AAAAA		AAAAA		AAAAA	
AAAAA	AAAAA		AAAAA		AAAAA		AAAAA		AAAAA	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
fract.	mrem/yr	fract.								
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
AAAAA	AAAAA	AAAAA								
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
0.0000	9.414E-24	0.0000								
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
0.0000	1.679E-11	0.5603								
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
0.0000	1.318E-11	0.4397								
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
0.0000	3.222E-19	0.0000								
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
0.0000	2.997E-11	1.0000								

0*Sum of all water independent and dependent pathways.

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Summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

(p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

0	Water Independent Pathways (Inhalation excludes radon)									
0	Ground		Inhalation		Radon		Plant		Meat	
Milk	Soil									
Radio-	AAAAA		AAAAA		AAAAA		AAAAA		AAAAA	
AAAAA	AAAAA		AAAAA		AAAAA		AAAAA		AAAAA	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
fract.	mrem/yr	fract.								
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
AAAAA	AAAAA	AAAAA								
Am-241	5.362E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
0.0000	0.000E+00	0.0000								

HB DCGL buried pipe_2m cover_revised activities.REP

Co-60	2.060E-12	0.1144	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	0.000E+00	0.0000									
Cs-137	1.594E-11	0.8856	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	0.000E+00	0.0000									
Sr-90	3.836E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	0.000E+00	0.0000									
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
iiiiiii	iiiiiii	iiiiiii									
Total	1.800E-11	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	0.000E+00	0.0000									
0											

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

(p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

	Water		Fish		Radon		Plant		Meat		
	All Pathways*										
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
AAAAA	AAAAA	AAAAA									
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
fract.	mrem/yr	fract.									
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
AAAAA	AAAAA	AAAAA									
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	5.362E-23	0.0000									
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	2.060E-12	0.1144									
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	1.594E-11	0.8856									
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	3.836E-19	0.0000									
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
iiiiiii	iiiiiii	iiiiiii									
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	1.800E-11	1.0000									

0*Sum of all water independent and dependent pathways.

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Summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

(p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

	Ground		Inhalation		Radon		Plant		Meat		
	Soil										
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
AAAAA	AAAAA	AAAAA									

Nuclide		mrem/yr		fract.		HB DCGL buried pipe_2m cover_revised activities.REP		mrem/yr		fract.		mrem/yr	
fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Am-241	1.949E-21	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00
Co-60	1.332E-15	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00
Cs-137	3.104E-11	1.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00
Sr-90	7.068E-19	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00
Total	3.104E-11	1.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00	0.0000	0.0000E+00

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

(p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water		Fish		Radon		Plant		Meat	
All Pathways*									
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Co-60	1.949E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Cs-137	1.332E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Sr-90	3.104E-11	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Total	7.068E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 17

Summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

(p)

HB DCGL buried pipe_2m cover_revised activities.REP

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

AS mrem/yr and Fract. of Total Dose (Inhalation excludes radon)											
0	Ground		Inhalation		Radon		Plant		Meat		
Milk	Soil										
Radio-	AAAAA	AAAAA	AAAAA		AAAAA		AAAAA		AAAAA		AAAAA
AAAAA	AAAAA	AAAAA									
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
fract.	mrem/yr	fract.									
AAAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
AAAAAA	AAAAA	AAAAA									
Am-241	7.320E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	0.000E+00	0.0000									
Co-60	1.027E-24	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	0.000E+00	0.0000									
Cs-137	2.083E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	0.000E+00	0.0000									
Sr-90	4.052E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	0.000E+00	0.0000									
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
iiiiiii	iiiiiii	iiiiiii									
Total	2.083E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	0.000E+00	0.0000									
0											

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

(p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

				Water Dependent Pathways				Meat			
0	Water		Fish		Radon		Plant				
0											
Milk	All Pathways*										
Radio-	AA										

0*Sum of all water independent and dependent pathways.

HB DCGL buried pipe_2m cover_revised activities.REP
 1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 18
 Summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
 File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

(p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years											
Water Independent Pathways (Inhalation excludes radon)											
	Ground		Inhalation		Radon		Plant		Meat		
Milk	Soil										
Radio-	AAAAA		AAAAA		AAAAA		AAAAA		AAAAA		
AAAAA	AAAAA		AAAAA		AAAAA		AAAAA		AAAAA		
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
fract.	mrem/yr	fract.									
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
AAAAA	AAAAA	AAAAA									
Am-241	1.936E-07	0.0005	1.561E-08	0.0000	0.000E+00	0.0000	5.714E-07	0.0016	9.050E-10	0.0000	2.560E-11
0.0000	5.036E-09	0.0000									
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	0.000E+00	0.0000									
Cs-137	6.973E-09	0.0000	1.007E-14	0.0000	0.000E+00	0.0000	2.989E-09	0.0000	1.336E-10	0.0000	2.329E-10
0.0000	6.193E-13	0.0000									
Sr-90	3.999E-17	0.0000	3.275E-19	0.0000	0.000E+00	0.0000	5.466E-15	0.0000	3.034E-17	0.0000	6.163E-17
0.0000	1.501E-18	0.0000									
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
iiiiiii	iiiiiii	iiiiiii									
Total	2.006E-07	0.0006	1.561E-08	0.0000	0.000E+00	0.0000	5.744E-07	0.0016	1.039E-09	0.0000	2.585E-10
0.0000	5.037E-09	0.0000									
0											

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways

(p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years											
Water Dependent Pathways											
	Water		Fish		Radon		Plant		Meat		
Milk	All Pathways*										
Radio-	AAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAA		
AAAAAAAAAAAAAAAA											
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
fract.	mrem/yr	fract.									
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
AAAAAA	AAAAAA	AAAAAA									
Am-241	3.458E-04	0.9718	1.308E-06	0.0037	0.000E+00	0.0000	7.931E-06	0.0223	1.536E-09	0.0000	4.142E-10
0.0000	3.558E-04	1.0000									
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	0.000E+00	0.0000									
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0.0000	1.033E-08	0.0000									
Sr-90	2.260E-14	0.0000	7.465E-17	0.0000	0.000E+00	0.0000	6.495E-16	0.0000	1.627E-17	0.0000	2.758E-17

HB DCGL buried pipe_2m cover_revised activities.REP

0.0000 2.897E-14 0.0000
 0.0000 3.558E-04 1.0000
 Total 3.458E-04 0.9718 1.308E-06 0.0037 0.000E+00 0.0000 7.931E-06 0.0223 1.536E-09 0.0000 4.142E-10

0*Sum of all water independent and dependent pathways.

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Summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
 File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Dose/Source Ratios Summed Over All Pathways

Parent and Progeny Principal Radionuclide Contributions Indicated

0	Parent	Product	Thread	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)						
(i)	(j)	Fraction		0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
1.000E+03	Am-241	Am-241	1.000E+00	2.803E-45	4.204E-45	5.605E-45	8.408E-45	5.885E-44	4.296E-41	5.808E-03
4.824E-03	Am-241	Np-237+D	1.000E+00	4.384E-24	1.355E-23	3.376E-23	1.279E-22	7.267E-22	2.617E-20	2.448E-09
1.085E-05	Am-241	U-233	1.000E+00	1.194E-35	8.657E-35	4.958E-34	5.918E-33	1.143E-31	2.311E-29	4.829E-14
4.225E-10	Am-241	Th-229+D	1.000E+00	8.146E-30	1.245E-28	1.517E-27	4.699E-26	1.800E-24	3.154E-22	1.431E-18
4.981E-10	Am-241	äDSR(j)		4.384E-24	1.355E-23	3.376E-23	1.279E-22	7.285E-22	2.648E-20	5.808E-03
4.835E-03	Co-60	Co-60	1.000E+00	1.080E-10	9.724E-11	7.884E-11	3.783E-11	4.640E-12	2.999E-15	2.313E-24
0.000E+00	Cs-137+D	Cs-137+D	1.000E+00	1.186E-13	1.198E-13	1.221E-13	1.305E-13	1.578E-13	3.073E-13	2.063E-12
1.023E-10	Sr-90+D	Sr-90+D	1.000E+00	6.112E-19	6.166E-19	6.275E-19	6.670E-19	7.943E-19	1.463E-18	8.388E-18
5.997E-14										
0.000E+00										

The DSR includes contributions from associated (half-life > 30 days) daughters.

0

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
(i)									
AAAAAAA		AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA

HB DCGL buried pipe_2m cover_revised activities.REP

0Sr-90	Sr-90	1.000E+00	2.952E-19	2.978E-19	3.031E-19	3.222E-19	3.836E-19	7.068E-19	4.052E-18
2.897E-14	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration									
Parent Nuclide and Branch Fraction Indicated									
ONuclide Parent	THF(i)	S(j,t), pCi/g							
(j)	(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
1.000E+03									
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA									
Am-241	Am-241	1.000E+00	7.360E-02	7.260E-02	7.065E-02	6.421E-02	4.888E-02	1.881E-02	1.229E-03
8.755E-08									
ONp-237	Am-241	1.000E+00	0.000E+00	2.367E-08	6.997E-08	2.218E-07	5.781E-07	1.228E-06	1.383E-06
7.296E-07									
OU-233	Am-241	1.000E+00	0.000E+00	5.179E-14	4.601E-13	4.887E-12	3.875E-11	2.821E-10	8.903E-10
7.931E-10									
OTh-229	Am-241	1.000E+00	0.000E+00	1.633E-18	4.366E-17	1.563E-15	3.836E-14	1.035E-12	1.278E-11
7.305E-11									
0Co-60	Co-60	1.000E+00	4.440E-01	3.892E-01	2.990E-01	1.189E-01	8.529E-03	8.429E-07	3.037E-18
0.000E+00									
OCs-137	Cs-137	1.000E+00	1.010E+02	9.869E+01	9.422E+01	8.012E+01	5.042E+01	9.968E+00	9.708E-02
8.851E-09									
OSr-90	Sr-90	1.000E+00	4.830E-01	4.679E-01	4.390E-01	3.512E-01	1.857E-01	1.997E-02	3.413E-05
7.049E-15									
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
iiiiiii									

THF(i) is the thread fraction of the parent nuclide.

ORESCALC.EXE execution time = 1040.71 seconds

Total water/soil iteration failures = 2.631E+03.

Attachment 3

RESRAD Uncertainty Report

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

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Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

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AAAAAAAAAAAAAAAAAAAA

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Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Probabilistic Input

0Number of Sample Runs: 2000

Number	Name	Distribution	Parameters			
AAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA			
1	DENSCZ	BOUNDED NORMAL	1.5635	.2385	.827	2.3
2	TPCZ	BOUNDED NORMAL	.41	.09	.1319	.6881
3	HCCZ	BOUNDED LOGNORMAL-N	1.36	2.17	.00478	3190
4	BCZ	BOUNDED LOGNORMAL-N	1.73	.323	2.08	15.3

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

5	EVAPTR			UNIFORM	.5	.75													
6	RI			UNIFORM	.36	.76													
7	DENSAQ			BOUNDED NORMAL	1.5105	.1855	.937	2.084											
8	TPSZ			BOUNDED NORMAL	.43	.0699	.214	.646											
9	EPSZ			BOUNDED NORMAL	.342	.0705	.124	.56											
10	HCSZ			BOUNDED LOGNORMAL-N	.362	1.59	.0106	195											
11	BSZ			BOUNDED LOGNORMAL-N	1.96	.265	3.02	15.5											
12	DWIBWT			TRIANGULAR	6	10	30												
13	UW			UNIFORM	1173	1973													
14	H(1)			UNIFORM	0	8.08													
15	DENSUZ(1)			BOUNDED NORMAL	1.5635	.2385	.827	2.3											
16	TPUZ(1)			BOUNDED NORMAL	.41	.09	.1319	.6881											
17	EPUZ(1)			BOUNDED NORMAL	.315	.0905	.0349	.594											
18	HCUZ(1)			BOUNDED LOGNORMAL-N	1.36	2.17	.00478	3190											
19	BUZ(1)			BOUNDED LOGNORMAL-N	1.73	.323	2.08	15.3											
20	MLINH	.000016	.1365	.00003	.8119	.00004	.9495	.00006	.9937	.000076	.000008	.0151	.0001	1					
				CONTINUOUS LINEAR	8	0	0												
21	SHF3			UNIFORM	.15	.95													
22	SHF1			BOUNDED LOGNORMAL-N	-1.3	.59	.044	1											
23	DM			TRIANGULAR	0	.15	.6												
24	YV(1)			TRUNCATED LOGNORMAL-N	.56	.48	.001	.999											
25	WLAM			TRIANGULAR	5.1	18	84												

26	RWET(2)	Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP TRIANGULAR	.06	.67	.95	
27	DCACTC(1)	TRUNCATED LOGNORMAL-N	7.28	3.15	.001	.999
28	DCACTU1(1)	TRUNCATED LOGNORMAL-N	7.28	3.15	.001	.999
29	DCACTS(1)	TRUNCATED LOGNORMAL-N	7.28	3.15	.001	.999
30	DCACTC(4)	TRUNCATED LOGNORMAL-N	2.84	2.25	.001	.999
31	DCACTU1(4)	TRUNCATED LOGNORMAL-N	2.84	2.25	.001	.999
32	DCACTS(4)	TRUNCATED LOGNORMAL-N	2.84	2.25	.001	.999
33	DCACTC(6)	TRUNCATED LOGNORMAL-N	8.68	3.62	.001	.999
34	DCACTU1(6)	TRUNCATED LOGNORMAL-N	8.68	3.62	.001	.999
35	DCACTS(6)	TRUNCATED LOGNORMAL-N	8.68	3.62	.001	.999
36	DCACTC(7)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999
37	DCACTU1(7)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999
38	DCACTS(7)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999
39	BRTF(95,2)	TRUNCATED LOGNORMAL-N	-9.9	.2	.001	.999
40	BRTF(95,3)	TRUNCATED LOGNORMAL-N	-13.12	.7	.001	.999
41	BBIO(95,1)	LOGNORMAL-N	3.4	1.1		
42	BRTF(93,1)	TRUNCATED LOGNORMAL-N	-3.91	.9	.001	.999
43	BRTF(93,2)	TRUNCATED LOGNORMAL-N	-6.91	.7	.001	.999
44	BRTF(93,3)	TRUNCATED LOGNORMAL-N	-11.51	.7	.001	.999
45	BBIO(93,1)	LOGNORMAL-N	3.4	1.1		
46	BRTF(90,1)	TRUNCATED LOGNORMAL-N	-6.91	.9	.001	.999
47	BRTF(90,2)	TRUNCATED LOGNORMAL-N	-9.21	1	.001	.999

1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 3
Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Number	Name	Distribution	Parameters
49	BBIO(90,1)	LOGNORMAL-N	4.6 1.1
50	BRTF(92,1)	TRUNCATED LOGNORMAL-N	-6.21 .9 .001 .999
51	BRTF(92,2)	TRUNCATED LOGNORMAL-N	-7.13 .7 .001 .999
52	BRTF(92,3)	TRUNCATED LOGNORMAL-N	-7.82 .6 .001 .999
53	BBIO(92,1)	LOGNORMAL-N	2.3 1.1
54	DENSCV	BOUNDED NORMAL	1.5635 .2385 .827 2.3
55	DCACTC(2)	TRUNCATED LOGNORMAL-N	5.46 2.53 .001 .999
56	DCACTU1(2)	TRUNCATED LOGNORMAL-N	5.46 2.53 .001 .999
57	DCACTS(2)	TRUNCATED LOGNORMAL-N	5.46 2.53 .001 .999
58	DCACTC(3)	TRUNCATED LOGNORMAL-N	6.1 2.33 .001 .999
59	DCACTU1(3)	TRUNCATED LOGNORMAL-N	6.1 2.33 .001 .999
60	DCACTS(3)	TRUNCATED LOGNORMAL-N	6.1 2.33 .001 .999
61	DCACTC(5)	TRUNCATED LOGNORMAL-N	3.45 2.12 .001 .999
62	DCACTU1(5)	TRUNCATED LOGNORMAL-N	3.45 2.12 .001 .999
63	DCACTS(5)	TRUNCATED LOGNORMAL-N	3.45 2.12 .001 .999
64	BRTF(27,3)	TRUNCATED LOGNORMAL-N	-6.21 .7 .001 .999
65	BBIO(27,1)	LOGNORMAL-N	5.7 1.1

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

66 BBIO(55,1) LOGNORMAL-N 7.6 .7
 67 BRTF(38,2) TRUNCATED LOGNORMAL-N -4.61 .4 .001 .999
 68 BRTF(38,3) TRUNCATED LOGNORMAL-N -6.21 .7 .001 .999
 69 BBIO(38,1) LOGNORMAL-N 4.1 1.1

1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 4
 Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
 File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD
 Probabilistic Total Dose Summary

0Nuclide (j)	Peak Time	Peak Dose	t=	0.00E+00	1.00E+00	3.00E+00	1.00E+01	3.00E+01	1.00E+02	3.00E+02	1.00E+03
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Am-241											
Min	3.78E+01	1.58E-19	0.00E+00	0.00E+00	0.00E+00	1.55E-31	1.04E-30	2.03E-29	2.48E-26	1.40E-20	
Max	1.00E+03	1.88E-03	6.34E-11	7.78E-10	4.60E-08	6.26E-06	8.36E-05	3.03E-04	4.33E-04	1.42E-03	
Avg	7.48E+02	1.01E-03	6.71E-14	1.38E-12	3.01E-11	3.38E-09	6.51E-08	3.63E-07	8.48E-07	7.56E-04	
Std	1.36E+02	5.66E-04	1.89E-12	2.86E-11	1.04E-09	1.40E-07	2.05E-06	8.40E-06	1.33E-05	4.60E-04	
Co-60											
Min	0.00E+00	5.07E-16	5.07E-16	4.46E-16	3.45E-16	3.66E-17	7.00E-29	0.00E+00	0.00E+00	0.00E+00	
Max	9.43E+01	5.21E-06	5.21E-06	4.63E-06	3.66E-06	1.61E-06	1.71E-06	8.49E-10	5.71E-21	0.00E+00	
Avg	1.04E+00	1.82E-08	1.55E-08	1.37E-08	1.09E-08	5.87E-09	2.01E-09	1.10E-12	2.04E-23	0.00E+00	
Std	6.63E+00	1.84E-07	1.76E-07	1.56E-07	1.24E-07	6.15E-08	4.07E-08	2.02E-11	1.63E-22	0.00E+00	
Cs-137											
Min	0.00E+00	5.30E-16	1.13E-17	1.16E-17	1.21E-17	1.43E-17	3.04E-18	0.00E+00	0.00E+00	0.00E+00	
Max	1.00E+03	1.64E-03	1.55E-05	1.54E-05	1.75E-05	2.02E-04	6.58E-04	1.32E-03	7.88E-05	2.15E-08	
Avg	3.80E+02	3.07E-04	3.25E-08	3.23E-08	4.11E-08	1.56E-07	8.65E-07	1.38E-06	1.59E-07	5.93E-09	
Std	7.45E+01	1.69E-04	4.80E-07	4.77E-07	6.12E-07	4.65E-06	1.89E-05	3.20E-05	2.37E-06	4.76E-09	
Sr-90											
Min	0.00E+00	2.38E-24	1.03E-26	1.07E-26	1.14E-26	6.99E-29	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Max	1.00E+03	2.77E-03	1.05E-04	3.62E-04	6.12E-04	8.49E-04	2.77E-03	7.25E-04	7.94E-06	1.76E-11	
Avg	3.01E+02	9.79E-06	5.83E-08	2.27E-07	6.02E-07	1.91E-06	5.01E-06	2.78E-06	3.99E-08	2.56E-12	
Std	1.60E+02	8.15E-05	2.36E-06	8.16E-06	1.45E-05	3.14E-05	7.24E-05	2.31E-05	2.87E-07	4.60E-12	
äALL											
Min	0.00E+00	1.29E-07	5.18E-16	4.57E-16	3.57E-16	1.39E-16	3.39E-17	1.59E-18	8.71E-21	6.29E-13	
Max	1.00E+03	2.77E-03	1.05E-04	3.62E-04	6.12E-04	8.49E-04	2.77E-03	1.32E-03	4.33E-04	1.42E-03	
Avg	7.01E+02	1.07E-03	1.06E-07	2.73E-07	6.54E-07	2.07E-06	5.94E-06	4.52E-06	1.05E-06	7.56E-04	
Std	1.82E+02	4.78E-04	2.45E-06	8.18E-06	1.45E-05	3.17E-05	7.51E-05	4.03E-05	1.35E-05	4.60E-04	

äALL is total dose summed for all nuclides.
 1RESRAD, Version 6.5 T« Limit = 30 days

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Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Probabilistic Risk Summary									
0 Nuclide	RISK(j,t)								
(j)	t=	0.00E+00	1.00E+00	3.00E+00	1.00E+01	3.00E+01	1.00E+02	3.00E+02	1.00E+03
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Am-241									
Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.75E-25
Max		0.00E+00	1.19E-16	2.92E-14	3.67E-12	7.07E-11	2.61E-10	3.71E-10	9.05E-09
Avg		0.00E+00	1.71E-19	1.74E-17	1.99E-15	5.44E-14	3.11E-13	7.22E-13	2.90E-09
Std		0.00E+00	4.24E-18	6.55E-16	8.20E-14	1.73E-12	7.27E-12	1.14E-11	1.98E-09
Co-60									
Min		1.24E-20	1.09E-20	8.43E-21	1.03E-21	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max		1.27E-10	1.13E-10	8.90E-11	3.91E-11	3.10E-11	1.59E-14	1.08E-25	0.00E+00
Avg		3.77E-13	3.33E-13	2.65E-13	1.36E-13	3.98E-14	2.19E-17	4.55E-28	0.00E+00
Std		4.28E-12	3.80E-12	3.00E-12	1.43E-12	7.45E-13	3.80E-16	0.00E+00	0.00E+00
Cs-137									
Min		2.49E-22	2.56E-22	2.68E-22	3.17E-22	8.88E-23	0.00E+00	0.00E+00	0.00E+00
Max		3.48E-10	3.46E-10	3.42E-10	4.26E-09	1.36E-08	2.85E-08	1.74E-09	4.86E-13
Avg		7.30E-13	7.25E-13	7.35E-13	3.30E-12	1.80E-11	2.94E-11	3.38E-12	1.35E-13
Std		1.08E-11	1.07E-11	1.06E-11	9.80E-11	3.97E-10	6.85E-10	5.13E-11	1.08E-13
Sr-90									
Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max		2.63E-16	3.78E-09	8.65E-09	1.22E-08	4.10E-08	1.09E-08	1.18E-10	3.34E-16
Avg		4.02E-19	2.19E-12	6.80E-12	2.76E-11	7.44E-11	4.13E-11	5.97E-13	4.87E-17
Std		7.50E-18	8.49E-11	1.99E-10	4.57E-10	1.08E-09	3.45E-10	4.28E-12	8.74E-17
äALL									
Min		1.26E-20	1.12E-20	8.70E-21	3.30E-21	7.75E-22	3.76E-23	1.91E-25	1.19E-17
Max		4.74E-10	3.78E-09	8.65E-09	1.22E-08	4.10E-08	2.85E-08	1.74E-09	9.05E-09
Avg		1.11E-12	3.25E-12	7.80E-12	3.10E-11	9.25E-11	7.10E-11	4.70E-12	2.90E-09
Std		1.50E-11	8.61E-11	2.00E-10	4.67E-10	1.15E-09	7.67E-10	5.28E-11	1.98E-09
iiiiiii		iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

äALL is total risk summed for all nuclides.

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Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Probabilistic Dose vs Pathway(i): Ground External									
0 Nuclide	DOSE(i,j,t), mrem/yr								
(j)	t=	0.00E+00	1.00E+00	3.00E+00	1.00E+01	3.00E+01	1.00E+02	3.00E+02	1.00E+03
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Am-241									
Min		0.00E+00	0.00E+00	0.00E+00	1.55E-31	1.04E-30	2.03E-29	4.25E-27	5.51E-25
Max		1.18E-17	3.56E-17	8.39E-17	2.60E-16	8.36E-16	5.40E-15	1.49E-12	4.14E-04
Avg		1.78E-20	5.26E-20	1.21E-19	3.63E-19	1.24E-18	1.13E-17	2.32E-15	1.12E-04

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP								
Std	3.34E-19	9.98E-19	2.32E-18	7.03E-18	2.26E-17	1.72E-16	3.64E-14	8.33E-05
Co-60								
Min	5.07E-16	4.46E-16	3.45E-16	3.66E-17	7.00E-29	0.00E+00	0.00E+00	0.00E+00
Max	5.21E-06	4.63E-06	3.66E-06	1.61E-06	1.54E-07	4.14E-11	2.61E-21	0.00E+00
Avg	1.55E-08	1.37E-08	1.08E-08	4.72E-09	4.53E-10	1.31E-13	1.31E-23	0.00E+00
Std	1.76E-07	1.56E-07	1.24E-07	5.42E-08	5.15E-09	1.38E-12	9.47E-23	0.00E+00
Cs-137								
Min	1.13E-17	1.16E-17	1.21E-17	1.43E-17	3.04E-18	0.00E+00	0.00E+00	0.00E+00
Max	1.55E-05	1.54E-05	1.52E-05	1.46E-05	1.30E-05	8.72E-06	2.76E-06	1.81E-08
Avg	3.25E-08	3.23E-08	3.19E-08	3.07E-08	2.76E-08	1.98E-08	9.49E-09	4.11E-09
Std	4.80E-07	4.77E-07	4.71E-07	4.52E-07	4.02E-07	2.69E-07	9.01E-08	3.56E-09
Sr-90								
Min	1.03E-26	1.07E-26	1.14E-26	6.99E-29	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	1.09E-11	1.09E-11	1.07E-11	1.02E-11	8.98E-12	5.67E-12	2.10E-12	2.46E-13
Avg	1.66E-14	1.63E-14	1.58E-14	1.46E-14	1.21E-14	7.52E-15	3.90E-15	1.99E-14
Std	3.11E-13	3.09E-13	3.03E-13	2.85E-13	2.41E-13	1.47E-13	6.22E-14	3.88E-14
äALL								
Min	5.18E-16	4.57E-16	3.57E-16	1.39E-16	3.39E-17	8.72E-19	6.89E-21	1.18E-20
Max	2.07E-05	2.00E-05	1.89E-05	1.62E-05	1.32E-05	8.72E-06	2.76E-06	4.14E-04
Avg	4.80E-08	4.60E-08	4.27E-08	3.54E-08	2.80E-08	1.98E-08	9.49E-09	1.12E-04
Std	6.55E-07	6.32E-07	5.94E-07	5.06E-07	4.07E-07	2.69E-07	9.01E-08	8.33E-05
íííííííí	íííííííí	íííííííí	íííííííí	íííííííí	íííííííí	íííííííí	íííííííí	íííííííí

äALL is total pathway dose summed for all nuclides.

1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 7
 Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
 File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Probabilistic Dose vs Pathway(i): Inhalation (w/o Radon)								
0Nuclide	DOSE(i,j,t), mrem/yr							
(j)	t= 0.00E+00	1.00E+00	3.00E+00	1.00E+01	3.00E+01	1.00E+02	3.00E+02	1.00E+03
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Am-241								
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.57E-26
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.91E-04
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.73E-05
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.29E-05
Co-60								
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cs-137								
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-14
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.34E-15

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.38E-15
Sr-90								
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.16E-16
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.74E-17
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.95E-17
äALL								
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.35E-23
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.91E-04
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.73E-05
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.29E-05
iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii

äALL is total pathway dose summed for all nuclides.

1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 8

Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

0 Probabilistic Dose vs Pathway(i): Radon (water Ind.)

0Nuclide	t=	0.00E+00	1.00E+00	3.00E+00	1.00E+01	3.00E+01	1.00E+02	3.00E+02	1.00E+03
(j)									
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Am-241									
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Co-60									
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cs-137									
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sr-90									
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
äALL									
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Std 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00
 ffffffff ffffffff ffffffff ffffffff ffffffff ffffffff ffffffff ffffffff ffffffff

äALL is total pathway dose summed for all nuclides.

1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 9

Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

0 Probabilistic Dose vs Pathway(i): Plant (Water Ind.)

ONuclide		DOSE(i,j,t), mrem/yr							
(j)	t=	0.00E+00	1.00E+00	3.00E+00	1.00E+01	3.00E+01	1.00E+02	3.00E+02	1.00E+03
Am-241	ÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄ
Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.34E-27
Max		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.16E-04
Avg		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.56E-04
Std		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.37E-04
Co-60									
Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Avg		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Std		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cs-137									
Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.15E-09
Avg		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.62E-09
Std		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-09
Sr-90									
Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-11
Avg		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.49E-12
Std		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.46E-12
äALL									
Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-18
Max		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.16E-04
Avg		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.56E-04
Std		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.37E-04
fffffff	fffffff	fffffff	fffffff	fffffff	fffffff	fffffff	fffffff	fffffff	fffffff

äALL is total pathway dose summed for all nuclides.

1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 10

Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

0 Probabilistic Dose vs Pathway(i): Meat (Water Ind.)

ONuclide		DOSE(i,j,t), mrem/yr							
(j)	t=	0.00E+00	1.00E+00	3.00E+00	1.00E+01	3.00E+01	1.00E+02	3.00E+02	1.00E+03
ÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄ	ÄÄÄÄÄÄÄÄ

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Am-241								
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.36E-28
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.28E-07
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.11E-07
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.01E-07
Co-60								
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cs-137								
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-10
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.25E-11
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.37E-11
Sr-90								
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.71E-13
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.85E-14
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.63E-14
äALL								
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-20
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.28E-07
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.11E-07
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.01E-07
iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii

äALL is total pathway dose summed for all nuclides.

1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 11

Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

0 Probabilistic Dose vs Pathway(i): Milk (water Ind.)

ONuclide	DOSE(i,j,t), mrem/yr								
(j)	t=	0.00E+00	1.00E+00	3.00E+00	1.00E+01	3.00E+01	1.00E+02	3.00E+02	1.00E+03
AAAAAAA		AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Am-241									
Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-29
Max		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.84E-07
Avg		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.94E-08
Std		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.42E-08
Co-60									
Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Avg		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Std		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Cs-137								
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.45E-10
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.26E-10
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.36E-11
Sr-90								
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.75E-13
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.55E-14
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.26E-14
äALL								
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-20
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.84E-07
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.95E-08
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.42E-08
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äALL is total pathway dose summed for all nuclides.

1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 12

Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

0 Probabilistic Dose vs Pathway(i): Soil Ingestion

ONuclide	(j)	t=	0.00E+00	1.00E+00	3.00E+00	1.00E+01	3.00E+01	1.00E+02	3.00E+02	1.00E+03
AAAAAAA	AAAAAAA		AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Am-241										
Min			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.61E-27
Max			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.63E-05
Avg			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.90E-05
Std			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.97E-05
Co-60										
Min			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Avg			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Std			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cs-137										
Min			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.53E-13
Avg			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.36E-13
Std			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.49E-13
Sr-90										
Min			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.68E-15
Avg			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.83E-16
Std			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.23E-15

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.66E-22
äALL									
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.66E-22
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.63E-05
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.90E-05
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.97E-05
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

äALL is total pathway dose summed for all nuclides.

1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 13

Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

0 Probabilistic Dose vs Pathway(i): Water Ingestion

ONuclide	t=	0.00E+00	1.00E+00	3.00E+00	1.00E+01	3.00E+01	1.00E+02	3.00E+02	1.00E+03
(j)									
AAAAAAA		AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Am-241									
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	6.06E-11	6.87E-10	3.99E-08	6.07E-06	8.09E-05	2.94E-04	4.28E-04	2.39E-04	2.39E-04
Avg	6.08E-14	1.09E-12	2.59E-11	3.26E-09	6.20E-08	3.34E-07	8.15E-07	5.99E-07	5.99E-07
Std	1.79E-12	2.40E-11	9.00E-10	1.36E-07	1.97E-06	7.95E-06	1.29E-05	8.15E-06	8.15E-06
Co-60									
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	1.02E-08	2.36E-07	7.59E-07	1.67E-06	8.31E-10	5.59E-21	0.00E+00	0.00E+00
Avg	0.00E+00	7.23E-12	1.44E-10	9.37E-10	1.46E-09	8.90E-13	6.54E-24	0.00E+00	0.00E+00
Std	0.00E+00	2.46E-10	5.37E-09	2.30E-08	3.93E-08	1.96E-11	1.30E-22	0.00E+00	0.00E+00
Cs-137									
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	4.32E-11	6.64E-09	4.95E-07	1.70E-05	2.32E-04	2.88E-04	2.41E-05	1.80E-12	1.80E-12
Avg	2.16E-14	3.32E-12	4.09E-10	1.15E-08	2.54E-07	3.69E-07	5.34E-08	9.47E-15	9.47E-15
Std	9.65E-13	1.48E-10	1.27E-08	3.99E-07	6.57E-06	8.00E-06	8.00E-07	8.22E-14	8.22E-14
Sr-90									
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	9.25E-05	3.17E-04	5.35E-04	7.79E-04	2.58E-03	6.75E-04	7.76E-06	1.94E-13	1.94E-13
Avg	5.15E-08	2.01E-07	5.42E-07	1.72E-06	4.55E-06	2.59E-06	3.77E-08	1.20E-15	1.20E-15
Std	2.07E-06	7.15E-06	1.28E-05	2.85E-05	6.69E-05	2.17E-05	2.74E-07	7.03E-15	7.03E-15
äALL									
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	9.25E-05	3.17E-04	5.35E-04	7.79E-04	2.58E-03	6.75E-04	4.28E-04	2.39E-04	2.39E-04
Avg	5.15E-08	2.01E-07	5.42E-07	1.74E-06	4.87E-06	3.29E-06	9.06E-07	5.99E-07	5.99E-07
Std	2.07E-06	7.15E-06	1.28E-05	2.85E-05	6.73E-05	2.45E-05	1.30E-05	8.15E-06	8.15E-06
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

äALL is total pathway dose summed for all nuclides.

1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 14

Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP
 Probabilistic Dose vs Pathway(i): Fish Ingestion

ONuclide	(j)	t=	0.00E+00	1.00E+00	3.00E+00	1.00E+01	3.00E+01	1.00E+02	3.00E+02	1.00E+03
Am-241	Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Max		6.06E-12	4.23E-10	5.66E-09	1.33E-07	1.79E-06	1.38E-05	1.11E-05	3.61E-06
	Avg		4.53E-15	2.70E-13	3.82E-12	8.62E-11	1.55E-09	2.07E-08	1.80E-08	1.39E-08
	Std		1.43E-13	9.66E-12	1.33E-10	3.04E-09	4.68E-08	4.62E-07	3.06E-07	1.44E-07
Co-60	Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Max		0.00E+00	2.48E-09	2.11E-08	2.85E-07	5.38E-08	2.15E-11	1.87E-22	0.00E+00
	Avg		0.00E+00	1.40E-12	1.77E-11	1.91E-10	6.44E-11	5.66E-14	6.11E-25	0.00E+00
	Std		0.00E+00	5.59E-11	5.32E-10	6.46E-09	1.35E-09	7.34E-13	7.00E-24	0.00E+00
Cs-137	Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Max		3.24E-11	7.08E-09	1.70E-05	1.96E-04	4.25E-04	1.13E-03	6.77E-05	9.66E-13
	Avg		1.62E-14	3.54E-12	8.72E-09	1.13E-07	5.73E-07	9.78E-07	9.42E-08	7.33E-15
	Std		7.25E-13	1.58E-10	3.79E-07	4.43E-06	1.39E-05	2.65E-05	1.83E-06	4.78E-14
Sr-90	Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Max		9.55E-06	3.37E-05	5.74E-05	6.25E-05	1.07E-04	1.68E-05	3.58E-07	1.91E-15
	Avg		5.08E-09	1.91E-08	3.79E-08	9.53E-08	2.17E-07	8.09E-08	8.40E-10	2.69E-17
	Std		2.14E-07	7.57E-07	1.30E-06	1.95E-06	3.42E-06	5.78E-07	8.31E-09	9.92E-17
äALL	Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Max		9.55E-06	3.37E-05	5.74E-05	1.96E-04	4.26E-04	1.13E-03	6.77E-05	3.61E-06
	Avg		5.08E-09	1.91E-08	4.67E-08	2.08E-07	7.91E-07	1.08E-06	1.13E-07	1.39E-08
	Std		2.14E-07	7.57E-07	1.35E-06	4.84E-06	1.44E-05	2.65E-05	1.86E-06	1.44E-07
iiiiiii	iiiiiii		iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

äALL is total pathway dose summed for all nuclides.

1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 15
 Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
 File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

ONuclide	(j)	t=	0.00E+00	1.00E+00	3.00E+00	1.00E+01	3.00E+01	1.00E+02	3.00E+02	1.00E+03
Am-241	Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Max		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Avg		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Std		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Co-60	Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cs-137								
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sr-90								
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
äALL								
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Avg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Std	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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äALL is total pathway dose summed for all nuclides.

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Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

0 Probabilistic Dose vs Pathway(i): Plant (water Dep.)

0Nuclide								
(j)	t=	0.00E+00	1.00E+00	3.00E+00	1.00E+01	3.00E+01	1.00E+02	3.00E+02
AAAAAAA		AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Am-241								
Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max		2.50E-12	3.15E-11	4.14E-10	6.13E-08	1.98E-06	8.74E-06	9.72E-06
Avg		1.74E-15	2.74E-14	3.95E-13	3.51E-11	1.52E-09	7.81E-09	1.51E-08
Std		5.88E-14	7.42E-13	1.02E-11	1.37E-09	4.80E-08	2.09E-07	2.61E-07
Co-60								
Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max		0.00E+00	2.08E-10	5.94E-09	1.17E-08	2.51E-08	1.25E-11	8.39E-23
Avg		0.00E+00	1.53E-13	3.59E-12	1.65E-11	2.72E-11	1.91E-14	1.48E-25
Std		0.00E+00	5.08E-12	1.34E-10	3.86E-10	6.44E-10	3.31E-13	2.21E-24
Cs-137								
Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max		7.77E-13	1.85E-10	2.19E-08	1.46E-06	5.24E-06	8.76E-06	7.83E-07
Avg		3.88E-16	9.25E-14	1.66E-11	7.98E-10	7.46E-09	1.12E-08	1.58E-09
Std		1.74E-14	4.13E-12	5.39E-10	3.29E-08	1.70E-07	2.39E-07	2.37E-08
Sr-90								

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	3.02E-06	1.06E-05	1.81E-05	6.16E-05	1.80E-04	4.71E-05	3.77E-07	7.33E-15
Avg	1.68E-09	6.68E-09	2.06E-08	8.35E-08	2.29E-07	1.03E-07	1.30E-09	3.91E-17
Std	6.77E-08	2.41E-07	4.55E-07	1.80E-06	4.53E-06	1.21E-06	1.14E-08	2.74E-16
äALL								
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	3.02E-06	1.06E-05	1.81E-05	6.16E-05	1.80E-04	4.71E-05	9.72E-06	4.21E-06
Avg	1.68E-09	6.68E-09	2.06E-08	8.43E-08	2.38E-07	1.22E-07	1.80E-08	1.11E-08
Std	6.77E-08	2.41E-07	4.55E-07	1.80E-06	4.53E-06	1.25E-06	2.62E-07	1.27E-07
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

äALL is total pathway dose summed for all nuclides.

1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 17

Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Probabilistic Dose vs Pathway(i): Meat (water Dep.)									
ONuclide		DOSE(i,j,t), mrem/yr							
(j)	t=	0.00E+00	1.00E+00	3.00E+00	1.00E+01	3.00E+01	1.00E+02	3.00E+02	1.00E+03
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Am-241									
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	2.62E-15	4.98E-14	2.88E-13	1.63E-11	2.33E-10	1.03E-09	1.33E-09	8.20E-10	
Avg	1.84E-18	3.69E-17	4.77E-16	1.77E-14	3.51E-13	2.21E-12	5.86E-12	6.61E-12	
Std	6.03E-17	1.13E-15	9.77E-15	3.87E-13	7.45E-12	3.46E-11	5.22E-11	3.97E-11	
Co-60									
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	0.00E+00	3.79E-11	1.00E-09	2.90E-09	6.62E-09	3.31E-12	2.23E-23	0.00E+00	
Avg	0.00E+00	2.17E-14	6.22E-13	3.81E-12	6.01E-12	4.02E-15	2.99E-26	0.00E+00	
Std	0.00E+00	8.55E-13	2.29E-11	9.11E-11	1.56E-10	7.94E-14	0.00E+00	0.00E+00	
Cs-137									
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	1.11E-14	2.70E-11	1.57E-09	1.73E-07	9.61E-07	1.55E-06	1.29E-07	1.22E-14	
Avg	5.54E-18	1.35E-14	1.26E-12	1.00E-10	1.33E-09	2.04E-09	3.15E-10	5.43E-17	
Std	2.48E-16	6.03E-13	3.92E-11	3.91E-09	3.15E-08	4.30E-08	4.68E-09	4.75E-16	
Sr-90									
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	5.03E-08	2.26E-07	4.08E-07	1.39E-06	3.42E-06	8.99E-07	5.78E-09	1.83E-16	
Avg	2.83E-11	1.46E-10	4.76E-10	2.04E-09	5.36E-09	2.85E-09	3.58E-11	1.17E-18	
Std	1.13E-09	5.11E-09	1.01E-08	4.08E-08	9.15E-08	2.86E-08	2.37E-10	7.45E-18	
äALL									
Min	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max	5.03E-08	2.26E-07	4.08E-07	1.39E-06	3.42E-06	1.55E-06	1.29E-07	8.20E-10	
Avg	2.83E-11	1.46E-10	4.78E-10	2.14E-09	6.70E-09	4.90E-09	3.56E-10	6.61E-12	
Std	1.13E-09	5.11E-09	1.01E-08	4.10E-08	9.71E-08	5.16E-08	4.70E-09	3.97E-11	
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

äALL is total pathway dose summed for all nuclides.

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Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Probabilistic Dose vs Pathway(i): Milk (Water Dep.)									
0 Nuclide (j)	t=	0.00E+00	1.00E+00	3.00E+00	1.00E+01	3.00E+01	1.00E+02	3.00E+02	1.00E+03
AAAAAAA		AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Am-241									
Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max		4.61E-16	7.67E-15	4.26E-14	1.52E-11	2.13E-10	7.73E-10	4.95E-10	3.57E-10
Avg		4.27E-19	6.56E-18	6.34E-17	8.51E-15	1.52E-13	8.57E-13	1.24E-12	9.11E-13
Std		1.33E-17	1.91E-16	1.30E-15	3.39E-13	4.96E-12	2.05E-11	1.73E-11	9.46E-12
Co-60									
Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max		0.00E+00	3.88E-12	3.11E-11	5.63E-10	1.12E-09	5.34E-13	2.51E-24	0.00E+00
Avg		0.00E+00	2.10E-15	2.93E-14	5.12E-13	1.15E-12	8.89E-16	6.92E-27	0.00E+00
Std		0.00E+00	8.69E-14	8.26E-13	1.43E-11	2.84E-11	1.46E-14	0.00E+00	0.00E+00
Cs-137									
Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max		8.36E-14	4.15E-11	2.40E-09	2.78E-07	1.30E-06	2.20E-06	1.92E-07	1.83E-14
Avg		4.18E-17	2.08E-14	2.27E-12	1.58E-10	1.89E-09	2.91E-09	4.55E-10	7.80E-17
Std		1.87E-15	9.28E-13	6.83E-11	6.27E-09	4.37E-08	6.11E-08	6.77E-09	6.87E-16
Sr-90									
Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max		1.00E-07	4.17E-07	7.39E-07	3.70E-06	4.04E-06	2.29E-06	1.62E-08	2.31E-16
Avg		6.33E-11	3.29E-10	9.84E-10	4.25E-09	7.91E-09	5.07E-09	5.85E-11	1.84E-18
Std		2.30E-09	1.03E-08	2.14E-08	9.74E-08	1.32E-07	6.29E-08	5.11E-10	1.03E-17
äALL									
Min		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Max		1.00E-07	4.17E-07	7.39E-07	3.70E-06	4.04E-06	2.29E-06	1.94E-07	3.57E-10
Avg		6.33E-11	3.29E-10	9.86E-10	4.40E-09	9.80E-09	7.99E-09	5.15E-10	9.12E-13
Std		2.30E-09	1.03E-08	2.14E-08	9.76E-08	1.40E-07	8.76E-08	6.81E-09	9.46E-12
iiiiiii		iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

äALL is total pathway dose summed for all nuclides.

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Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Cumulative Probability Summary for: Total Dose Over Pathways

Cumulative Probability	t=	0.00E+00	1.00E+00	3.00E+00	1.00E+01	3.00E+01	1.00E+02	3.00E+02	1.00E+03
AAAAAAAAA		AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA
0.025		3.50E-14	3.20E-14	2.68E-14	2.03E-14	7.21E-15	1.79E-14	6.81E-13	1.01E-08

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

0.050	1.17E-13	1.08E-13	1.03E-13	6.29E-14	2.82E-14	1.02E-13	4.32E-12	2.83E-08
0.075	2.49E-13	2.27E-13	1.93E-13	1.17E-13	7.08E-14	2.91E-13	1.07E-11	1.38E-07
0.100	4.46E-13	4.14E-13	3.69E-13	2.56E-13	1.58E-13	6.83E-13	2.23E-11	5.95E-07
0.125	7.60E-13	6.80E-13	6.46E-13	4.30E-13	2.68E-13	1.32E-12	4.34E-11	3.81E-06
0.150	1.16E-12	1.06E-12	9.40E-13	5.95E-13	4.68E-13	2.33E-12	8.55E-11	1.85E-05
0.175	1.61E-12	1.49E-12	1.31E-12	9.73E-13	7.46E-13	4.19E-12	1.38E-10	5.65E-05
0.200	2.53E-12	2.28E-12	2.02E-12	1.40E-12	1.14E-12	7.25E-12	2.39E-10	1.11E-04
0.225	3.38E-12	3.10E-12	2.75E-12	1.99E-12	1.84E-12	1.15E-11	3.56E-10	1.96E-04
0.250	4.53E-12	4.15E-12	3.74E-12	2.83E-12	2.88E-12	1.68E-11	6.18E-10	2.97E-04
0.275	6.34E-12	5.81E-12	5.02E-12	3.93E-12	4.15E-12	2.69E-11	9.40E-10	3.82E-04
0.300	8.05E-12	7.32E-12	6.59E-12	5.41E-12	5.68E-12	4.06E-11	1.30E-09	4.86E-04
0.325	1.11E-11	1.05E-11	9.14E-12	7.31E-12	8.11E-12	6.10E-11	1.62E-09	5.90E-04
0.350	1.46E-11	1.34E-11	1.17E-11	9.54E-12	1.18E-11	8.52E-11	2.09E-09	6.67E-04
0.375	1.87E-11	1.73E-11	1.51E-11	1.25E-11	1.66E-11	1.38E-10	2.66E-09	7.31E-04
0.400	2.31E-11	2.21E-11	1.94E-11	1.66E-11	2.23E-11	1.95E-10	3.32E-09	8.02E-04
0.425	2.99E-11	2.80E-11	2.40E-11	2.16E-11	3.23E-11	2.90E-10	4.38E-09	8.50E-04
0.450	3.82E-11	3.61E-11	3.24E-11	2.84E-11	4.26E-11	4.49E-10	5.33E-09	8.99E-04
0.475	4.99E-11	4.73E-11	4.10E-11	3.74E-11	5.75E-11	6.40E-10	6.45E-09	9.51E-04
0.500	6.20E-11	5.83E-11	5.36E-11	4.97E-11	7.95E-11	9.60E-10	7.92E-09	9.77E-04
0.525	7.98E-11	7.55E-11	7.00E-11	6.38E-11	1.10E-10	1.32E-09	9.26E-09	1.01E-03
0.550	1.01E-10	9.70E-11	8.75E-11	8.13E-11	1.51E-10	1.88E-09	1.07E-08	1.04E-03
0.575	1.27E-10	1.20E-10	1.11E-10	1.16E-10	2.18E-10	2.64E-09	1.28E-08	1.05E-03
0.600	1.61E-10	1.60E-10	1.53E-10	1.53E-10	2.95E-10	3.83E-09	1.58E-08	1.07E-03
0.625	2.21E-10	2.14E-10	1.99E-10	2.01E-10	4.46E-10	6.21E-09	1.89E-08	1.08E-03
0.650	2.83E-10	2.76E-10	2.53E-10	2.83E-10	6.46E-10	9.25E-09	2.27E-08	1.09E-03
0.675	3.71E-10	3.67E-10	3.51E-10	3.70E-10	9.09E-10	1.38E-08	2.71E-08	1.10E-03
0.700	5.19E-10	5.01E-10	4.82E-10	5.53E-10	1.24E-09	2.02E-08	3.31E-08	1.11E-03
0.725	6.70E-10	6.60E-10	6.42E-10	7.03E-10	1.80E-09	3.62E-08	3.97E-08	1.12E-03
0.750	8.92E-10	9.24E-10	9.04E-10	1.01E-09	2.92E-09	6.90E-08	4.67E-08	1.13E-03
0.775	1.28E-09	1.27E-09	1.25E-09	1.47E-09	5.34E-09	1.17E-07	5.76E-08	1.14E-03
0.800	1.71E-09	1.75E-09	1.75E-09	2.43E-09	9.68E-09	1.95E-07	7.53E-08	1.15E-03
0.825	2.52E-09	2.60E-09	2.91E-09	3.93E-09	1.81E-08	4.13E-07	9.38E-08	1.16E-03
0.850	4.06E-09	4.11E-09	4.24E-09	7.71E-09	4.05E-08	8.05E-07	1.15E-07	1.17E-03
0.875	6.22E-09	6.58E-09	7.14E-09	1.55E-08	1.42E-07	1.37E-06	1.57E-07	1.18E-03
0.900	1.06E-08	1.22E-08	1.46E-08	3.22E-08	4.96E-07	2.52E-06	2.22E-07	1.20E-03
0.925	2.25E-08	2.34E-08	3.09E-08	8.89E-08	1.62E-06	5.05E-06	3.55E-07	1.22E-03
0.950	5.75E-08	5.78E-08	8.15E-08	3.19E-07	5.99E-06	1.05E-05	6.94E-07	1.25E-03
0.975	1.92E-07	2.38E-07	4.41E-07	2.11E-06	2.58E-05	2.90E-05	2.21E-06	1.28E-03
1.000	1.05E-04	3.62E-04	6.12E-04	8.49E-04	2.77E-03	1.32E-03	4.33E-04	1.42E-03
iiiiiiiiiii	iiiiiiiiii	iiiiiiiiiii	iiiiiiiiiii	iiiiiiiiiii	iiiiiiiiiii	iiiiiiiiiii	iiiiiiiiiii	iiiiiiiiiii

1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 20
 Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
 File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD
 Summary of dose at graphical times, reptition 1

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Time	Dose statistics at graphical times, mrem/yr							
Years	Minimum	Maximum	Mean	Median	90%	95%	97.5%	99%
AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA
0.00E+00	5.18E-16	1.05E-04	1.06E-07	6.18E-11	1.06E-08	5.73E-08	2.03E-07	9.29E-07
1.00E+00	4.57E-16	3.62E-04	2.73E-07	5.81E-11	1.22E-08	5.77E-08	2.42E-07	1.05E-06
1.30E+00	4.40E-16	4.19E-04	3.21E-07	5.69E-11	1.30E-08	5.90E-08	2.42E-07	1.21E-06
1.70E+00	4.19E-16	4.81E-04	3.81E-07	5.69E-11	1.40E-08	6.30E-08	2.63E-07	1.47E-06
2.22E+00	3.93E-16	5.45E-04	4.59E-07	5.57E-11	1.42E-08	7.00E-08	3.78E-07	2.58E-06
2.89E+00	3.62E-16	6.04E-04	6.22E-07	5.35E-11	1.47E-08	8.19E-08	4.37E-07	2.88E-06
3.00E+00	3.57E-16	6.12E-04	6.54E-07	5.34E-11	1.46E-08	8.15E-08	4.58E-07	3.00E-06
3.78E+00	3.25E-16	6.53E-04	8.79E-07	5.11E-11	1.66E-08	1.05E-07	5.80E-07	5.41E-06
4.92E+00	2.82E-16	6.85E-04	1.18E-06	4.76E-11	1.83E-08	1.13E-07	7.50E-07	1.29E-05
6.42E+00	2.35E-16	6.96E-04	1.50E-06	4.77E-11	1.88E-08	1.61E-07	1.07E-06	1.74E-05
8.38E+00	1.72E-16	7.44E-04	1.84E-06	4.70E-11	2.15E-08	2.15E-07	1.76E-06	3.25E-05
1.00E+01	1.39E-16	8.49E-04	2.07E-06	4.97E-11	3.20E-08	3.19E-07	2.12E-06	3.83E-05
1.09E+01	1.29E-16	8.96E-04	2.28E-06	4.98E-11	3.76E-08	4.44E-07	3.23E-06	4.16E-05
1.43E+01	9.73E-17	1.23E-03	3.19E-06	5.17E-11	6.20E-08	9.53E-07	7.25E-06	5.09E-05
1.86E+01	6.42E-17	2.08E-03	4.30E-06	5.36E-11	1.52E-07	1.88E-06	1.16E-05	7.56E-05
2.42E+01	4.27E-17	2.61E-03	5.38E-06	6.09E-11	3.03E-07	3.40E-06	1.97E-05	1.00E-04
3.00E+01	3.39E-17	2.77E-03	5.94E-06	7.94E-11	4.95E-07	5.99E-06	2.59E-05	1.14E-04
3.16E+01	3.28E-17	2.77E-03	6.06E-06	8.65E-11	5.15E-07	6.99E-06	3.05E-05	1.15E-04
4.12E+01	3.28E-17	2.55E-03	6.49E-06	1.36E-10	1.02E-06	8.96E-06	4.17E-05	1.60E-04
5.38E+01	4.13E-17	2.05E-03	6.28E-06	1.92E-10	1.81E-06	1.14E-05	4.13E-05	1.64E-04
7.02E+01	2.01E-17	1.45E-03	5.46E-06	3.50E-10	2.28E-06	1.27E-05	3.66E-05	1.50E-04
9.15E+01	3.20E-18	8.85E-04	4.73E-06	7.32E-10	2.65E-06	1.15E-05	3.43E-05	1.19E-04
1.00E+02	1.59E-18	1.32E-03	4.52E-06	9.56E-10	2.52E-06	1.05E-05	2.97E-05	1.06E-04
1.19E+02	2.28E-19	1.64E-03	4.01E-06	1.60E-09	2.29E-06	8.11E-06	2.03E-05	8.24E-05
1.56E+02	5.07E-21	1.21E-03	3.14E-06	3.48E-09	1.43E-06	4.78E-06	1.40E-05	7.09E-05
2.03E+02	1.29E-21	5.63E-04	1.62E-06	6.39E-09	6.80E-07	1.88E-06	6.55E-06	3.06E-05
2.65E+02	1.88E-21	3.24E-04	1.07E-06	8.30E-09	3.09E-07	1.02E-06	3.89E-06	1.64E-05
3.00E+02	8.71E-21	4.33E-04	1.05E-06	7.92E-09	2.22E-07	6.93E-07	2.27E-06	1.29E-05
3.46E+02	8.60E-20	4.90E-04	1.09E-06	6.54E-09	1.73E-07	5.03E-07	1.31E-06	8.00E-06
4.51E+02	2.57E-10	9.28E-04	5.96E-04	6.49E-04	8.39E-04	8.48E-04	8.53E-04	8.57E-04
5.88E+02	2.88E-12	1.13E-03	7.71E-04	9.99E-04	1.10E-03	1.10E-03	1.10E-03	1.10E-03
7.67E+02	3.70E-10	1.57E-03	9.67E-04	1.27E-03	1.43E-03	1.45E-03	1.47E-03	1.49E-03
1.00E+03	6.29E-13	1.42E-03	7.56E-04	9.77E-04	1.20E-03	1.25E-03	1.28E-03	1.33E-03
iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii

1RESRAD, Version 6.5 T« Limit = 30 days 07/15/2014 18:44 Page 21
 Probabilistic results summary : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
 File: C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD
 Peak of the mean dose (averaged over observations) at graphical times
 Repetition Time of peak mean dose Peak mean dose
 Years mrem/yr
 1 7.667E+02 9.672E-04

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 1

Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Coefficients for peak of mean dose time Dose				PCC	SRC
Coefficient =				1	1
PRCC	SRRC	Repetition =			
1	1				
Description of Probabilistic Variable				Sig Coeff	Sig Coeff
Sig Coeff	Sig Coeff				
Density of contaminated zone				55	0.00
8	0.06	5	0.08	24	-0.02
Contaminated zone total porosity				32	-0.01
29	0.02	11	0.03	6	-0.07
Contaminated zone hydraulic conductivity				66	0.00
40	0.01	44	0.00	67	0.00
Contaminated zone b parameter				49	0.00
54	0.01	56	0.00	53	0.00
Evapotranspiration coefficient				2	0.05
3	0.31	6	0.06	7	0.05
Irrigation				29	-0.01
6	-0.06	9	-0.04	8	-0.04
Density of saturated zone				68	0.00
21	-0.03	2	-0.16	13	0.03
Saturated zone total porosity				59	0.00
19	-0.03	3	-0.10	11	-0.03
Saturated zone effective porosity				48	0.00
35	-0.02	7	-0.06	5	0.08
Saturated zone hydraulic conductivity				8	0.03
11	0.04	19	0.01	16	0.03
Saturated zone b parameter				54	0.00
16	0.03	24	0.01	58	0.00
well pump intake depth				69	0.00
43	-0.01	46	0.00	69	0.00
well pumping rate				62	0.00
42	0.01	18	0.01	47	0.01
Thickness of Unsaturated zone 1				11	-0.03
53	0.01	55	0.00	19	-0.02

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Density of Unsaturated zone 1	16	-0.02	1	-0.69
55 -0.01 8 -0.05				
Total Porosity of Unsaturated zone 1	18	-0.02	3	-0.35
60 -0.01 13 -0.02				
Effective Porosity of Unsaturated zone 1	17	-0.02	2	-0.35
47 -0.01 10 -0.03				
Hydraulic Conductivity of Unsaturated zone 1	40	-0.01	44	-0.01
57 -0.01 58 0.00				
b Parameter of Unsaturated zone 1	41	0.01	45	0.01
66 0.00 66 0.00				
Mass loading for inhalation	33	-0.01	37	-0.01
23 0.03 29 0.00				
Indoor dust filtration factor	38	-0.01	42	-0.01
24 0.03 30 0.00				
External gamma shielding factor	47	0.00	52	0.00
56 -0.01 57 0.00				
Depth of soil mixing layer	19	0.02	25	0.02
2 0.45 4 0.10				
Wet weight crop yield of fruit, grain and non-leafy vegetables	35	-0.01	39	-0.01
67 0.00 67 0.00				
Weathering removal constant of all vegetation	56	0.00	59	0.00
26 0.02 32 0.00				
Wet foliar interception fraction of leafy vegetables	37	0.01	41	0.01
34 -0.02 39 0.00				
Kd of Am-241 in Contaminated Zone	1	0.12	4	0.12
1 0.98 1 0.97				
Kd of Am-241 in Unsaturated Zone 1	6	0.03	15	0.03
37 -0.02 41 0.00				
Kd of Am-241 in Saturated Zone	10	-0.03	18	-0.03
52 -0.01 54 0.00				
Kd of Np-237 in Contaminated Zone	67	0.00	68	0.00
4 0.12 12 0.02				
Kd of Np-237 in Unsaturated Zone 1	42	-0.01	46	-0.01
45 0.01 48 0.00				
Kd of Np-237 in Saturated Zone	7	0.03	14	0.03
17 0.03 25 0.01				
Kd of Th-229 in Contaminated Zone	13	-0.02	20	-0.02
33 0.02 38 0.00				
Kd of Th-229 in Unsaturated Zone 1	65	0.00	66	0.00
31 -0.02 36 0.00				
Kd of Th-229 in Saturated Zone	15	0.02	23	0.02
50 -0.01 52 0.00				
Kd of U-233 in Contaminated Zone	9	0.03	17	0.03
39 0.01 43 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of U-233 in Unsaturated Zone 1	30	0.01	35	0.01
69 0.00 69 0.00				
Kd of U-233 in Saturated Zone	36	0.01	40	0.01
15 0.03 23 0.01				
Meat transfer factor for Am	14	0.02	22	0.02
9 0.06 16 0.01				
Milk transfer factor for Am	50	0.00	54	0.00
36 0.02 40 0.00				
Fish transfer factor for Am	63	0.00	64	0.00
62 0.00 62 0.00				
Plant transfer factor for Np	3	0.04	9	0.04
5 0.08 14 0.02				
Meat transfer factor for Np	51	0.00	55	0.00
63 0.00 63 0.00				
Milk transfer factor for Np	45	0.01	50	0.01
46 0.01 49 0.00				
Fish transfer factor for Np	34	-0.01	38	-0.01
65 0.00 65 0.00				
Plant transfer factor for Th	28	-0.01	34	-0.01
59 0.01 60 0.00				
Meat transfer factor for Th	39	-0.01	43	-0.01
28 -0.02 34 0.00				
Milk transfer factor for Th	43	-0.01	48	-0.01
14 -0.03 22 -0.01				
Fish transfer factor for Th	24	0.02	30	0.02
44 -0.01 47 0.00				
Plant transfer factor for U	21	-0.02	27	-0.02
13 0.04 21 0.01				
Meat transfer factor for U	46	0.01	51	0.01
32 0.02 37 0.00				
Milk transfer factor for U	64	0.00	65	0.00
68 0.00 68 0.00				
Fish transfer factor for U	5	-0.03	12	-0.03
41 -0.01 45 0.00				
Density of cover material	25	0.02	31	0.02
20 0.03 27 0.01				
Kd of Co-60 in Contaminated Zone	26	-0.01	32	-0.01
61 0.00 61 0.00				
Kd of Co-60 in Unsaturated Zone 1	23	0.02	29	0.02
25 -0.03 31 0.00				
Kd of Co-60 in Saturated Zone	27	0.01	33	0.01
12 0.04 20 0.01				
Kd of Cs-137 in Contaminated Zone	60	0.00	62	0.00
10 0.05 17 0.01				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of Cs-137 in Unsaturated Zone 1	22	-0.02	28	-0.02
30 -0.02 35 0.00				
Kd of Cs-137 in Saturated Zone	44	-0.01	49	-0.01
7 0.06 15 0.01				
Kd of Sr-90 in Contaminated Zone	57	0.00	60	0.00
49 -0.01 51 0.00				
Kd of Sr-90 in Unsaturated Zone 1	53	0.00	57	0.00
22 -0.03 28 -0.01				
Kd of Sr-90 in Saturated Zone	20	-0.02	26	-0.02
38 -0.02 42 0.00				
Milk transfer factor for Co	58	0.00	61	0.00
64 0.00 64 0.00				
Fish transfer factor for Co	31	-0.01	36	-0.01
27 0.02 33 0.00				
Fish transfer factor for Cs	61	0.00	63	0.00
58 0.01 59 0.00				
Meat transfer factor for Sr	12	0.02	21	0.02
18 0.03 26 0.01				
Milk transfer factor for Sr	52	0.00	56	0.00
51 0.01 53 0.00				
Fish transfer factor for Sr	4	0.04	10	0.04
48 0.01 50 0.00				
<hr/>				
R-SQUARE			0.03	0.03
0.96 0.96				
<hr/>				

-Rank is set to zero if the dose is zero or the correlation matrix is singular.

-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef. 2

Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Coefficients for peak All Pathways Dose				
PRCC	Coefficient =		PCC	SRC
1	SRRC		1	1
	Repetition =			
	1			
<hr/>				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Description of Probabilistic Variable				Sig	Coeff	Sig	Coeff
Sig	Coeff	Sig	Coeff				
Density of contaminated zone				66	0.00	41	0.01
8	0.07	3	0.13				
Contaminated zone total porosity				44	-0.01	8	-0.05
14	0.04	5	0.07				
Contaminated zone hydraulic conductivity				55	0.00	59	0.00
18	0.03	25	0.01				
Contaminated zone b parameter				31	0.01	35	0.01
40	0.02	46	0.00				
Evapotranspiration coefficient				2	0.06	7	0.06
3	0.23	6	0.06				
Irrigation				25	-0.02	9	-0.05
9	-0.06	9	-0.05				
Density of saturated zone				60	0.00	6	0.10
67	0.00	15	0.02				
Saturated zone total porosity				68	0.00	32	0.01
65	0.00	21	-0.01				
Saturated zone effective porosity				50	0.01	5	0.11
54	0.01	11	0.04				
Saturated zone hydraulic conductivity				5	0.04	11	0.04
13	0.04	20	0.01				
Saturated zone b parameter				58	0.00	62	0.00
25	0.03	32	0.01				
well pump intake depth				63	0.00	65	0.00
36	-0.02	42	0.00				
well pumping rate				59	0.00	39	0.01
33	0.02	16	0.02				
Thickness of Unsaturated zone 1				9	-0.03	16	-0.03
35	-0.02	41	0.00				
Density of Unsaturated zone 1				12	-0.03	1	-0.86
49	-0.01	4	-0.09				
Total Porosity of Unsaturated zone 1				14	-0.03	3	-0.43
53	-0.01	10	-0.04				
Effective Porosity of Unsaturated zone 1				13	-0.03	2	-0.44
43	-0.01	7	-0.06				
Hydraulic Conductivity of Unsaturated zone 1				27	-0.01	29	-0.01
68	0.00	68	0.00				
b Parameter of Unsaturated zone 1				46	0.01	51	0.01
60	0.01	62	0.00				
Mass loading for inhalation				51	0.01	55	0.01
5	0.08	12	0.02				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Indoor dust filtration factor	65	0.00	67	0.00
6 0.08 13 0.02				
External gamma shielding factor	23	0.02	27	0.02
59 0.01 61 0.00				
Depth of soil mixing layer	3	0.04	12	0.04
2 0.48 2 0.14				
wet weight crop yield of fruit, grain and non-leafy vegetables	38	-0.01	45	-0.01
51 0.01 55 0.00				
weathering removal constant of all vegetation	61	0.00	63	0.00
29 -0.02 36 -0.01				
wet foliar interception fraction of leafy vegetables	35	0.01	40	0.01
57 0.01 59 0.00				
Kd of Am-241 in Contaminated Zone	1	0.12	4	0.12
1 0.96 1 0.95				
Kd of Am-241 in Unsaturated Zone 1	7	0.03	14	0.03
39 0.02 45 0.00				
Kd of Am-241 in Saturated Zone	16	-0.02	20	-0.02
21 -0.03 28 -0.01				
Kd of Np-237 in Contaminated Zone	54	0.00	58	0.00
10 0.05 17 0.01				
Kd of Np-237 in Unsaturated Zone 1	33	-0.01	37	-0.01
44 0.01 49 0.00				
Kd of Np-237 in Saturated Zone	11	0.03	17	0.03
23 0.03 30 0.01				
Kd of Th-229 in Contaminated Zone	18	-0.02	22	-0.02
19 0.03 26 0.01				
Kd of Th-229 in Unsaturated Zone 1	57	0.00	61	0.00
55 0.01 57 0.00				
Kd of Th-229 in Saturated Zone	20	0.02	25	0.02
47 0.01 52 0.00				
Kd of U-233 in Contaminated Zone	8	0.03	15	0.03
28 0.02 35 0.01				
Kd of U-233 in Unsaturated Zone 1	36	0.01	42	0.01
27 0.03 34 0.01				
Kd of U-233 in Saturated Zone	42	0.01	48	0.01
31 0.02 38 0.01				
Meat transfer factor for Am	17	0.02	21	0.02
11 0.05 18 0.01				
Milk transfer factor for Am	40	0.01	46	0.01
61 0.00 63 0.00				
Fish transfer factor for Am	67	0.00	68	0.00
38 -0.02 44 0.00				
Plant transfer factor for Np	4	0.04	10	0.04
7 0.07 14 0.02				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Meat transfer factor for Np	47	-0.01	52	-0.01
17 -0.04 24 -0.01				
Milk transfer factor for Np	56	0.00	60	0.00
69 0.00 69 0.00				
Fish transfer factor for Np	32	-0.01	36	-0.01
64 0.00 66 0.00				
Plant transfer factor for Th	37	-0.01	43	-0.01
42 -0.01 48 0.00				
Meat transfer factor for Th	34	-0.01	38	-0.01
50 -0.01 54 0.00				
Milk transfer factor for Th	64	0.00	66	0.00
15 -0.04 22 -0.01				
Fish transfer factor for Th	26	0.01	30	0.01
24 -0.03 31 -0.01				
Plant transfer factor for U	21	-0.02	24	-0.02
37 0.02 43 0.00				
Meat transfer factor for U	45	0.01	50	0.01
26 0.03 33 0.01				
Milk transfer factor for U	43	0.01	49	0.01
52 -0.01 56 0.00				
Fish transfer factor for U	15	-0.02	19	-0.02
56 0.01 58 0.00				
Density of cover material	22	0.02	26	0.02
45 0.01 50 0.00				
Kd of Co-60 in Contaminated Zone	39	-0.01	44	-0.01
30 0.02 37 0.01				
Kd of Co-60 in Unsaturated Zone 1	24	0.02	28	0.02
63 0.00 65 0.00				
Kd of Co-60 in Saturated Zone	30	0.01	34	0.01
22 0.03 29 0.01				
Kd of Cs-137 in Contaminated Zone	29	0.01	33	0.01
4 0.22 8 0.06				
Kd of Cs-137 in Unsaturated Zone 1	28	-0.01	31	-0.01
20 -0.03 27 -0.01				
Kd of Cs-137 in Saturated Zone	62	0.00	64	0.00
34 0.02 40 0.00				
Kd of Sr-90 in Contaminated Zone	69	0.00	69	0.00
58 0.01 60 0.00				
Kd of Sr-90 in Unsaturated Zone 1	53	-0.01	57	-0.01
16 -0.04 23 -0.01				
Kd of Sr-90 in Saturated Zone	19	-0.02	23	-0.02
12 -0.05 19 -0.01				
Milk transfer factor for Co	48	0.01	53	0.01
46 0.01 51 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Fish transfer factor for Co	49	-0.01	54	-0.01
41 0.01 47 0.00				
Fish transfer factor for Cs	52	-0.01	56	-0.01
48 -0.01 53 0.00				
Meat transfer factor for Sr	10	0.03	18	0.03
32 0.02 39 0.01				
Milk transfer factor for Sr	41	-0.01	47	-0.01
62 0.00 64 0.00				
Fish transfer factor for Sr	6	0.04	13	0.04
66 0.00 67 0.00				
<hr/>				
R-SQUARE		0.04		0.04
0.93	0.93			
<hr/>				

-Rank is set to zero if the dose is zero or the correlation matrix is singular.

-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 3

Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Coefficients for peak External Ground Dose				PCC	SRC
PRCC	Coefficient =			1	1
	SRRC				
1	Repetition =				
	1				
<hr/>					
Description of Probabilistic Variable				Sig	Coeff
Sig Coeff Sig Coeff					
<hr/>					
Density of contaminated zone	42	0.01	9	0.05	
17 0.03 8 0.10					
Contaminated zone total porosity	66	0.00	50	-0.01	
44 0.01 11 0.04					
Contaminated zone hydraulic conductivity	32	0.01	37	0.01	
28 0.02 34 0.01					
Contaminated zone b parameter	56	0.00	59	0.00	
60 0.00 60 0.00					

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Evapotranspiration coefficient	3	0.07	6	0.06
3 0.16 9 0.06				
Irrigation	25	-0.02	8	-0.05
36 -0.02 14 -0.02				
Density of saturated zone	63	0.00	10	-0.04
47 0.01 6 0.15				
Saturated zone total porosity	52	0.00	7	-0.06
53 0.01 10 0.05				
Saturated zone effective porosity	58	0.00	13	0.03
33 0.02 7 0.11				
Saturated zone hydraulic conductivity	4	0.04	11	0.03
18 0.03 23 0.01				
Saturated zone b parameter	54	0.00	57	0.00
24 -0.03 30 -0.01				
well pump intake depth	53	0.00	56	0.00
63 0.00 63 0.00				
well pumping rate	46	0.01	31	0.02
48 -0.01 25 -0.01				
Thickness of Unsaturated zone 1	13	-0.02	21	-0.02
16 -0.04 22 -0.01				
Density of Unsaturated zone 1	24	-0.02	1	-0.53
10 0.04 2 0.55				
Total Porosity of Unsaturated zone 1	27	-0.02	4	-0.25
12 0.04 5 0.26				
Effective Porosity of Unsaturated zone 1	21	-0.02	3	-0.31
11 0.04 4 0.27				
Hydraulic Conductivity of Unsaturated zone 1	35	-0.01	40	-0.01
29 -0.02 35 -0.01				
b Parameter of Unsaturated zone 1	33	0.01	38	0.01
25 -0.03 31 -0.01				
Mass loading for inhalation	38	-0.01	44	-0.01
20 -0.03 26 -0.01				
Indoor dust filtration factor	17	-0.02	25	-0.02
5 -0.06 13 -0.02				
External gamma shielding factor	1	0.50	2	0.50
2 0.73 3 0.43				
Depth of soil mixing layer	69	0.00	69	0.00
58 0.00 58 0.00				
wet weight crop yield of fruit, grain and non-leafy vegetables	62	0.00	64	0.00
34 -0.02 39 -0.01				
weathering removal constant of all vegetation	60	0.00	62	0.00
46 -0.01 49 0.00				
wet foliar interception fraction of leafy vegetables	43	0.01	47	0.01
62 0.00 62 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of Am-241 in Contaminated Zone	2	0.11	5	0.10
1 0.89 1 0.79				
Kd of Am-241 in Unsaturated Zone 1	6	0.03	14	0.03
67 0.00 67 0.00				
Kd of Am-241 in Saturated Zone	19	-0.02	27	-0.02
23 -0.03 29 -0.01				
Kd of Np-237 in Contaminated Zone	57	0.00	60	0.00
40 0.01 44 0.01				
Kd of Np-237 in Unsaturated Zone 1	20	-0.02	28	-0.02
15 0.04 21 0.01				
Kd of Np-237 in Saturated Zone	7	0.03	15	0.03
59 0.00 59 0.00				
Kd of Th-229 in Contaminated Zone	5	-0.03	12	-0.03
30 0.02 36 0.01				
Kd of Th-229 in Unsaturated Zone 1	41	-0.01	46	-0.01
7 0.05 16 0.02				
Kd of Th-229 in Saturated Zone	9	0.03	17	0.02
68 0.00 68 0.00				
Kd of U-233 in Contaminated Zone	15	0.02	23	0.02
54 -0.01 54 0.00				
Kd of U-233 in Unsaturated Zone 1	29	0.02	34	0.01
9 0.04 18 0.02				
Kd of U-233 in Saturated Zone	61	0.00	63	0.00
66 0.00 66 0.00				
Meat transfer factor for Am	12	0.02	20	0.02
4 0.06 12 0.03				
Milk transfer factor for Am	39	0.01	43	0.01
56 0.01 56 0.00				
Fish transfer factor for Am	45	-0.01	49	-0.01
8 -0.05 17 -0.02				
Plant transfer factor for Np	14	0.02	22	0.02
19 0.03 24 0.01				
Meat transfer factor for Np	49	0.00	53	0.00
41 0.01 45 0.01				
Milk transfer factor for Np	55	0.00	58	0.00
42 -0.01 46 -0.01				
Fish transfer factor for Np	18	-0.02	26	-0.02
14 -0.04 20 -0.01				
Plant transfer factor for Th	37	-0.01	42	-0.01
37 -0.02 41 -0.01				
Meat transfer factor for Th	30	-0.02	35	-0.01
32 0.02 38 0.01				
Milk transfer factor for Th	48	-0.01	52	0.00
27 -0.02 33 -0.01				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Fish transfer factor for Th	36	0.01	41	0.01
51 -0.01 52 0.00				
Plant transfer factor for U	26	-0.02	32	-0.01
52 -0.01 53 0.00				
Meat transfer factor for U	44	-0.01	48	-0.01
38 -0.02 42 -0.01				
Milk transfer factor for U	65	0.00	66	0.00
26 -0.02 32 -0.01				
Fish transfer factor for U	22	-0.02	29	-0.02
43 0.01 47 0.01				
Density of cover material	28	0.02	33	0.01
64 0.00 64 0.00				
Kd of Co-60 in Contaminated Zone	59	0.00	61	0.00
31 0.02 37 0.01				
Kd of Co-60 in Unsaturated Zone 1	16	0.02	24	0.02
21 -0.03 27 -0.01				
Kd of Co-60 in Saturated Zone	31	0.01	36	0.01
6 0.05 15 0.02				
Kd of Cs-137 in Contaminated Zone	40	-0.01	45	-0.01
13 0.04 19 0.02				
Kd of Cs-137 in Unsaturated Zone 1	23	-0.02	30	-0.02
39 0.02 43 0.01				
Kd of Cs-137 in Saturated Zone	67	0.00	67	0.00
69 0.00 69 0.00				
Kd of Sr-90 in Contaminated Zone	34	-0.01	39	-0.01
50 0.01 51 0.00				
Kd of Sr-90 in Unsaturated Zone 1	68	0.00	68	0.00
61 0.00 61 0.00				
Kd of Sr-90 in Saturated Zone	10	-0.03	18	-0.02
65 0.00 65 0.00				
Milk transfer factor for Co	47	0.01	51	0.00
57 0.01 57 0.00				
Fish transfer factor for Co	64	0.00	65	0.00
35 0.02 40 0.01				
Fish transfer factor for Cs	51	0.00	55	0.00
55 0.01 55 0.00				
Meat transfer factor for Sr	8	0.03	16	0.03
45 0.01 48 0.00				
Milk transfer factor for Sr	50	0.00	54	0.00
22 -0.03 28 -0.01				
Fish transfer factor for Sr	11	0.02	19	0.02
49 0.01 50 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

R-SQUARE

0.27

0.27

0.84

0.84

-Rank is set to zero if the dose is zero or the correlation matrix is singular.

-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 4

Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Coefficients for peak Inhalation Particles Dose

PRCC Coefficient =
SRRC
Repetition =
1 1

PCC

SRC

1

1

Description of Probabilistic Variable

Sig Coeff

Sig Coeff

Sig Coeff Sig Coeff

Density of contaminated zone

63 0.00 22 -0.01

Contaminated zone total porosity

31 -0.02 9 -0.06

Contaminated zone hydraulic conductivity

68 0.00 68 0.00

Contaminated zone b parameter

37 0.02 43 0.01

Evapotranspiration coefficient

4 0.10 10 0.05

Irrigation

59 -0.01 37 -0.01

Density of saturated zone

55 -0.01 7 -0.13

Saturated zone total porosity

50 -0.01 8 -0.08

Saturated zone effective porosity

62 0.00 11 -0.04

Saturated zone hydraulic conductivity

21 0.02 30 0.01

21 -0.02

10 -0.11

12 -0.03

9 -0.15

48 0.01

49 0.01

51 0.01

52 0.01

4 0.06

12 0.05

36 -0.01

14 -0.03

31 0.01

4 0.37

32 0.01

8 0.18

30 0.01

7 0.20

24 0.02

29 0.01

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Saturated zone b parameter	67	0.00	67	0.00
44 -0.02 50 -0.01				
well pump intake depth	19	-0.02	25	-0.02
13 -0.03 21 -0.01				
well pumping rate	53	0.01	24	0.02
51 -0.01 17 -0.02				
Thickness of Unsaturated zone 1	5	-0.05	13	-0.04
7 -0.05 14 -0.02				
Density of Unsaturated zone 1	17	-0.02	1	-0.65
22 0.02 3 0.33				
Total Porosity of Unsaturated zone 1	18	-0.02	6	-0.30
26 0.02 5 0.16				
Effective Porosity of Unsaturated zone 1	10	-0.03	3	-0.38
27 0.02 6 0.16				
Hydraulic Conductivity of Unsaturated zone 1	15	-0.03	22	-0.02
67 0.00 67 0.00				
b Parameter of Unsaturated zone 1	60	0.00	60	0.00
43 -0.02 49 -0.01				
Mass loading for inhalation	1	0.51	2	0.47
2 0.62 2 0.36				
Indoor dust filtration factor	2	0.41	5	0.36
3 0.58 4 0.32				
External gamma shielding factor	62	0.00	62	0.00
15 -0.03 24 -0.01				
Depth of soil mixing layer	66	0.00	66	0.00
48 -0.01 54 -0.01				
wet weight crop yield of fruit, grain and non-leafy vegetables	26	-0.02	31	-0.01
38 -0.02 44 -0.01				
weathering removal constant of all vegetation	43	0.01	44	0.01
49 -0.01 55 -0.01				
wet foliar interception fraction of leafy vegetables	68	0.00	68	0.00
16 0.02 25 0.01				
Kd of Am-241 in Contaminated Zone	3	0.11	11	0.09
1 0.86 1 0.75				
Kd of Am-241 in Unsaturated Zone 1	25	0.02	30	0.01
65 0.00 65 0.00				
Kd of Am-241 in Saturated Zone	6	-0.04	15	-0.03
47 0.01 53 0.01				
Kd of Np-237 in Contaminated Zone	33	0.01	35	0.01
46 0.01 52 0.01				
Kd of Np-237 in Unsaturated Zone 1	49	0.01	50	0.01
11 0.03 19 0.02				
Kd of Np-237 in Saturated Zone	14	0.03	21	0.02
69 0.00 69 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of Th-229 in Contaminated Zone	37	-0.01	38	-0.01
53 0.01 57 0.00				
Kd of Th-229 in Unsaturated Zone 1	41	-0.01	42	-0.01
32 0.02 38 0.01				
Kd of Th-229 in Saturated Zone	27	0.02	32	0.01
52 -0.01 56 0.00				
Kd of U-233 in Contaminated Zone	7	0.03	16	0.03
39 0.02 45 0.01				
Kd of U-233 in Unsaturated Zone 1	65	0.00	65	0.00
24 0.02 32 0.01				
Kd of U-233 in Saturated Zone	59	0.00	59	0.00
41 0.02 47 0.01				
Meat transfer factor for Am	8	0.03	17	0.02
5 0.06 12 0.03				
Milk transfer factor for Am	56	0.00	56	0.00
12 -0.03 20 -0.01				
Fish transfer factor for Am	40	-0.01	41	-0.01
19 -0.02 28 -0.01				
Plant transfer factor for Np	13	0.03	20	0.02
8 0.04 15 0.02				
Meat transfer factor for Np	46	0.01	47	0.01
58 0.01 61 0.00				
Milk transfer factor for Np	47	0.01	48	0.01
61 -0.01 63 0.00				
Fish transfer factor for Np	58	0.00	58	0.00
66 0.00 66 0.00				
Plant transfer factor for Th	22	-0.02	27	-0.01
25 -0.02 33 -0.01				
Meat transfer factor for Th	28	-0.01	33	-0.01
30 0.02 36 0.01				
Milk transfer factor for Th	45	-0.01	46	-0.01
6 -0.06 13 -0.03				
Fish transfer factor for Th	9	0.03	18	0.02
64 0.00 64 0.00				
Plant transfer factor for U	39	-0.01	40	-0.01
45 0.02 51 0.01				
Meat transfer factor for U	20	-0.02	26	-0.02
10 -0.03 18 -0.02				
Milk transfer factor for U	63	0.00	63	0.00
20 -0.02 29 -0.01				
Fish transfer factor for U	35	-0.01	36	-0.01
29 -0.02 35 -0.01				
Density of cover material	34	-0.01	37	-0.01
28 -0.02 34 -0.01				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of Co-60 in Contaminated Zone	57	0.00	57	0.00
34 0.02 40 0.01				
Kd of Co-60 in Unsaturated Zone 1	16	0.02	23	0.02
35 -0.02 41 -0.01				
Kd of Co-60 in Saturated Zone	54	0.01	54	0.00
14 0.03 23 0.01				
Kd of Cs-137 in Contaminated Zone	52	-0.01	53	-0.01
33 0.02 39 0.01				
Kd of Cs-137 in Unsaturated Zone 1	29	0.01	34	0.01
57 0.01 60 0.00				
Kd of Cs-137 in Saturated Zone	64	0.00	64	0.00
18 0.02 27 0.01				
Kd of Sr-90 in Contaminated Zone	42	0.01	43	0.01
9 0.04 16 0.02				
Kd of Sr-90 in Unsaturated Zone 1	61	0.00	61	0.00
56 0.01 59 0.00				
Kd of Sr-90 in Saturated Zone	44	-0.01	45	-0.01
42 -0.02 48 -0.01				
Milk transfer factor for Co	38	-0.01	39	-0.01
54 -0.01 58 0.00				
Fish transfer factor for Co	55	0.01	55	0.00
36 0.02 42 0.01				
Fish transfer factor for Cs	23	-0.02	28	-0.01
17 0.02 26 0.01				
Meat transfer factor for Sr	50	0.01	51	0.01
40 -0.02 46 -0.01				
Milk transfer factor for Sr	69	0.00	69	0.00
23 -0.02 31 -0.01				
Fish transfer factor for Sr	11	0.03	19	0.02
60 -0.01 62 0.00				

R-SQUARE

0.80 0.80

0.38

0.38

-Rank is set to zero if the dose is zero or the correlation matrix is singular.

-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 5

Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Coefficients for peak Radon (WaterInd.) Dose
 Coefficient =
 PRCC SRRC
 Repetition =
 1 1

PCC SRC
 1 1

Description of Probabilistic Variable
 Sig Coeff Sig Coeff

Sig Coeff Sig Coeff

Density of contaminated zone	0	0.00	0	0.00
0 0.00 0 0.00				
Contaminated zone total porosity	0	0.00	0	0.00
0 0.00 0 0.00				
Contaminated zone hydraulic conductivity	0	0.00	0	0.00
0 0.00 0 0.00				
Contaminated zone b parameter	0	0.00	0	0.00
0 0.00 0 0.00				
Evapotranspiration coefficient	0	0.00	0	0.00
0 0.00 0 0.00				
Irrigation	0	0.00	0	0.00
0 0.00 0 0.00				
Density of saturated zone	0	0.00	0	0.00
0 0.00 0 0.00				
Saturated zone total porosity	0	0.00	0	0.00
0 0.00 0 0.00				
Saturated zone effective porosity	0	0.00	0	0.00
0 0.00 0 0.00				
Saturated zone hydraulic conductivity	0	0.00	0	0.00
0 0.00 0 0.00				
Saturated zone b parameter	0	0.00	0	0.00
0 0.00 0 0.00				
well pump intake depth	0	0.00	0	0.00
0 0.00 0 0.00				
well pumping rate	0	0.00	0	0.00
0 0.00 0 0.00				
Thickness of Unsaturated zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Density of Unsaturated zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Total Porosity of Unsaturated zone 1	0	0.00	0	0.00
0 0.00 0 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Effective Porosity of Unsaturated zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Hydraulic Conductivity of Unsaturated zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
b Parameter of Unsaturated zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Mass loading for inhalation	0	0.00	0	0.00
0 0.00 0 0.00				
Indoor dust filtration factor	0	0.00	0	0.00
0 0.00 0 0.00				
External gamma shielding factor	0	0.00	0	0.00
0 0.00 0 0.00				
Depth of soil mixing layer	0	0.00	0	0.00
0 0.00 0 0.00				
wet weight crop yield of fruit, grain and non-leafy vegetables	0	0.00	0	0.00
0 0.00 0 0.00				
weathering removal constant of all vegetation	0	0.00	0	0.00
0 0.00 0 0.00				
wet foliar interception fraction of leafy vegetables	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Am-241 in Contaminated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Am-241 in Unsaturated Zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Am-241 in Saturated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Np-237 in Contaminated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Np-237 in Unsaturated Zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Np-237 in Saturated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Th-229 in Contaminated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Th-229 in Unsaturated Zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Th-229 in Saturated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of U-233 in Contaminated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of U-233 in Unsaturated Zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of U-233 in Saturated Zone	0	0.00	0	0.00
0 0.00 0 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP				
Meat transfer factor for Am	0	0.00	0	0.00
0 0.00 0 0.00				
Milk transfer factor for Am	0	0.00	0	0.00
0 0.00 0 0.00				
Fish transfer factor for Am	0	0.00	0	0.00
0 0.00 0 0.00				
Plant transfer factor for Np	0	0.00	0	0.00
0 0.00 0 0.00				
Meat transfer factor for Np	0	0.00	0	0.00
0 0.00 0 0.00				
Milk transfer factor for Np	0	0.00	0	0.00
0 0.00 0 0.00				
Fish transfer factor for Np	0	0.00	0	0.00
0 0.00 0 0.00				
Plant transfer factor for Th	0	0.00	0	0.00
0 0.00 0 0.00				
Meat transfer factor for Th	0	0.00	0	0.00
0 0.00 0 0.00				
Milk transfer factor for Th	0	0.00	0	0.00
0 0.00 0 0.00				
Fish transfer factor for Th	0	0.00	0	0.00
0 0.00 0 0.00				
Plant transfer factor for U	0	0.00	0	0.00
0 0.00 0 0.00				
Meat transfer factor for U	0	0.00	0	0.00
0 0.00 0 0.00				
Milk transfer factor for U	0	0.00	0	0.00
0 0.00 0 0.00				
Fish transfer factor for U	0	0.00	0	0.00
0 0.00 0 0.00				
Density of cover material	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Co-60 in Contaminated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Co-60 in Unsaturated Zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Co-60 in Saturated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Cs-137 in Contaminated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Cs-137 in Unsaturated Zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Cs-137 in Saturated Zone	0	0.00	0	0.00
0 0.00 0 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of Sr-90 in Contaminated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Sr-90 in Unsaturated Zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Sr-90 in Saturated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Milk transfer factor for Co	0	0.00	0	0.00
0 0.00 0 0.00				
Fish transfer factor for Co	0	0.00	0	0.00
0 0.00 0 0.00				
Fish transfer factor for Cs	0	0.00	0	0.00
0 0.00 0 0.00				
Meat transfer factor for Sr	0	0.00	0	0.00
0 0.00 0 0.00				
Milk transfer factor for Sr	0	0.00	0	0.00
0 0.00 0 0.00				
Fish transfer factor for Sr	0	0.00	0	0.00
0 0.00 0 0.00				

R-SQUARE		0.00	0.00
0.00	0.00		

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 6
 Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
 Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Coefficients for peak Plant (WaterInd.) Dose			
PRCC	Coefficient =	PCC	SRC
	SRRC		
	Repetition =	1	1
1	1		

Description of Probabilistic variable	Sig Coeff	Sig Coeff
Sig Coeff Sig Coeff		

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Density of contaminated zone	61	0.00	29	-0.02
6 0.11 5 0.11				
Contaminated zone total porosity	36	-0.01	7	-0.08
9 0.05 8 0.05				
Contaminated zone hydraulic conductivity	50	0.01	53	0.01
16 0.04 19 0.01				
Contaminated zone b parameter	41	0.01	45	0.01
44 0.01 46 0.00				
Evapotranspiration coefficient	2	0.07	8	0.07
2 0.43 6 0.07				
Irrigation	25	-0.02	9	-0.05
7 -0.09 9 -0.04				
Density of saturated zone	60	0.00	6	0.08
50 -0.01 12 -0.03				
Saturated zone total porosity	67	0.00	57	0.00
37 -0.01 10 -0.03				
Saturated zone effective porosity	49	0.01	5	0.11
60 0.00 15 0.01				
Saturated zone hydraulic conductivity	6	0.03	13	0.03
15 0.04 18 0.01				
Saturated zone b parameter	69	0.00	69	0.00
51 -0.01 52 0.00				
well pump intake depth	65	0.00	66	0.00
33 0.01 36 0.00				
well pumping rate	56	0.00	34	0.01
65 0.00 59 0.00				
Thickness of Unsaturated zone 1	16	-0.02	20	-0.02
62 0.00 63 0.00				
Density of Unsaturated zone 1	9	-0.03	1	-0.92
13 -0.05 2 -0.21				
Total Porosity of Unsaturated zone 1	11	-0.03	3	-0.46
12 -0.05 3 -0.11				
Effective Porosity of Unsaturated zone 1	10	-0.03	2	-0.47
14 -0.05 4 -0.11				
Hydraulic Conductivity of Unsaturated zone 1	29	-0.01	33	-0.01
43 0.01 45 0.00				
b Parameter of Unsaturated zone 1	45	0.01	49	0.01
41 0.01 43 0.00				
Mass loading for inhalation	30	-0.01	35	-0.01
67 0.00 67 0.00				
Indoor dust filtration factor	28	-0.01	32	-0.01
57 0.00 58 0.00				
External gamma shielding factor	46	0.01	50	0.01
52 0.01 53 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Depth of soil mixing layer	51	-0.01	54	0.00
55 0.01 56 0.00				
Wet weight crop yield of fruit, grain and non-leafy vegetables	33	-0.01	38	-0.01
34 -0.01 37 0.00				
Weathering removal constant of all vegetation	68	0.00	68	0.00
23 0.03 26 0.00				
Wet foliar interception fraction of leafy vegetables	47	0.01	51	0.01
29 -0.02 32 0.00				
Kd of Am-241 in Contaminated Zone	1	0.12	4	0.12
1 0.99 1 0.98				
Kd of Am-241 in Unsaturated Zone 1	5	0.03	12	0.03
8 0.06 14 0.01				
Kd of Am-241 in Saturated Zone	14	-0.02	18	-0.02
64 0.00 65 0.00				
Kd of Np-237 in Contaminated Zone	53	0.00	55	0.00
4 0.23 11 0.03				
Kd of Np-237 in Unsaturated Zone 1	31	-0.01	36	-0.01
25 0.02 28 0.00				
Kd of Np-237 in Saturated Zone	7	0.03	14	0.03
48 0.01 50 0.00				
Kd of Th-229 in Contaminated Zone	17	-0.02	21	-0.02
26 0.02 29 0.00				
Kd of Th-229 in Unsaturated Zone 1	62	0.00	63	0.00
28 -0.02 31 0.00				
Kd of Th-229 in Saturated Zone	19	0.02	23	0.02
53 0.01 54 0.00				
Kd of U-233 in Contaminated Zone	13	0.02	17	0.02
59 0.00 61 0.00				
Kd of U-233 in Unsaturated Zone 1	32	0.01	37	0.01
10 0.05 16 0.01				
Kd of U-233 in Saturated Zone	42	0.01	46	0.01
31 0.02 34 0.00				
Meat transfer factor for Am	15	0.02	19	0.02
17 0.04 20 0.01				
Milk transfer factor for Am	44	0.01	48	0.01
66 0.00 66 0.00				
Fish transfer factor for Am	63	0.00	64	0.00
24 0.02 27 0.00				
Plant transfer factor for Np	3	0.04	10	0.04
5 0.17 13 0.02				
Meat transfer factor for Np	59	0.00	62	0.00
21 -0.03 24 0.00				
Milk transfer factor for Np	58	0.00	61	0.00
42 -0.01 44 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Fish transfer factor for Np	35	-0.01	40	-0.01
45 -0.01 47 0.00				
Plant transfer factor for Th	23	-0.02	27	-0.02
47 -0.01 49 0.00				
Meat transfer factor for Th	39	-0.01	43	-0.01
49 -0.01 51 0.00				
Milk transfer factor for Th	55	0.00	59	0.00
22 -0.03 25 0.00				
Fish transfer factor for Th	20	0.02	24	0.02
54 -0.01 55 0.00				
Plant transfer factor for U	24	-0.02	28	-0.02
19 0.03 22 0.00				
Meat transfer factor for U	54	0.00	58	0.00
68 0.00 68 0.00				
Milk transfer factor for U	37	0.01	41	0.01
63 0.00 64 0.00				
Fish transfer factor for U	12	-0.03	16	-0.03
39 0.01 41 0.00				
Density of cover material	21	0.02	25	0.02
36 0.01 39 0.00				
Kd of Co-60 in Contaminated Zone	40	-0.01	44	-0.01
11 0.05 17 0.01				
Kd of Co-60 in Unsaturated Zone 1	22	0.02	26	0.02
35 -0.01 38 0.00				
Kd of Co-60 in Saturated Zone	27	0.01	31	0.01
58 0.00 60 0.00				
Kd of Cs-137 in Contaminated Zone	34	0.01	39	0.01
3 0.35 7 0.05				
Kd of Cs-137 in Unsaturated Zone 1	26	-0.02	30	-0.02
20 -0.03 23 0.00				
Kd of Cs-137 in Saturated Zone	64	0.00	65	0.00
18 0.03 21 0.00				
Kd of Sr-90 in Contaminated Zone	66	0.00	67	0.00
32 0.02 35 0.00				
Kd of Sr-90 in Unsaturated Zone 1	57	0.00	60	0.00
56 -0.01 57 0.00				
Kd of Sr-90 in Saturated Zone	18	-0.02	22	-0.02
30 0.02 33 0.00				
Milk transfer factor for Co	43	0.01	47	0.01
61 0.00 62 0.00				
Fish transfer factor for Co	48	-0.01	52	-0.01
69 0.00 69 0.00				
Fish transfer factor for Cs	52	0.00	56	0.00
40 -0.01 42 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Meat transfer factor for Sr	8	0.03	15	0.03
38 0.01 40 0.00				
Milk transfer factor for Sr	38	-0.01	42	-0.01
46 -0.01 48 0.00				
Fish transfer factor for Sr	4	0.04	11	0.04
27 0.02 30 0.00				

R-SQUARE		0.04	0.04
0.98	0.98		

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 7
 Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
 Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Coefficients for peak Meat (WaterInd.) Dose			
PRCC	Coefficient =	PCC	SRC
	SRRC		
	Repetition =	1	1
1	1		

Description of Probabilistic Variable	Sig	Coeff	Sig	Coeff
Sig Coeff Sig Coeff				
Density of contaminated zone	68	0.00	59	0.00
5 0.13 3 0.06				
Contaminated zone total porosity	42	-0.01	9	-0.07
66 0.00 50 0.00				
Contaminated zone hydraulic conductivity	24	0.02	32	0.02
30 0.02 36 0.00				
Contaminated zone b parameter	19	0.02	27	0.02
52 -0.01 56 0.00				
Evapotranspiration coefficient	2	0.08	8	0.08
2 0.77 2 0.09				
Irrigation	26	-0.02	10	-0.06
3 -0.18 4 -0.04				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Density of saturated zone	39	-0.01	2	-0.39
36 -0.02 5 -0.04				
Saturated zone total porosity	37	-0.01	6	-0.21
54 -0.01 11 -0.01				
Saturated zone effective porosity	36	-0.01	5	-0.21
22 -0.03 6 -0.03				
Saturated zone hydraulic conductivity	5	0.04	13	0.04
32 -0.02 38 0.00				
Saturated zone b parameter	60	0.00	62	0.00
56 0.01 58 0.00				
well pump intake depth	46	-0.01	46	-0.01
60 0.00 61 0.00				
well pumping rate	65	0.00	56	0.00
46 -0.01 22 0.00				
Thickness of Unsaturated zone 1	62	0.00	64	0.00
50 0.01 54 0.00				
Density of Unsaturated zone 1	31	-0.01	1	-0.46
53 0.01 7 0.02				
Total Porosity of Unsaturated zone 1	38	-0.01	7	-0.21
49 0.01 8 0.01				
Effective Porosity of Unsaturated zone 1	28	-0.02	3	-0.27
59 0.00 14 0.00				
Hydraulic Conductivity of Unsaturated zone 1	50	-0.01	50	-0.01
13 0.04 19 0.00				
b Parameter of Unsaturated zone 1	10	0.03	18	0.02
64 0.00 65 0.00				
Mass loading for inhalation	40	0.01	41	0.01
8 -0.07 13 0.00				
Indoor dust filtration factor	16	-0.02	24	-0.02
62 0.00 63 0.00				
External gamma shielding factor	61	0.00	63	0.00
16 -0.03 23 0.00				
Depth of soil mixing layer	21	-0.02	29	-0.02
25 -0.02 31 0.00				
wet weight crop yield of fruit, grain and non-leafy vegetables	52	-0.01	52	-0.01
11 -0.04 17 0.00				
weathering removal constant of all vegetation	66	0.00	67	0.00
42 0.01 47 0.00				
wet foliar interception fraction of leafy vegetables	45	0.01	45	0.01
57 0.01 59 0.00				
Kd of Am-241 in Contaminated Zone	41	0.01	42	0.01
4 0.15 9 0.01				
Kd of Am-241 in Unsaturated Zone 1	4	-0.04	12	-0.04
26 0.02 32 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of Am-241 in Saturated Zone	23	0.02	31	0.02
37 -0.02 42 0.00				
Kd of Np-237 in Contaminated Zone	54	-0.01	54	0.00
18 0.03 25 0.00				
Kd of Np-237 in Unsaturated Zone 1	30	0.01	36	0.01
68 0.00 68 0.00				
Kd of Np-237 in Saturated Zone	14	0.02	22	0.02
17 0.03 24 0.00				
Kd of Th-229 in Contaminated Zone	49	0.01	49	0.01
47 0.01 52 0.00				
Kd of Th-229 in Unsaturated Zone 1	55	0.00	55	0.00
35 0.02 41 0.00				
Kd of Th-229 in Saturated Zone	32	0.01	37	0.01
15 0.04 21 0.00				
Kd of U-233 in Contaminated Zone	43	-0.01	43	-0.01
69 0.00 69 0.00				
Kd of U-233 in Unsaturated Zone 1	35	0.01	40	0.01
10 0.05 16 0.00				
Kd of U-233 in Saturated Zone	58	0.00	60	0.00
23 -0.03 29 0.00				
Meat transfer factor for Am	48	0.01	48	0.01
6 0.10 10 0.01				
Milk transfer factor for Am	13	0.02	21	0.02
33 -0.02 39 0.00				
Fish transfer factor for Am	15	0.02	23	0.02
65 0.00 66 0.00				
Plant transfer factor for Np	69	0.00	69	0.00
58 0.01 60 0.00				
Meat transfer factor for Np	17	0.02	25	0.02
45 0.01 51 0.00				
Milk transfer factor for Np	22	-0.02	30	-0.02
20 -0.03 27 0.00				
Fish transfer factor for Np	59	0.00	61	0.00
34 -0.02 40 0.00				
Plant transfer factor for Th	8	0.03	17	0.03
67 0.00 67 0.00				
Meat transfer factor for Th	11	-0.02	19	-0.02
39 0.01 44 0.00				
Milk transfer factor for Th	7	0.03	15	0.03
24 -0.03 30 0.00				
Fish transfer factor for Th	63	0.00	65	0.00
61 0.00 62 0.00				
Plant transfer factor for U	33	-0.01	38	-0.01
41 0.01 46 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Meat transfer factor for U	51	-0.01	51	-0.01
14 0.04 20 0.00				
Milk transfer factor for U	57	0.00	58	0.00
51 0.01 55 0.00				
Fish transfer factor for U	9	0.03	16	0.03
27 -0.02 33 0.00				
Density of cover material	53	0.01	53	0.00
21 0.03 28 0.00				
Kd of Co-60 in Contaminated Zone	27	0.02	34	0.02
43 0.01 48 0.00				
Kd of Co-60 in Unsaturated Zone 1	67	0.00	68	0.00
12 -0.04 18 0.00				
Kd of Co-60 in Saturated Zone	20	-0.02	28	-0.02
9 -0.05 15 0.00				
Kd of Cs-137 in Contaminated Zone	1	0.21	4	0.21
1 1.00 1 0.99				
Kd of Cs-137 in Unsaturated Zone 1	25	0.02	33	0.02
29 -0.02 35 0.00				
Kd of Cs-137 in Saturated Zone	34	-0.01	39	-0.01
63 0.00 64 0.00				
Kd of Sr-90 in Contaminated Zone	3	-0.04	11	-0.04
7 0.09 12 0.01				
Kd of Sr-90 in Unsaturated Zone 1	64	0.00	66	0.00
19 -0.03 26 0.00				
Kd of Sr-90 in Saturated Zone	12	-0.02	20	-0.02
55 0.01 57 0.00				
Milk transfer factor for Co	44	0.01	44	0.01
31 0.02 37 0.00				
Fish transfer factor for Co	29	-0.01	35	-0.01
38 -0.02 43 0.00				
Fish transfer factor for Cs	18	0.02	26	0.02
28 0.02 34 0.00				
Meat transfer factor for Sr	56	0.00	57	0.00
44 0.01 49 0.00				
Milk transfer factor for Sr	47	0.01	47	0.01
48 -0.01 53 0.00				
Fish transfer factor for Sr	6	0.03	14	0.03
40 -0.01 45 0.00				
<hr/>				
R-SQUARE		0.07		0.07
1.00 1.00				
<hr/>				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

-Rank is set to zero if the dose is zero or the correlation matrix is singular.

-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 8

Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Coefficients for peak Milk (WaterInd.) Dose				PCC	SRC
PRCC	Coefficient	=			
	SRRC				
	Repetition	=			
1	1			1	1
Description of Probabilistic Variable				Sig Coeff	Sig Coeff
Sig Coeff	Sig Coeff				
Density of contaminated zone				68 0.00	65 0.00
4 0.15 3 0.06					
Contaminated zone total porosity				41 -0.01	9 -0.07
43 -0.01 10 -0.01					
Contaminated zone hydraulic conductivity				24 0.02	32 0.02
41 0.02 45 0.00					
Contaminated zone b parameter				19 0.02	27 0.02
34 -0.02 38 0.00					
Evapotranspiration coefficient				2 0.08	8 0.08
2 0.83 2 0.08					
Irrigation				26 -0.02	10 -0.06
3 -0.24 5 -0.05					
Density of saturated zone				40 -0.01	2 -0.38
17 -0.03 4 -0.06					
Saturated zone total porosity				38 -0.01	6 -0.20
29 -0.02 7 -0.02					
Saturated zone effective porosity				39 -0.01	7 -0.20
12 -0.04 6 -0.04					
Saturated zone hydraulic conductivity				5 0.04	13 0.04
22 -0.03 27 0.00					
Saturated zone b parameter				61 0.00	62 0.00
60 0.01 62 0.00					
well pump intake depth				47 -0.01	47 -0.01
38 0.02 42 0.00					

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

well pumping rate	64	0.00	54	0.00
68 0.00 63 0.00				
Thickness of Unsaturated zone 1	62	0.00	63	0.00
55 0.01 58 0.00				
Density of Unsaturated zone 1	31	-0.01	1	-0.46
69 0.00 22 0.00				
Total Porosity of Unsaturated zone 1	36	-0.01	5	-0.20
59 0.01 9 0.01				
Effective Porosity of Unsaturated zone 1	28	-0.02	3	-0.27
65 0.00 12 0.00				
Hydraulic Conductivity of Unsaturated zone 1	49	-0.01	49	-0.01
52 0.01 55 0.00				
b Parameter of Unsaturated zone 1	10	0.03	19	0.02
36 0.02 40 0.00				
Mass loading for inhalation	37	0.01	41	0.01
8 -0.06 14 0.00				
Indoor dust filtration factor	16	-0.02	24	-0.02
53 -0.01 56 0.00				
External gamma shielding factor	59	0.00	60	0.00
35 -0.02 39 0.00				
Depth of soil mixing layer	21	-0.02	29	-0.02
61 -0.01 64 0.00				
Wet weight crop yield of fruit, grain and non-leafy vegetables	52	-0.01	52	-0.01
7 -0.06 13 0.00				
Weathering removal constant of all vegetation	67	0.00	68	0.00
57 0.01 60 0.00				
Wet foliar interception fraction of leafy vegetables	46	0.01	46	0.01
63 0.00 66 0.00				
Kd of Am-241 in Contaminated Zone	43	0.01	43	0.01
11 0.04 17 0.00				
Kd of Am-241 in Unsaturated Zone 1	4	-0.04	12	-0.04
51 0.01 54 0.00				
Kd of Am-241 in Saturated Zone	23	0.02	31	0.02
21 -0.03 26 0.00				
Kd of Np-237 in Contaminated Zone	53	-0.01	53	-0.01
62 0.01 65 0.00				
Kd of Np-237 in Unsaturated Zone 1	32	0.01	37	0.01
47 0.01 50 0.00				
Kd of Np-237 in Saturated Zone	13	0.02	21	0.02
42 0.02 46 0.00				
Kd of Th-229 in Contaminated Zone	48	0.01	48	0.01
58 -0.01 61 0.00				
Kd of Th-229 in Unsaturated Zone 1	55	0.00	56	0.00
14 0.04 19 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of Th-229 in Saturated Zone	30	0.01	36	0.01
15 0.03 20 0.00				
Kd of U-233 in Contaminated Zone	42	-0.01	42	-0.01
49 0.01 52 0.00				
Kd of U-233 in Unsaturated Zone 1	35	0.01	40	0.01
10 0.04 16 0.00				
Kd of U-233 in Saturated Zone	57	0.00	58	0.00
24 -0.03 29 0.00				
Meat transfer factor for Am	50	0.01	50	0.01
48 0.01 51 0.00				
Milk transfer factor for Am	11	0.03	18	0.02
6 0.07 11 0.00				
Fish transfer factor for Am	15	0.02	23	0.02
30 -0.02 34 0.00				
Plant transfer factor for Np	69	0.00	69	0.00
26 0.02 31 0.00				
Meat transfer factor for Np	17	0.02	25	0.02
54 -0.01 57 0.00				
Milk transfer factor for Np	22	-0.02	30	-0.02
32 -0.02 36 0.00				
Fish transfer factor for Np	56	0.00	57	0.00
37 -0.02 41 0.00				
Plant transfer factor for Th	9	0.03	17	0.03
50 0.01 53 0.00				
Meat transfer factor for Th	12	-0.03	20	-0.02
45 -0.01 48 0.00				
Milk transfer factor for Th	7	0.03	15	0.03
13 -0.04 18 0.00				
Fish transfer factor for Th	63	0.00	64	0.00
33 -0.02 37 0.00				
Plant transfer factor for U	33	-0.01	38	-0.01
46 0.01 49 0.00				
Meat transfer factor for U	51	-0.01	51	-0.01
16 0.03 21 0.00				
Milk transfer factor for U	58	0.00	59	0.00
67 0.00 69 0.00				
Fish transfer factor for U	8	0.03	16	0.03
23 -0.03 28 0.00				
Density of cover material	54	0.00	55	0.00
18 0.03 23 0.00				
Kd of Co-60 in Contaminated Zone	27	0.02	34	0.02
66 0.00 68 0.00				
Kd of Co-60 in Unsaturated Zone 1	66	0.00	67	0.00
9 -0.05 15 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of Co-60 in Saturated Zone	20	-0.02	28	-0.02
28 -0.02 33 0.00				
Kd of Cs-137 in Contaminated Zone	1	0.21	4	0.21
1 1.00 1 0.99				
Kd of Cs-137 in Unsaturated Zone 1	25	0.02	33	0.02
44 -0.01 47 0.00				
Kd of Cs-137 in Saturated Zone	34	-0.01	39	-0.01
56 -0.01 59 0.00				
Kd of Sr-90 in Contaminated Zone	3	-0.04	11	-0.04
5 0.13 8 0.01				
Kd of Sr-90 in Unsaturated Zone 1	65	0.00	66	0.00
39 -0.02 43 0.00				
Kd of Sr-90 in Saturated Zone	14	-0.02	22	-0.02
19 0.03 24 0.00				
Milk transfer factor for Co	45	0.01	45	0.01
20 0.03 25 0.00				
Fish transfer factor for Co	29	-0.01	35	-0.01
64 0.00 67 0.00				
Fish transfer factor for Cs	18	0.02	26	0.02
40 0.02 44 0.00				
Meat transfer factor for Sr	60	0.00	61	0.00
27 -0.02 32 0.00				
Milk transfer factor for Sr	44	0.01	44	0.01
25 0.03 30 0.00				
Fish transfer factor for Sr	6	0.03	14	0.03
31 -0.02 35 0.00				
<hr/>				
R-SQUARE		0.07		0.07
1.00 1.00				

-Rank is set to zero if the dose is zero or the correlation matrix is singular.

-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 9
 Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
 Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Coefficients for peak Soil Ingestion Dose
 Coefficient =
 PRCC SRRC

PCC SRC

Repetition =				1	1
1	1				
Description of Probabilistic Variable				Sig	Coeff
Sig	Coeff	Sig	Coeff		
Density of contaminated zone				56	0.00
4	0.19	3	0.06	14	-0.03
Contaminated zone total porosity				32	-0.01
14	0.04	10	0.01	6	-0.08
Contaminated zone hydraulic conductivity				64	0.00
30	0.02	32	0.00	66	0.00
Contaminated zone b parameter				57	0.00
68	0.00	68	0.00	59	0.00
Evapotranspiration coefficient				2	0.06
2	0.81	2	0.06	7	0.06
Irrigation				27	-0.02
3	-0.21	5	-0.03	8	-0.05
Density of saturated zone				65	0.00
15	-0.03	4	-0.05	9	0.05
Saturated zone total porosity				66	0.00
18	-0.03	8	-0.02	28	-0.02
Saturated zone effective porosity				52	0.00
11	-0.04	6	-0.03	5	0.09
Saturated zone hydraulic conductivity				8	0.03
8	0.05	16	0.00	17	0.03
Saturated zone b parameter				67	0.00
37	0.02	39	0.00	67	0.00
well pump intake depth				69	0.00
67	0.00	67	0.00	69	0.00
well pumping rate				54	0.00
20	-0.03	13	0.00	33	0.01
Thickness of Unsaturated zone 1				10	-0.03
64	0.00	64	0.00	18	-0.03
Density of Unsaturated zone 1				14	-0.02
38	-0.02	7	-0.02	1	-0.74
Total Porosity of Unsaturated zone 1				17	-0.02
29	-0.02	9	-0.02	3	-0.37
Effective Porosity of Unsaturated zone 1				13	-0.02
52	-0.01	11	-0.01	2	-0.39
Hydraulic Conductivity of Unsaturated zone 1				33	-0.01
46	0.02	47	0.00	38	-0.01

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

b Parameter of Unsaturated zone 1	42	0.01	47	0.01
34 -0.02 36 0.00				
Mass loading for inhalation	28	-0.01	34	-0.01
61 0.01 61 0.00				
Indoor dust filtration factor	34	-0.01	39	-0.01
41 0.02 42 0.00				
External gamma shielding factor	39	0.01	44	0.01
28 0.02 31 0.00				
Depth of soil mixing layer	53	0.00	57	0.00
60 0.01 60 0.00				
wet weight crop yield of fruit, grain and non-leafy vegetables	35	-0.01	40	-0.01
69 0.00 69 0.00				
weathering removal constant of all vegetation	49	-0.01	55	-0.01
32 0.02 34 0.00				
wet foliar interception fraction of leafy vegetables	37	0.01	42	0.01
53 -0.01 53 0.00				
Kd of Am-241 in Contaminated Zone	1	0.12	4	0.12
1 1.00 1 1.00				
Kd of Am-241 in Unsaturated Zone 1	4	0.03	11	0.03
7 0.05 15 0.00				
Kd of Am-241 in Saturated Zone	12	-0.03	20	-0.03
19 0.03 23 0.00				
Kd of Np-237 in Contaminated Zone	58	0.00	60	0.00
5 0.17 12 0.01				
Kd of Np-237 in Unsaturated Zone 1	38	-0.01	43	-0.01
55 0.01 55 0.00				
Kd of Np-237 in Saturated Zone	5	0.03	12	0.03
25 0.02 28 0.00				
Kd of Th-229 in Contaminated Zone	16	-0.02	22	-0.02
65 0.00 65 0.00				
Kd of Th-229 in Unsaturated Zone 1	59	0.00	61	0.00
9 -0.04 17 0.00				
Kd of Th-229 in Saturated Zone	15	0.02	21	0.02
54 0.01 54 0.00				
Kd of U-233 in Contaminated Zone	9	0.03	16	0.03
44 -0.02 45 0.00				
Kd of U-233 in Unsaturated Zone 1	31	0.01	37	0.01
6 0.06 14 0.00				
Kd of U-233 in Saturated Zone	41	0.01	46	0.01
16 0.03 21 0.00				
Meat transfer factor for Am	22	0.02	27	0.02
63 0.00 63 0.00				
Milk transfer factor for Am	47	0.01	52	0.01
27 0.02 30 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Fish transfer factor for Am	68	0.00	68	0.00
36 0.02 38 0.00				
Plant transfer factor for Np	6	0.03	13	0.03
58 0.01 58 0.00				
Meat transfer factor for Np	60	0.00	62	0.00
43 0.02 44 0.00				
Milk transfer factor for Np	48	0.01	53	0.01
17 -0.03 22 0.00				
Fish transfer factor for Np	36	-0.01	41	-0.01
59 0.01 59 0.00				
Plant transfer factor for Th	19	-0.02	24	-0.02
56 0.01 56 0.00				
Meat transfer factor for Th	30	-0.01	36	-0.01
10 -0.04 18 0.00				
Milk transfer factor for Th	40	-0.01	45	-0.01
50 -0.01 51 0.00				
Fish transfer factor for Th	20	0.02	25	0.02
33 -0.02 35 0.00				
Plant transfer factor for U	24	-0.02	30	-0.02
13 0.04 20 0.00				
Meat transfer factor for U	55	0.00	58	0.00
51 0.01 52 0.00				
Milk transfer factor for U	44	0.01	49	0.01
31 -0.02 33 0.00				
Fish transfer factor for U	7	-0.03	15	-0.03
47 0.01 48 0.00				
Density of cover material	26	0.02	32	0.02
57 0.01 57 0.00				
Kd of Co-60 in Contaminated Zone	29	-0.01	35	-0.01
21 0.03 24 0.00				
Kd of Co-60 in Unsaturated Zone 1	21	0.02	26	0.02
40 -0.02 41 0.00				
Kd of Co-60 in Saturated Zone	23	0.02	29	0.02
22 0.03 25 0.00				
Kd of Cs-137 in Contaminated Zone	63	0.00	65	0.00
23 0.03 26 0.00				
Kd of Cs-137 in Unsaturated Zone 1	25	-0.02	31	-0.02
42 -0.02 43 0.00				
Kd of Cs-137 in Saturated Zone	50	-0.01	54	-0.01
66 0.00 66 0.00				
Kd of Sr-90 in Contaminated Zone	62	0.00	64	0.00
26 0.02 29 0.00				
Kd of Sr-90 in Unsaturated Zone 1	61	0.00	63	0.00
45 0.02 46 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of Sr-90 in Saturated Zone	18	-0.02	23	-0.02
39 0.02 40 0.00				
Milk transfer factor for Co	46	0.01	51	0.01
49 -0.01 50 0.00				
Fish transfer factor for Co	43	-0.01	48	-0.01
12 0.04 19 0.00				
Fish transfer factor for Cs	45	-0.01	50	-0.01
48 -0.01 49 0.00				
Meat transfer factor for Sr	11	0.03	19	0.03
24 0.03 27 0.00				
Milk transfer factor for Sr	51	-0.01	56	-0.01
62 -0.01 62 0.00				
Fish transfer factor for Sr	3	0.04	10	0.04
35 0.02 37 0.00				

R-SQUARE	0.04	0.04
1.00 1.00		

-Rank is set to zero if the dose is zero or the correlation matrix is singular.

-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 10

Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Coefficients for peak Water Ingestion Dose

PRCC	Coefficient =	PCC	SRC
1	SRRC	1	1
1	Repetition =		
	1		

Description of Probabilistic variable	Sig	Coeff	Sig	Coeff
Sig Coeff Sig Coeff				
Density of contaminated zone	60	0.00	24	0.02
69 0.00 65 0.00				
Contaminated zone total porosity	67	0.00	57	0.00
65 0.00 39 -0.02				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP									
Contaminated zone hydraulic conductivity	55	0.00	59	0.00					
44 -0.01 51 -0.01									
Contaminated zone b parameter	19	0.02	23	0.02					
41 0.01 48 0.01									
Evapotranspiration coefficient	9	-0.03	14	-0.03					
8 -0.14 11 -0.09									
Irrigation	53	0.00	40	-0.01					
27 0.03 17 0.06									
Density of saturated zone	24	0.02	1	0.69					
56 -0.01 7 -0.17									
Saturated zone total porosity	15	0.03	2	0.44					
59 -0.01 13 -0.08									
Saturated zone effective porosity	30	0.02	3	0.27					
61 -0.01 15 -0.07									
Saturated zone hydraulic conductivity	1	0.14	4	0.14					
2 0.44 2 0.32									
Saturated zone b parameter	42	-0.01	47	-0.01					
45 0.01 52 0.01									
well pump intake depth	65	0.00	67	0.00					
29 0.02 36 0.02									
well pumping rate	46	-0.01	30	-0.02					
46 -0.01 27 -0.03									
Thickness of Unsaturated zone 1	2	-0.09	6	-0.09					
3 -0.39 3 -0.28									
Density of Unsaturated zone 1	61	0.00	7	0.07					
62 0.01 9 0.13									
Total Porosity of Unsaturated zone 1	68	0.00	50	-0.01					
34 0.02 6 0.18									
Effective Porosity of Unsaturated zone 1	47	0.01	5	0.09					
64 0.00 21 -0.04									
Hydraulic Conductivity of Unsaturated zone 1	59	0.00	63	0.00					
47 0.01 53 0.01									
b Parameter of Unsaturated zone 1	14	-0.03	19	-0.03					
58 0.01 63 0.00									
Mass loading for inhalation	17	-0.02	20	-0.02					
68 0.00 69 0.00									
Indoor dust filtration factor	31	0.01	37	0.01					
30 0.02 37 0.02									
External gamma shielding factor	5	0.04	10	0.04					
17 0.05 24 0.03									
Depth of soil mixing layer	13	-0.03	18	-0.03					
39 0.01 46 0.01									
wet weight crop yield of fruit, grain and non-leafy vegetables	69	0.00	69	0.00					
20 -0.04 28 -0.03									

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

weathering removal constant of all vegetation	4	-0.05	9	-0.05
55 0.01 61 0.01				
wet foliar interception fraction of leafy vegetables	16	0.02	21	0.02
54 0.01 60 0.01				
Kd of Am-241 in Contaminated Zone	45	-0.01	51	-0.01
13 -0.07 19 -0.05				
Kd of Am-241 in Unsaturated Zone 1	48	0.00	52	0.00
11 -0.10 16 -0.07				
Kd of Am-241 in Saturated Zone	58	0.00	62	0.00
10 -0.11 14 -0.07				
Kd of Np-237 in Contaminated Zone	7	0.04	12	0.04
18 -0.05 25 -0.03				
Kd of Np-237 in Unsaturated Zone 1	37	-0.01	42	-0.01
5 -0.32 5 -0.22				
Kd of Np-237 in Saturated Zone	57	0.00	61	0.00
6 -0.25 8 -0.17				
Kd of Th-229 in Contaminated Zone	38	0.01	43	0.01
15 -0.06 22 -0.04				
Kd of Th-229 in Unsaturated Zone 1	52	0.00	56	0.00
42 -0.01 49 -0.01				
Kd of Th-229 in Saturated Zone	39	-0.01	44	-0.01
50 0.01 56 0.01				
Kd of U-233 in Contaminated Zone	64	0.00	66	0.00
33 -0.02 41 -0.01				
Kd of U-233 in Unsaturated Zone 1	50	0.00	54	0.00
32 -0.02 40 -0.01				
Kd of U-233 in Saturated Zone	21	0.02	26	0.02
57 -0.01 62 0.00				
Meat transfer factor for Am	22	-0.02	27	-0.02
40 -0.01 47 -0.01				
Milk transfer factor for Am	49	0.00	53	0.00
28 0.03 35 0.02				
Fish transfer factor for Am	11	-0.03	16	-0.03
26 0.03 34 0.02				
Plant transfer factor for Np	6	0.04	11	0.04
35 0.02 42 0.01				
Meat transfer factor for Np	62	0.00	64	0.00
14 0.07 20 0.05				
Milk transfer factor for Np	10	-0.03	15	-0.03
66 0.00 67 0.00				
Fish transfer factor for Np	51	0.00	55	0.00
31 0.02 38 0.02				
Plant transfer factor for Th	3	0.07	8	0.07
23 0.03 31 0.02				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Meat transfer factor for Th	63	0.00	65	0.00
25 -0.03 33 -0.02				
Milk transfer factor for Th	34	0.01	38	0.01
21 0.04 29 0.03				
Fish transfer factor for Th	56	0.00	60	0.00
19 0.04 26 0.03				
Plant transfer factor for U	18	-0.02	22	-0.02
38 -0.01 45 -0.01				
Meat transfer factor for U	28	0.02	33	0.02
16 0.05 23 0.03				
Milk transfer factor for U	25	-0.02	29	-0.02
51 0.01 57 0.01				
Fish transfer factor for U	66	0.00	68	0.00
24 0.03 32 0.02				
Density of cover material	54	0.00	58	0.00
37 0.02 44 0.01				
Kd of Co-60 in Contaminated Zone	43	-0.01	48	-0.01
43 -0.01 50 -0.01				
Kd of Co-60 in Unsaturated Zone 1	35	-0.01	39	-0.01
22 -0.04 30 -0.02				
Kd of Co-60 in Saturated Zone	29	-0.02	34	-0.02
63 0.00 66 0.00				
Kd of Cs-137 in Contaminated Zone	36	-0.01	41	-0.01
67 0.00 68 0.00				
Kd of Cs-137 in Unsaturated Zone 1	41	-0.01	46	-0.01
9 -0.13 12 -0.09				
Kd of Cs-137 in Saturated Zone	32	-0.01	35	-0.01
12 -0.08 18 -0.06				
Kd of Sr-90 in Contaminated Zone	33	-0.01	36	-0.01
7 -0.17 10 -0.11				
Kd of Sr-90 in Unsaturated Zone 1	12	-0.03	17	-0.03
1 -0.56 1 -0.44				
Kd of Sr-90 in Saturated Zone	8	-0.03	13	-0.03
4 -0.37 4 -0.26				
Milk transfer factor for Co	23	-0.02	28	-0.02
52 -0.01 58 -0.01				
Fish transfer factor for Co	27	-0.02	32	-0.02
49 -0.01 55 -0.01				
Fish transfer factor for Cs	44	0.01	49	0.01
48 0.01 54 0.01				
Meat transfer factor for Sr	40	0.01	45	0.01
53 -0.01 59 -0.01				
Milk transfer factor for Sr	20	0.02	25	0.02
60 0.01 64 0.00				

Fish transfer factor for Sr 26 0.02 31 0.02
36 0.02 43 0.01

R-SQUARE		0.05	0.05
0.58	0.58		

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 11
Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Coefficients for peak Fish Ingestion Dose		PCC	SRC
PRCC	Coefficient =		
	SRRC		
	Repetition =	1	1
1	1		

Description of Probabilistic Variable				Sig	Coeff	Sig	Coeff
Sig	Coeff	Sig	Coeff				
Density of contaminated zone		64	0.00	18	-0.02		
64 0.00 52 0.01							
Contaminated zone total porosity		41	-0.01	9	-0.05		
61 0.00 48 -0.01							
Contaminated zone hydraulic conductivity		33	-0.01	39	-0.01		
48 -0.01 56 -0.01							
Contaminated zone b parameter		32	-0.01	38	-0.01		
42 0.02 49 0.01							
Evapotranspiration coefficient		65	0.00	65	0.00		
10 -0.12 12 -0.09							
Irrigation		39	0.01	16	0.02		
49 0.01 29 0.02							
Density of saturated zone		8	0.03	1	0.91		
69 0.00 65 0.00							
Saturated zone total porosity		7	0.03	2	0.51		
68 0.00 43 0.01							

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Saturated zone effective porosity	10	0.02	3	0.41
60 0.00 25 0.03				
Saturated zone hydraulic conductivity	24	-0.01	30	-0.01
62 0.00 66 0.00				
Saturated zone b parameter	58	0.00	60	0.00
54 0.01 60 0.01				
well pump intake depth	3	-0.04	11	-0.04
14 -0.08 16 -0.05				
well pumping rate	22	-0.01	10	-0.04
35 0.02 18 0.05				
Thickness of Unsaturated zone 1	2	-0.06	7	-0.06
2 -0.42 2 -0.32				
Density of Unsaturated zone 1	56	0.00	4	-0.14
66 0.00 26 -0.03				
Total Porosity of Unsaturated zone 1	51	-0.01	5	-0.09
55 0.01 10 0.10				
Effective Porosity of Unsaturated zone 1	63	0.00	8	-0.06
53 -0.01 9 -0.10				
Hydraulic Conductivity of Unsaturated zone 1	69	0.00	69	0.00
36 0.02 41 0.01				
b Parameter of Unsaturated zone 1	49	-0.01	53	-0.01
40 0.02 46 0.01				
Mass loading for inhalation	67	0.00	67	0.00
59 0.00 64 0.00				
Indoor dust filtration factor	4	-0.04	12	-0.04
27 0.03 33 0.02				
External gamma shielding factor	40	0.01	45	0.01
19 0.05 22 0.03				
Depth of soil mixing layer	6	0.03	14	0.03
50 0.01 57 0.01				
wet weight crop yield of fruit, grain and non-leafy vegetables	21	-0.01	28	-0.01
25 -0.03 31 -0.02				
weathering removal constant of all vegetation	38	0.01	44	0.01
39 0.02 45 0.01				
wet foliar interception fraction of leafy vegetables	34	-0.01	40	-0.01
65 0.00 68 0.00				
Kd of Am-241 in Contaminated Zone	53	0.00	56	0.00
15 -0.07 17 -0.05				
Kd of Am-241 in Unsaturated Zone 1	29	0.01	35	0.01
11 -0.10 13 -0.07				
Kd of Am-241 in Saturated Zone	44	-0.01	48	-0.01
12 -0.10 14 -0.07				
Kd of Np-237 in Contaminated Zone	57	0.00	59	0.00
17 -0.06 20 -0.04				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of Np-237 in Unsaturated Zone 1	15	0.02	22	0.02
4 -0.28 4 -0.20				
Kd of Np-237 in Saturated Zone	52	0.00	55	0.00
5 -0.24 5 -0.17				
Kd of Th-229 in Contaminated Zone	68	0.00	68	0.00
20 -0.05 23 -0.03				
Kd of Th-229 in Unsaturated Zone 1	46	-0.01	50	-0.01
37 -0.02 42 -0.01				
Kd of Th-229 in Saturated Zone	25	-0.01	31	-0.01
41 0.02 47 0.01				
Kd of U-233 in Contaminated Zone	5	0.03	13	0.03
34 -0.02 40 -0.01				
Kd of U-233 in Unsaturated Zone 1	66	0.00	66	0.00
33 -0.02 39 -0.01				
Kd of U-233 in Saturated Zone	61	0.00	63	0.00
46 -0.01 54 -0.01				
Meat transfer factor for Am	62	0.00	64	0.00
56 0.01 61 0.00				
Milk transfer factor for Am	31	0.01	37	0.01
23 0.04 28 0.02				
Fish transfer factor for Am	18	-0.02	25	-0.02
28 0.03 34 0.02				
Plant transfer factor for Np	42	-0.01	46	-0.01
44 0.01 51 0.01				
Meat transfer factor for Np	14	-0.02	21	-0.02
16 0.06 19 0.04				
Milk transfer factor for Np	16	-0.02	23	-0.02
58 0.00 63 0.00				
Fish transfer factor for Np	12	-0.02	19	-0.02
8 0.14 8 0.10				
Plant transfer factor for Th	55	0.00	58	0.00
22 0.04 27 0.03				
Meat transfer factor for Th	13	-0.02	20	-0.02
21 -0.04 24 -0.03				
Milk transfer factor for Th	48	0.01	52	0.01
30 0.02 36 0.02				
Fish transfer factor for Th	45	-0.01	49	-0.01
18 0.05 21 0.04				
Plant transfer factor for U	9	-0.03	15	-0.03
43 -0.01 50 -0.01				
Meat transfer factor for U	36	-0.01	42	-0.01
24 0.03 30 0.02				
Milk transfer factor for U	30	-0.01	36	-0.01
51 0.01 58 0.01				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Fish transfer factor for U	11	-0.02	17	-0.02
26 0.03 32 0.02				
Density of cover material	19	-0.02	26	-0.02
31 0.02 37 0.02				
Kd of Co-60 in Contaminated Zone	60	0.00	62	0.00
38 -0.02 44 -0.01				
Kd of Co-60 in Unsaturated Zone 1	43	-0.01	47	-0.01
29 -0.02 35 -0.02				
Kd of Co-60 in Saturated Zone	47	-0.01	51	-0.01
63 0.00 67 0.00				
Kd of Cs-137 in Contaminated Zone	26	-0.01	32	-0.01
47 0.01 55 0.01				
Kd of Cs-137 in Unsaturated Zone 1	17	-0.02	24	-0.02
6 -0.18 6 -0.13				
Kd of Cs-137 in Saturated Zone	28	-0.01	34	-0.01
9 -0.13 11 -0.09				
Kd of Sr-90 in Contaminated Zone	23	-0.01	29	-0.01
7 -0.16 7 -0.11				
Kd of Sr-90 in Unsaturated Zone 1	27	-0.01	33	-0.01
1 -0.54 1 -0.44				
Kd of Sr-90 in Saturated Zone	37	-0.01	43	-0.01
3 -0.35 3 -0.25				
Milk transfer factor for Co	35	0.01	41	0.01
67 0.00 69 0.00				
Fish transfer factor for Co	54	0.00	57	0.00
52 -0.01 59 -0.01				
Fish transfer factor for Cs	1	0.08	6	0.08
32 0.02 38 0.01				
Meat transfer factor for Sr	59	0.00	61	0.00
45 -0.01 53 -0.01				
Milk transfer factor for Sr	50	-0.01	54	-0.01
57 0.00 62 0.00				
Fish transfer factor for Sr	20	0.01	27	0.01
13 0.10 15 0.07				
<hr/>				
R-SQUARE				
0.53 0.53		0.02		0.02
<hr/>				

-Rank is set to zero if the dose is zero or the correlation matrix is singular.

-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 12

Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Coefficients for peak Radon (WaterDep.) Dose				PCC	SRC
PRCC	Coefficient	=			
	SRRC				
	Repetition	=			
1	1			1	1
Description of Probabilistic Variable				Sig Coeff	Sig Coeff
Sig Coeff	Sig Coeff				
Density of contaminated zone	0 0.00	0 0.00		0 0.00	0 0.00
Contaminated zone total porosity	0 0.00	0 0.00		0 0.00	0 0.00
Contaminated zone hydraulic conductivity	0 0.00	0 0.00		0 0.00	0 0.00
Contaminated zone b parameter	0 0.00	0 0.00		0 0.00	0 0.00
Evapotranspiration coefficient	0 0.00	0 0.00		0 0.00	0 0.00
Irrigation	0 0.00	0 0.00		0 0.00	0 0.00
Density of saturated zone	0 0.00	0 0.00		0 0.00	0 0.00
Saturated zone total porosity	0 0.00	0 0.00		0 0.00	0 0.00
Saturated zone effective porosity	0 0.00	0 0.00		0 0.00	0 0.00
Saturated zone hydraulic conductivity	0 0.00	0 0.00		0 0.00	0 0.00
Saturated zone b parameter	0 0.00	0 0.00		0 0.00	0 0.00
well pump intake depth	0 0.00	0 0.00		0 0.00	0 0.00
well pumping rate	0 0.00	0 0.00		0 0.00	0 0.00
Thickness of Unsaturated zone 1	0 0.00	0 0.00		0 0.00	0 0.00

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP				
Density of Unsaturated zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Total Porosity of Unsaturated zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Effective Porosity of Unsaturated zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Hydraulic Conductivity of Unsaturated zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
b Parameter of Unsaturated zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Mass loading for inhalation	0	0.00	0	0.00
0 0.00 0 0.00				
Indoor dust filtration factor	0	0.00	0	0.00
0 0.00 0 0.00				
External gamma shielding factor	0	0.00	0	0.00
0 0.00 0 0.00				
Depth of soil mixing layer	0	0.00	0	0.00
0 0.00 0 0.00				
wet weight crop yield of fruit, grain and non-leafy vegetables	0	0.00	0	0.00
0 0.00 0 0.00				
weathering removal constant of all vegetation	0	0.00	0	0.00
0 0.00 0 0.00				
wet foliar interception fraction of leafy vegetables	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Am-241 in Contaminated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Am-241 in Unsaturated Zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Am-241 in Saturated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Np-237 in Contaminated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Np-237 in Unsaturated Zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Np-237 in Saturated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Th-229 in Contaminated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Th-229 in Unsaturated Zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Th-229 in Saturated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of U-233 in Contaminated Zone	0	0.00	0	0.00
0 0.00 0 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of U-233 in Unsaturated Zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of U-233 in Saturated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Meat transfer factor for Am	0	0.00	0	0.00
0 0.00 0 0.00				
Milk transfer factor for Am	0	0.00	0	0.00
0 0.00 0 0.00				
Fish transfer factor for Am	0	0.00	0	0.00
0 0.00 0 0.00				
Plant transfer factor for Np	0	0.00	0	0.00
0 0.00 0 0.00				
Meat transfer factor for Np	0	0.00	0	0.00
0 0.00 0 0.00				
Milk transfer factor for Np	0	0.00	0	0.00
0 0.00 0 0.00				
Fish transfer factor for Np	0	0.00	0	0.00
0 0.00 0 0.00				
Plant transfer factor for Th	0	0.00	0	0.00
0 0.00 0 0.00				
Meat transfer factor for Th	0	0.00	0	0.00
0 0.00 0 0.00				
Milk transfer factor for Th	0	0.00	0	0.00
0 0.00 0 0.00				
Fish transfer factor for Th	0	0.00	0	0.00
0 0.00 0 0.00				
Plant transfer factor for U	0	0.00	0	0.00
0 0.00 0 0.00				
Meat transfer factor for U	0	0.00	0	0.00
0 0.00 0 0.00				
Milk transfer factor for U	0	0.00	0	0.00
0 0.00 0 0.00				
Fish transfer factor for U	0	0.00	0	0.00
0 0.00 0 0.00				
Density of cover material	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Co-60 in Contaminated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Co-60 in Unsaturated Zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Co-60 in Saturated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Cs-137 in Contaminated Zone	0	0.00	0	0.00
0 0.00 0 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of Cs-137 in Unsaturated Zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Cs-137 in Saturated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Sr-90 in Contaminated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Sr-90 in Unsaturated Zone 1	0	0.00	0	0.00
0 0.00 0 0.00				
Kd of Sr-90 in Saturated Zone	0	0.00	0	0.00
0 0.00 0 0.00				
Milk transfer factor for Co	0	0.00	0	0.00
0 0.00 0 0.00				
Fish transfer factor for Co	0	0.00	0	0.00
0 0.00 0 0.00				
Fish transfer factor for Cs	0	0.00	0	0.00
0 0.00 0 0.00				
Meat transfer factor for Sr	0	0.00	0	0.00
0 0.00 0 0.00				
Milk transfer factor for Sr	0	0.00	0	0.00
0 0.00 0 0.00				
Fish transfer factor for Sr	0	0.00	0	0.00
0 0.00 0 0.00				
<hr/>				
R-SQUARE				
0.00 0.00			0.00	0.00
<hr/>				

-Rank is set to zero if the dose is zero or the correlation matrix is singular.

-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 13

Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Coefficients for peak Plant (WaterDep.) Dose					
PRCC	Coefficient =			PCC	SRC
	SRRC				
	Repetition =				
1	1			1	1
<hr/>					

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Description of Probabilistic Variable				Sig	Coeff	Sig	Coeff
Sig	Coeff	Sig	Coeff				
Density of contaminated zone				66	0.00	45	-0.01
68	0.00	63	0.00				
Contaminated zone total porosity				59	0.00	18	-0.03
66	0.00	40	-0.01				
Contaminated zone hydraulic conductivity				65	0.00	68	0.00
44	-0.01	51	-0.01				
Contaminated zone b parameter				14	0.02	20	0.02
43	0.01	50	0.01				
Evapotranspiration coefficient				11	-0.03	16	-0.03
9	-0.13	13	-0.09				
Irrigation				68	0.00	66	0.00
21	0.05	11	0.10				
Density of saturated zone				49	0.01	5	0.20
59	-0.01	9	-0.12				
Saturated zone total porosity				33	0.01	4	0.21
63	0.00	23	-0.04				
Saturated zone effective porosity				67	0.00	28	0.02
61	0.00	19	-0.05				
Saturated zone hydraulic conductivity				1	0.11	6	0.11
2	0.43	2	0.31				
Saturated zone b parameter				25	-0.01	30	-0.01
49	0.01	56	0.01				
well pump intake depth				24	-0.02	29	-0.02
31	0.03	37	0.02				
well pumping rate				58	0.00	34	-0.01
55	-0.01	30	-0.02				
Thickness of Unsaturated zone 1				3	-0.06	8	-0.06
3	-0.40	3	-0.28				
Density of Unsaturated zone 1				23	0.02	1	0.51
57	0.01	7	0.17				
Total Porosity of Unsaturated zone 1				31	0.01	3	0.22
37	0.02	6	0.20				
Effective Porosity of Unsaturated zone 1				20	0.02	2	0.31
67	0.00	38	-0.02				
Hydraulic Conductivity of Unsaturated zone 1				60	0.00	62	0.00
46	0.01	53	0.01				
b Parameter of Unsaturated zone 1				13	-0.03	19	-0.03
41	0.02	48	0.01				
Mass loading for inhalation				9	-0.03	14	-0.03
65	0.00	68	0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Indoor dust filtration factor	47	0.01	52	0.01
32 0.02 39 0.02				
External gamma shielding factor	4	0.05	9	0.05
20 0.05 26 0.03				
Depth of soil mixing layer	10	-0.03	15	-0.03
48 0.01 55 0.01				
Wet weight crop yield of fruit, grain and non-leafy vegetables	51	-0.01	55	-0.01
14 -0.09 18 -0.06				
Weathering removal constant of all vegetation	2	-0.07	7	-0.07
10 -0.12 14 -0.08				
Wet foliar interception fraction of leafy vegetables	6	0.04	11	0.04
17 0.07 22 0.04				
Kd of Am-241 in Contaminated Zone	63	0.00	65	0.00
16 -0.07 21 -0.05				
Kd of Am-241 in Unsaturated Zone 1	61	0.00	63	0.00
12 -0.10 16 -0.06				
Kd of Am-241 in Saturated Zone	43	0.01	49	0.01
11 -0.11 15 -0.07				
Kd of Np-237 in Contaminated Zone	35	0.01	39	0.01
23 -0.04 28 -0.02				
Kd of Np-237 in Unsaturated Zone 1	36	-0.01	40	-0.01
5 -0.32 5 -0.22				
Kd of Np-237 in Saturated Zone	46	0.01	51	0.01
6 -0.24 8 -0.16				
Kd of Th-229 in Contaminated Zone	34	0.01	38	0.01
18 -0.05 24 -0.03				
Kd of Th-229 in Unsaturated Zone 1	62	0.00	64	0.00
42 -0.02 49 -0.01				
Kd of Th-229 in Saturated Zone	55	-0.01	59	0.00
50 0.01 57 0.01				
Kd of U-233 in Contaminated Zone	45	0.01	50	0.01
34 -0.02 42 -0.01				
Kd of U-233 in Unsaturated Zone 1	64	0.00	67	0.00
33 -0.02 41 -0.01				
Kd of U-233 in Saturated Zone	48	0.01	53	0.01
56 -0.01 62 -0.01				
Meat transfer factor for Am	8	-0.03	13	-0.03
47 -0.01 54 -0.01				
Milk transfer factor for Am	52	-0.01	56	-0.01
30 0.03 36 0.02				
Fish transfer factor for Am	17	-0.02	23	-0.02
27 0.03 33 0.02				
Plant transfer factor for Np	7	0.03	12	0.03
36 0.02 44 0.01				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Meat transfer factor for Np	54	-0.01	58	-0.01
15 0.07 20 0.05				
Milk transfer factor for Np	12	-0.03	17	-0.03
64 0.00 67 0.00				
Fish transfer factor for Np	69	0.00	69	0.00
35 0.02 43 0.01				
Plant transfer factor for Th	5	0.04	10	0.04
28 0.03 34 0.02				
Meat transfer factor for Th	18	0.02	24	0.02
29 -0.03 35 -0.02				
Milk transfer factor for Th	29	0.01	35	0.01
24 0.03 29 0.02				
Fish transfer factor for Th	53	-0.01	57	-0.01
22 0.05 27 0.03				
Plant transfer factor for U	22	-0.02	26	-0.02
39 -0.02 46 -0.01				
Meat transfer factor for U	26	0.01	31	0.01
19 0.05 25 0.03				
Milk transfer factor for U	16	-0.02	22	-0.02
52 0.01 59 0.01				
Fish transfer factor for U	32	0.01	37	0.01
25 0.03 31 0.02				
Density of cover material	39	0.01	43	0.01
40 0.02 47 0.01				
Kd of Co-60 in Contaminated Zone	56	0.00	60	0.00
38 -0.02 45 -0.01				
Kd of Co-60 in Unsaturated Zone 1	27	-0.01	32	-0.01
26 -0.03 32 -0.02				
Kd of Co-60 in Saturated Zone	30	-0.01	36	-0.01
62 0.00 66 0.00				
Kd of Cs-137 in Contaminated Zone	40	-0.01	44	-0.01
69 0.00 69 0.00				
Kd of Cs-137 in Unsaturated Zone 1	57	0.00	61	0.00
8 -0.14 12 -0.09				
Kd of Cs-137 in Saturated Zone	50	-0.01	54	-0.01
13 -0.09 17 -0.06				
Kd of Sr-90 in Contaminated Zone	37	-0.01	41	-0.01
7 -0.17 10 -0.11				
Kd of Sr-90 in Unsaturated Zone 1	19	-0.02	25	-0.02
1 -0.57 1 -0.44				
Kd of Sr-90 in Saturated Zone	15	-0.02	21	-0.02
4 -0.38 4 -0.26				
Milk transfer factor for Co	21	-0.02	27	-0.02
54 -0.01 61 -0.01				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Fish transfer factor for Co	28	-0.01	33	-0.01
45 -0.01 52 -0.01				
Fish transfer factor for Cs	44	0.01	48	0.01
51 0.01 58 0.01				
Meat transfer factor for Sr	42	0.01	47	0.01
53 -0.01 60 -0.01				
Milk transfer factor for Sr	38	0.01	42	0.01
60 0.01 65 0.00				
Fish transfer factor for Sr	41	0.01	46	0.01
58 0.01 64 0.00				
<hr/>				
R-SQUARE		0.04		0.04
0.58 0.58				
<hr/>				

-Rank is set to zero if the dose is zero or the correlation matrix is singular.

-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 14

Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Coefficients for peak Meat (WaterDep.) Dose				PCC	SRC
PRCC	Coefficient =			1	1
	SRRC				
1	Repetition =				
	1				
<hr/>					
Description of Probabilistic Variable				Sig Coeff	Sig Coeff
Sig Coeff	Sig Coeff				
<hr/>					
Density of contaminated zone	69	0.00	61	0.00	
65 0.00 37 -0.02					
Contaminated zone total porosity	62	0.00	26	-0.02	
54 -0.01 19 -0.04					
Contaminated zone hydraulic conductivity	53	-0.01	54	-0.01	
37 -0.02 45 -0.01					
Contaminated zone b parameter	10	0.03	18	0.03	
61 0.01 63 0.00					

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Evapotranspiration coefficient	38	-0.01	41	-0.01
11 -0.13 16 -0.08				
Irrigation	18	-0.02	9	-0.07
17 0.05 13 0.10				
Density of saturated zone	31	0.02	2	0.52
50 -0.01 7 -0.21				
Saturated zone total porosity	19	0.02	3	0.32
53 -0.01 12 -0.10				
Saturated zone effective porosity	40	0.01	6	0.22
60 -0.01 17 -0.08				
Saturated zone hydraulic conductivity	1	0.14	7	0.14
4 0.38 6 0.26				
Saturated zone b parameter	20	-0.02	27	-0.02
39 0.02 47 0.01				
well pump intake depth	8	-0.04	16	-0.04
26 0.04 34 0.02				
well pumping rate	39	0.01	13	0.04
40 -0.02 20 -0.04				
Thickness of Unsaturated zone 1	2	-0.09	8	-0.09
2 -0.42 4 -0.30				
Density of Unsaturated zone 1	32	0.02	1	0.52
42 0.02 2 0.35				
Total Porosity of Unsaturated zone 1	37	0.01	5	0.22
31 0.03 3 0.32				
Effective Porosity of Unsaturated zone 1	22	0.02	4	0.32
66 0.00 18 0.05				
Hydraulic Conductivity of Unsaturated zone 1	55	-0.01	56	-0.01
41 0.02 48 0.01				
b Parameter of Unsaturated zone 1	9	-0.04	17	-0.04
56 0.01 59 0.01				
Mass loading for inhalation	5	-0.04	12	-0.04
57 -0.01 60 -0.01				
Indoor dust filtration factor	50	-0.01	51	-0.01
35 0.03 43 0.02				
External gamma shielding factor	13	0.03	21	0.03
22 0.04 30 0.03				
Depth of soil mixing layer	17	-0.02	25	-0.02
64 0.01 66 0.00				
wet weight crop yield of fruit, grain and non-leafy vegetables	43	0.01	44	0.01
18 -0.05 26 -0.03				
weathering removal constant of all vegetation	3	-0.07	10	-0.07
20 -0.05 28 -0.03				
wet foliar interception fraction of leafy vegetables	11	0.03	20	0.03
52 0.01 57 0.01				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of Am-241 in Contaminated Zone	57	0.00	58	0.00
13 -0.06 22 -0.04				
Kd of Am-241 in Unsaturated Zone 1	48	0.01	49	0.01
21 -0.04 29 -0.03				
Kd of Am-241 in Saturated Zone	65	0.00	66	0.00
16 -0.05 25 -0.03				
Kd of Np-237 in Contaminated Zone	66	0.00	67	0.00
28 -0.03 36 -0.02				
Kd of Np-237 in Unsaturated Zone 1	44	0.01	45	0.01
5 -0.28 8 -0.18				
Kd of Np-237 in Saturated Zone	64	0.00	65	0.00
6 -0.19 9 -0.12				
Kd of Th-229 in Contaminated Zone	46	0.01	46	0.01
15 -0.05 24 -0.03				
Kd of Th-229 in Unsaturated Zone 1	56	-0.01	57	-0.01
43 -0.02 49 -0.01				
Kd of Th-229 in Saturated Zone	45	-0.01	47	-0.01
69 0.00 69 0.00				
Kd of U-233 in Contaminated Zone	42	0.01	43	0.01
33 -0.03 41 -0.02				
Kd of U-233 in Unsaturated Zone 1	61	0.00	63	0.00
49 -0.01 55 -0.01				
Kd of U-233 in Saturated Zone	26	0.02	32	0.02
45 -0.01 51 -0.01				
Meat transfer factor for Am	34	-0.01	38	-0.01
67 0.00 67 0.00				
Milk transfer factor for Am	59	0.00	60	0.00
34 0.03 42 0.02				
Fish transfer factor for Am	15	-0.03	23	-0.03
14 0.05 23 0.03				
Plant transfer factor for Np	14	0.03	22	0.03
59 0.01 62 0.01				
Meat transfer factor for Np	47	-0.01	48	-0.01
9 0.15 14 0.09				
Milk transfer factor for Np	30	-0.02	36	-0.02
58 0.01 61 0.01				
Fish transfer factor for Np	54	-0.01	55	-0.01
55 0.01 58 0.01				
Plant transfer factor for Th	6	0.04	14	0.04
24 0.04 32 0.02				
Meat transfer factor for Th	49	0.01	50	0.01
25 -0.04 33 -0.02				
Milk transfer factor for Th	67	0.00	68	0.00
32 0.03 40 0.02				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Fish transfer factor for Th	63	0.00	64	0.00
19 0.05 27 0.03				
Plant transfer factor for U	33	-0.01	37	-0.01
44 -0.02 50 -0.01				
Meat transfer factor for U	12	0.03	19	0.03
23 0.04 31 0.03				
Milk transfer factor for U	35	-0.01	39	-0.01
46 0.01 52 0.01				
Fish transfer factor for U	58	0.00	59	0.00
30 0.03 39 0.02				
Density of cover material	51	-0.01	52	-0.01
47 0.01 53 0.01				
Kd of Co-60 in Contaminated Zone	60	0.00	62	0.00
29 -0.03 38 -0.02				
Kd of Co-60 in Unsaturated Zone 1	24	-0.02	30	-0.02
12 -0.06 21 -0.04				
Kd of Co-60 in Saturated Zone	29	-0.02	35	-0.02
38 -0.02 46 -0.01				
Kd of Cs-137 in Contaminated Zone	23	-0.02	29	-0.02
51 0.01 56 0.01				
Kd of Cs-137 in Unsaturated Zone 1	41	-0.01	42	-0.01
8 -0.17 11 -0.11				
Kd of Cs-137 in Saturated Zone	36	-0.01	40	-0.01
10 -0.14 15 -0.09				
Kd of Sr-90 in Contaminated Zone	27	-0.02	33	-0.02
7 -0.17 10 -0.11				
Kd of Sr-90 in Unsaturated Zone 1	21	-0.02	28	-0.02
1 -0.62 1 -0.50				
Kd of Sr-90 in Saturated Zone	16	-0.03	24	-0.03
3 -0.41 5 -0.28				
Milk transfer factor for Co	25	-0.02	31	-0.02
68 0.00 68 0.00				
Fish transfer factor for Co	28	-0.02	34	-0.02
36 -0.02 44 -0.02				
Fish transfer factor for Cs	7	0.04	15	0.04
48 0.01 54 0.01				
Meat transfer factor for Sr	4	0.06	11	0.06
27 0.04 35 0.02				
Milk transfer factor for Sr	68	0.00	69	0.00
63 0.01 65 0.00				
Fish transfer factor for Sr	52	0.01	53	0.01
62 0.01 64 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

R-SQUARE 0.60 0.60 0.06 0.06

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 15

Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
 Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Coefficients for peak Milk (waterDep.) Dose				PCC	SRC
PRCC	Coefficient =				
	SRRC	Repetition =			
1	1				1
Description of Probabilistic Variable				Sig Coeff	Sig Coeff
Sig Coeff	Sig Coeff				
Density of contaminated zone				13 -0.03	7 -0.21
61 -0.01	30 -0.03				
Contaminated zone total porosity				11 -0.03	5 -0.23
53 -0.01	20 -0.05				
Contaminated zone hydraulic conductivity				68 0.00	68 0.00
28 -0.03	37 -0.02				
Contaminated zone b parameter				49 0.01	50 0.01
51 0.01	54 0.01				
Evapotranspiration coefficient				52 -0.01	53 -0.01
9 -0.14	15 -0.09				
Irrigation				21 -0.02	12 -0.07
18 0.05	12 0.11				
Density of saturated zone				38 0.01	1 0.47
43 -0.02	2 -0.33				
Saturated zone total porosity				37 0.01	4 0.25
47 -0.01	8 -0.15				
Saturated zone effective porosity				35 0.01	3 0.25
49 -0.01	10 -0.14				
Saturated zone hydraulic conductivity				1 0.15	8 0.15
4 0.34	7 0.22				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Saturated zone b parameter	28	-0.02	35	-0.02
52 0.01 55 0.01				
well pump intake depth	7	-0.04	17	-0.04
25 0.04 34 0.02				
well pumping rate	39	0.01	15	0.04
37 -0.02 19 -0.05				
Thickness of Unsaturated zone 1	2	-0.10	10	-0.09
2 -0.45 4 -0.31				
Density of Unsaturated zone 1	47	0.01	2	0.35
44 0.02 3 0.31				
Total Porosity of Unsaturated zone 1	53	0.01	9	0.14
32 0.03 6 0.28				
Effective Porosity of Unsaturated zone 1	40	0.01	6	0.22
65 0.00 18 0.05				
Hydraulic Conductivity of Unsaturated zone 1	57	0.00	57	0.00
39 0.02 46 0.01				
b Parameter of Unsaturated zone 1	9	-0.04	19	-0.04
50 0.01 53 0.01				
Mass loading for inhalation	8	-0.04	18	-0.04
55 -0.01 57 -0.01				
Indoor dust filtration factor	42	-0.01	44	-0.01
40 0.02 47 0.01				
External gamma shielding factor	54	0.01	54	0.01
21 0.05 29 0.03				
Depth of soil mixing layer	18	-0.02	26	-0.02
56 0.01 58 0.01				
wet weight crop yield of fruit, grain and non-leafy vegetables	63	0.00	63	0.00
24 -0.04 33 -0.03				
weathering removal constant of all vegetation	3	-0.08	11	-0.08
23 -0.05 32 -0.03				
wet foliar interception fraction of leafy vegetables	34	0.01	41	0.01
69 0.00 69 0.00				
Kd of Am-241 in Contaminated Zone	58	0.00	58	0.00
14 -0.06 23 -0.04				
Kd of Am-241 in Unsaturated Zone 1	45	0.01	48	0.01
17 -0.05 26 -0.03				
Kd of Am-241 in Saturated Zone	69	0.00	69	0.00
19 -0.05 27 -0.03				
Kd of Np-237 in Contaminated Zone	64	0.00	64	0.00
41 -0.02 48 -0.01				
Kd of Np-237 in Unsaturated Zone 1	32	0.02	39	0.01
5 -0.23 9 -0.15				
Kd of Np-237 in Saturated Zone	62	0.00	62	0.00
10 -0.12 16 -0.08				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of Th-229 in Contaminated Zone	50	0.01	51	0.01
16 -0.06 25 -0.03				
Kd of Th-229 in Unsaturated Zone 1	61	0.00	61	0.00
42 -0.02 49 -0.01				
Kd of Th-229 in Saturated Zone	59	0.00	59	0.00
58 -0.01 60 -0.01				
Kd of U-233 in Contaminated Zone	44	0.01	46	0.01
31 -0.03 40 -0.02				
Kd of U-233 in Unsaturated Zone 1	66	0.00	66	0.00
60 -0.01 62 0.00				
Kd of U-233 in Saturated Zone	12	0.03	21	0.03
36 -0.03 44 -0.02				
Meat transfer factor for Am	25	-0.02	32	-0.02
48 -0.01 52 -0.01				
Milk transfer factor for Am	46	-0.01	47	-0.01
38 0.02 45 0.01				
Fish transfer factor for Am	17	-0.02	25	-0.02
22 0.05 31 0.03				
Plant transfer factor for Np	16	0.03	24	0.03
66 0.00 66 0.00				
Meat transfer factor for Np	48	-0.01	49	-0.01
15 0.06 24 0.03				
Milk transfer factor for Np	22	-0.02	29	-0.02
11 0.09 17 0.06				
Fish transfer factor for Np	56	-0.01	56	-0.01
63 0.01 64 0.00				
Plant transfer factor for Th	6	0.04	16	0.04
26 0.04 35 0.02				
Meat transfer factor for Th	10	0.04	20	0.04
27 -0.04 36 -0.02				
Milk transfer factor for Th	19	0.02	27	0.02
29 0.03 38 0.02				
Fish transfer factor for Th	55	0.01	55	0.01
20 0.05 28 0.03				
Plant transfer factor for U	41	-0.01	43	-0.01
59 -0.01 61 -0.01				
Meat transfer factor for U	51	0.01	52	0.01
35 0.03 43 0.02				
Milk transfer factor for U	27	-0.02	34	-0.02
68 0.00 68 0.00				
Fish transfer factor for U	30	0.02	37	0.02
30 0.03 39 0.02				
Density of cover material	60	0.00	60	0.00
62 0.01 63 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of Co-60 in Contaminated Zone	67	0.00	67	0.00
34 -0.03 42 -0.02				
Kd of Co-60 in Unsaturated Zone 1	23	-0.02	30	-0.02
12 -0.08 21 -0.05				
Kd of Co-60 in Saturated Zone	26	-0.02	33	-0.02
33 -0.03 41 -0.02				
Kd of Cs-137 in Contaminated Zone	24	-0.02	31	-0.02
46 0.02 51 0.01				
Kd of Cs-137 in Unsaturated Zone 1	65	0.00	65	0.00
6 -0.18 11 -0.11				
Kd of Cs-137 in Saturated Zone	43	-0.01	45	-0.01
8 -0.17 14 -0.10				
Kd of Sr-90 in Contaminated Zone	36	-0.01	42	-0.01
7 -0.17 13 -0.10				
Kd of Sr-90 in Unsaturated Zone 1	29	-0.02	36	-0.02
1 -0.66 1 -0.54				
Kd of Sr-90 in Saturated Zone	14	-0.03	22	-0.03
3 -0.44 5 -0.30				
Milk transfer factor for Co	15	-0.03	23	-0.03
57 -0.01 59 -0.01				
Fish transfer factor for Co	31	-0.02	38	-0.02
45 -0.02 50 -0.01				
Fish transfer factor for Cs	20	0.02	28	0.02
67 0.00 67 0.00				
Meat transfer factor for Sr	5	0.05	14	0.05
54 -0.01 56 -0.01				
Milk transfer factor for Sr	4	0.06	13	0.05
13 0.07 22 0.04				
Fish transfer factor for Sr	33	0.02	40	0.01
64 0.00 65 0.00				

R-SQUARE _____
0.63 0.63

0.06 0.06

-Rank is set to zero if the dose is zero or the correlation matrix is singular.

-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 16

Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Coefficients for peak Am-241 Dose				PCC		SRC	
PRCC		SRRC		1		1	
Coefficient =		Repetition =					
1		1					
Description of Probabilistic Variable				Sig	Coeff	Sig	Coeff
Sig Coeff		Sig Coeff					
Density of contaminated zone				60	0.00	34	-0.01
6	0.07	3	0.11				
Contaminated zone total porosity				33	-0.01	6	-0.07
15	0.04	5	0.06				
Contaminated zone hydraulic conductivity				67	0.00	67	0.00
37	0.01	43	0.00				
Contaminated zone b parameter				43	0.01	48	0.01
39	0.01	45	0.00				
Evapotranspiration coefficient				2	0.06	7	0.06
3	0.25	4	0.06				
Irrigation				29	-0.01	9	-0.04
8	-0.07	6	-0.05				
Density of saturated zone				62	0.00	8	0.05
63	0.00	10	-0.03				
Saturated zone total porosity				66	0.00	24	-0.02
51	-0.01	8	-0.03				
Saturated zone effective porosity				47	0.01	5	0.09
68	0.00	24	0.01				
Saturated zone hydraulic conductivity				11	0.03	18	0.03
19	0.03	26	0.01				
Saturated zone b parameter				46	0.01	51	0.01
12	0.04	19	0.01				
well pump intake depth				64	0.00	65	0.00
20	-0.03	27	-0.01				
well pumping rate				55	0.00	41	0.01
25	0.03	13	0.02				
Thickness of Unsaturated zone 1				12	-0.03	19	-0.03
27	-0.03	33	-0.01				
Density of Unsaturated zone 1				17	-0.02	1	-0.74
61	-0.01	7	-0.05				
Total Porosity of Unsaturated zone 1				19	-0.02	3	-0.37
62	-0.01	14	-0.02				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Effective Porosity of Unsaturated zone 1	16	-0.02	2	-0.38
52 -0.01 9 -0.03				
Hydraulic Conductivity of Unsaturated zone 1	41	-0.01	46	-0.01
67 0.00 68 0.00				
b Parameter of Unsaturated zone 1	36	0.01	40	0.01
47 0.01 53 0.00				
Mass loading for inhalation	54	0.00	57	0.00
4 0.10 11 0.02				
Indoor dust filtration factor	65	0.00	66	0.00
5 0.09 12 0.02				
External gamma shielding factor	37	0.01	42	0.01
66 0.00 67 0.00				
Depth of soil mixing layer	5	0.04	12	0.04
2 0.54 2 0.15				
wet weight crop yield of fruit, grain and non-leafy vegetables	35	-0.01	39	-0.01
42 0.01 48 0.00				
weathering removal constant of all vegetation	51	0.00	55	0.00
23 -0.03 30 -0.01				
wet foliar interception fraction of leafy vegetables	40	0.01	45	0.01
59 -0.01 63 0.00				
Kd of Am-241 in Contaminated Zone	1	0.12	4	0.12
1 0.97 1 0.96				
Kd of Am-241 in Unsaturated Zone 1	7	0.03	14	0.03
54 0.01 58 0.00				
Kd of Am-241 in Saturated Zone	8	-0.03	15	-0.03
21 -0.03 28 -0.01				
Kd of Np-237 in Contaminated Zone	69	0.00	69	0.00
7 0.07 15 0.02				
Kd of Np-237 in Unsaturated Zone 1	32	-0.01	37	-0.01
32 0.02 38 0.00				
Kd of Np-237 in Saturated Zone	9	0.03	16	0.03
40 0.01 46 0.00				
Kd of Th-229 in Contaminated Zone	14	-0.02	21	-0.02
33 0.02 39 0.00				
Kd of Th-229 in Unsaturated Zone 1	58	0.00	61	0.00
38 0.01 44 0.00				
Kd of Th-229 in Saturated Zone	15	0.02	22	0.02
69 0.00 69 0.00				
Kd of U-233 in Contaminated Zone	10	0.03	17	0.03
56 0.01 60 0.00				
Kd of U-233 in Unsaturated Zone 1	31	0.01	35	0.01
65 0.00 66 0.00				
Kd of U-233 in Saturated Zone	34	0.01	38	0.01
13 0.04 20 0.01				

· Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Meat transfer factor for Am	18	0.02	23	0.02
10 0.05 17 0.01				
Milk transfer factor for Am	44	0.01	49	0.01
55 0.01 59 0.00				
Fish transfer factor for Am	68	0.00	68	0.00
41 -0.01 47 0.00				
Plant transfer factor for Np	3	0.04	10	0.04
9 0.06 16 0.01				
Meat transfer factor for Np	52	0.00	56	0.00
36 -0.02 42 0.00				
Milk transfer factor for Np	42	0.01	47	0.01
45 0.01 51 0.00				
Fish transfer factor for Np	30	-0.01	36	-0.01
44 0.01 50 0.00				
Plant transfer factor for Th	28	-0.01	33	-0.01
22 -0.03 29 -0.01				
Meat transfer factor for Th	39	-0.01	44	-0.01
49 0.01 55 0.00				
Milk transfer factor for Th	49	0.00	53	0.00
11 -0.05 18 -0.01				
Fish transfer factor for Th	25	0.02	30	0.02
26 -0.03 32 -0.01				
Plant transfer factor for U	22	-0.02	27	-0.02
16 0.04 22 0.01				
Meat transfer factor for U	48	0.01	52	0.01
29 0.02 35 0.01				
Milk transfer factor for U	63	0.00	64	0.00
50 -0.01 56 0.00				
Fish transfer factor for U	6	-0.03	13	-0.03
53 0.01 57 0.00				
Density of cover material	27	0.01	32	0.01
43 0.01 49 0.00				
Kd of Co-60 in Contaminated Zone	24	-0.02	29	-0.02
64 0.00 65 0.00				
Kd of Co-60 in Unsaturated Zone 1	20	0.02	25	0.02
57 0.01 61 0.00				
Kd of Co-60 in Saturated Zone	26	0.01	31	0.01
14 0.04 21 0.01				
Kd of Cs-137 in Contaminated Zone	61	0.00	63	0.00
46 0.01 52 0.00				
Kd of Cs-137 in Unsaturated Zone 1	23	-0.02	28	-0.02
60 -0.01 64 0.00				
Kd of Cs-137 in Saturated Zone	45	-0.01	50	-0.01
34 0.02 41 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of Sr-90 in Contaminated Zone	57	0.00	59	0.00
31 0.02 37 0.01				
Kd of Sr-90 in Unsaturated Zone 1	56	0.00	60	0.00
24 -0.03 31 -0.01				
Kd of Sr-90 in Saturated Zone	21	-0.02	26	-0.02
17 -0.04 23 -0.01				
Milk transfer factor for Co	59	0.00	62	0.00
58 0.01 62 0.00				
Fish transfer factor for Co	38	-0.01	43	-0.01
18 0.03 25 0.01				
Fish transfer factor for Cs	50	0.00	54	0.00
35 -0.02 40 0.00				
Meat transfer factor for Sr	13	0.03	20	0.02
28 0.02 34 0.01				
Milk transfer factor for Sr	53	0.00	58	0.00
30 0.02 36 0.01				
Fish transfer factor for Sr	4	0.04	11	0.04
48 -0.01 54 0.00				

R-SQUARE

0.95

0.95

0.04

0.04

-Rank is set to zero if the dose is zero or the correlation matrix is singular.

-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 17

Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Coefficients for peak Co-60 Dose

PRCC Coefficient =

1 SRRC

Repetition =

1

1

PCC

SRC

1

1

Description of Probabilistic variable
Sig Coeff Sig Coeff

Sig Coeff Sig Coeff

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Density of contaminated zone	31	-0.01	7	-0.09
25 0.02 9 0.04				
Contaminated zone total porosity	24	-0.02	6	-0.12
26 0.02 10 0.04				
Contaminated zone hydraulic conductivity	46	0.01	48	0.01
60 0.01 62 0.00				
Contaminated zone b parameter	55	0.00	57	0.00
52 -0.01 55 0.00				
Evapotranspiration coefficient	5	-0.04	10	-0.03
35 -0.02 40 0.00				
Irrigation	42	-0.01	13	-0.03
27 0.02 13 0.02				
Density of saturated zone	69	0.00	67	0.00
32 0.02 2 0.15				
Saturated zone total porosity	68	0.00	41	-0.01
41 0.02 5 0.06				
Saturated zone effective porosity	62	0.00	11	0.03
28 0.02 3 0.09				
Saturated zone hydraulic conductivity	8	0.03	16	0.03
17 0.03 27 0.01				
Saturated zone b parameter	38	0.01	42	0.01
48 -0.01 52 0.00				
Well pump intake depth	27	-0.02	31	-0.02
18 0.03 28 0.01				
Well pumping rate	40	0.01	12	0.03
51 -0.01 23 -0.01				
Thickness of Unsaturated zone 1	20	-0.02	25	-0.02
5 -0.12 11 -0.03				
Density of Unsaturated zone 1	12	-0.03	1	-0.87
62 -0.01 7 -0.04				
Total Porosity of Unsaturated zone 1	10	-0.03	2	-0.46
66 0.00 18 -0.01				
Effective Porosity of Unsaturated zone 1	14	-0.03	3	-0.41
58 -0.01 12 -0.03				
Hydraulic Conductivity of Unsaturated zone 1	61	0.00	63	0.00
64 0.00 65 0.00				
b Parameter of Unsaturated zone 1	43	-0.01	45	-0.01
29 -0.02 35 0.00				
Mass loading for inhalation	3	0.08	8	0.07
61 0.01 63 0.00				
Indoor dust filtration factor	45	0.01	47	0.01
19 -0.03 29 -0.01				
External gamma shielding factor	4	0.05	9	0.04
2 0.31 4 0.08				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Depth of soil mixing layer	37	0.01	40	0.01
46 0.01 50 0.00				
wet weight crop yield of fruit, grain and non-leafy vegetables	48	0.01	50	0.01
36 0.02 41 0.00				
weathering removal constant of all vegetation	22	0.02	27	0.02
55 -0.01 58 0.00				
wet foliar interception fraction of leafy vegetables	35	0.01	38	0.01
24 0.02 34 0.01				
Kd of Am-241 in Contaminated Zone	56	0.00	58	0.00
31 0.02 37 0.00				
Kd of Am-241 in Unsaturated Zone 1	9	0.03	17	0.03
50 -0.01 54 0.00				
Kd of Am-241 in Saturated Zone	1	0.41	4	0.40
59 -0.01 61 0.00				
Kd of Np-237 in Contaminated Zone	23	-0.02	28	-0.02
43 -0.01 47 0.00				
Kd of Np-237 in Unsaturated Zone 1	39	-0.01	43	-0.01
15 -0.04 25 -0.01				
Kd of Np-237 in Saturated Zone	60	0.00	62	0.00
56 0.01 59 0.00				
Kd of Th-229 in Contaminated Zone	41	0.01	44	0.01
10 -0.05 19 -0.01				
Kd of Th-229 in Unsaturated Zone 1	57	0.00	59	0.00
13 0.04 22 0.01				
Kd of Th-229 in Saturated Zone	67	0.00	69	0.00
39 0.02 44 0.00				
Kd of U-233 in Contaminated Zone	58	0.00	60	0.00
9 -0.05 17 -0.01				
Kd of U-233 in Unsaturated Zone 1	44	-0.01	46	-0.01
47 -0.01 51 0.00				
Kd of U-233 in Saturated Zone	49	-0.01	51	-0.01
20 -0.03 30 -0.01				
Meat transfer factor for Am	21	0.02	26	0.02
40 0.02 45 0.00				
Milk transfer factor for Am	11	0.03	18	0.03
44 -0.01 48 0.00				
Fish transfer factor for Am	66	0.00	68	0.00
68 0.00 68 0.00				
Plant transfer factor for Np	19	-0.02	24	-0.02
16 0.03 26 0.01				
Meat transfer factor for Np	7	0.03	15	0.03
30 -0.02 36 0.00				
Milk transfer factor for Np	15	0.02	21	0.02
67 0.00 67 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Fish transfer factor for Np	34	-0.01	37	-0.01
54 -0.01 57 0.00				
Plant transfer factor for Th	26	0.02	30	0.02
53 0.01 56 0.00				
Meat transfer factor for Th	30	-0.01	34	-0.01
37 -0.02 42 0.00				
Milk transfer factor for Th	16	-0.02	20	-0.02
23 0.02 33 0.01				
Fish transfer factor for Th	33	-0.01	36	-0.01
38 -0.02 43 0.00				
Plant transfer factor for U	36	-0.01	39	-0.01
49 -0.01 53 0.00				
Meat transfer factor for U	13	0.03	19	0.02
33 -0.02 38 0.00				
Milk transfer factor for U	65	0.00	66	0.00
63 0.00 64 0.00				
Fish transfer factor for U	29	0.02	33	0.01
7 0.06 15 0.02				
Density of cover material	2	-0.24	5	-0.21
1 -0.97 1 -0.96				
Kd of Co-60 in Contaminated Zone	63	0.00	64	0.00
6 -0.07 14 -0.02				
Kd of Co-60 in Unsaturated Zone 1	52	0.00	54	0.00
3 -0.23 6 -0.06				
Kd of Co-60 in Saturated Zone	51	-0.01	53	0.00
4 -0.16 8 -0.04				
Kd of Cs-137 in Contaminated Zone	54	0.00	56	0.00
65 0.00 66 0.00				
Kd of Cs-137 in Unsaturated Zone 1	53	0.00	55	0.00
21 0.03 31 0.01				
Kd of Cs-137 in Saturated Zone	18	0.02	23	0.02
42 0.02 46 0.00				
Kd of Sr-90 in Contaminated Zone	17	-0.02	22	-0.02
34 0.02 39 0.00				
Kd of Sr-90 in Unsaturated Zone 1	59	0.00	61	0.00
57 -0.01 60 0.00				
Kd of Sr-90 in Saturated Zone	28	-0.02	32	-0.01
14 0.04 24 0.01				
Milk transfer factor for Co	32	0.01	35	0.01
11 -0.05 20 -0.01				
Fish transfer factor for Co	64	0.00	65	0.00
8 -0.06 16 -0.01				
Fish transfer factor for Cs	25	-0.02	29	-0.02
22 0.03 32 0.01				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Meat transfer factor for Sr	6	0.03	14	0.03
69 0.00 69 0.00				
Milk transfer factor for Sr	50	0.01	52	0.01
12 -0.04 21 -0.01				
Fish transfer factor for Sr	47	0.01	49	0.01
45 0.01 49 0.00				

R-SQUARE		0.23	0.23
0.94 0.94			

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 18
 Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe
 Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Coefficients for peak Cs-137 Dose			
PRCC	SRRC	PCC	SRC
1	1	1	1

Description of Probabilistic Variable	Sig	Coeff	Sig	Coeff
Density of contaminated zone	66	0.00	45	0.01
5 0.08 4 0.07				
Contaminated zone total porosity	40	-0.01	8	-0.07
56 0.01 23 0.00				
Contaminated zone hydraulic conductivity	30	0.01	37	0.01
13 -0.04 19 -0.01				
Contaminated zone b parameter	24	0.02	32	0.02
38 -0.02 42 0.00				
Evapotranspiration coefficient	2	0.08	7	0.08
2 0.53 2 0.08				
Irrigation	25	-0.02	10	-0.06
3 -0.11 6 -0.05				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Density of saturated zone	55	0.00	5	-0.14
37 0.02 5 0.07				
Saturated zone total porosity	56	0.00	9	-0.07
28 0.02 7 0.05				
Saturated zone effective porosity	53	-0.01	6	-0.09
48 0.01 10 0.02				
Saturated zone hydraulic conductivity	6	0.04	14	0.04
55 -0.01 57 0.00				
Saturated zone b parameter	54	0.00	57	0.00
51 -0.01 53 0.00				
well pump intake depth	20	-0.02	28	-0.02
8 -0.05 14 -0.01				
well pumping rate	69	0.00	64	0.00
57 0.01 40 0.00				
Thickness of Unsaturated zone 1	26	-0.02	33	-0.02
7 -0.06 13 -0.01				
Density of Unsaturated zone 1	37	-0.01	1	-0.39
33 0.02 3 0.08				
Total Porosity of Unsaturated zone 1	41	-0.01	4	-0.17
29 0.02 8 0.05				
Effective Porosity of Unsaturated zone 1	31	-0.01	2	-0.23
41 0.01 9 0.03				
Hydraulic Conductivity of Unsaturated zone 1	43	-0.01	47	-0.01
17 -0.03 24 0.00				
b Parameter of Unsaturated zone 1	14	0.02	22	0.02
67 0.00 67 0.00				
Mass loading for inhalation	38	0.01	43	0.01
24 -0.03 31 0.00				
Indoor dust filtration factor	7	-0.03	15	-0.03
16 -0.04 22 0.00				
External gamma shielding factor	51	0.01	55	0.01
64 0.00 64 0.00				
Depth of soil mixing layer	33	-0.01	40	-0.01
36 0.02 41 0.00				
wet weight crop yield of fruit, grain and non-leafy vegetables	47	-0.01	51	-0.01
23 -0.03 30 0.00				
weathering removal constant of all vegetation	63	0.00	65	0.00
32 0.02 37 0.00				
wet foliar interception fraction of leafy vegetables	46	0.01	50	0.01
58 0.00 58 0.00				
Kd of Am-241 in Contaminated Zone	45	0.01	49	0.01
62 0.00 62 0.00				
Kd of Am-241 in Unsaturated Zone 1	5	-0.04	13	-0.04
40 0.02 44 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Kd of Am-241 in Saturated Zone	27	0.02	34	0.02
34 -0.02 38 0.00				
Kd of Np-237 in Contaminated Zone	50	-0.01	54	-0.01
65 0.00 65 0.00				
Kd of Np-237 in Unsaturated Zone 1	19	0.02	27	0.02
19 0.03 26 0.00				
Kd of Np-237 in Saturated Zone	16	0.02	24	0.02
25 0.02 32 0.00				
Kd of Th-229 in Contaminated Zone	44	0.01	48	0.01
9 -0.05 15 -0.01				
Kd of Th-229 in Unsaturated Zone 1	61	0.00	62	0.00
15 -0.04 21 -0.01				
Kd of Th-229 in Saturated Zone	39	0.01	44	0.01
18 0.03 25 0.00				
Kd of U-233 in Contaminated Zone	59	0.00	60	0.00
63 0.00 63 0.00				
Kd of U-233 in Unsaturated Zone 1	35	0.01	41	0.01
45 0.01 48 0.00				
Kd of U-233 in Saturated Zone	62	0.00	63	0.00
44 -0.01 47 0.00				
Meat transfer factor for Am	42	0.01	46	0.01
52 0.01 54 0.00				
Milk transfer factor for Am	11	0.03	19	0.03
35 0.02 39 0.00				
Fish transfer factor for Am	22	0.02	30	0.02
59 0.00 59 0.00				
Plant transfer factor for Np	67	0.00	68	0.00
60 0.00 60 0.00				
Meat transfer factor for Np	29	0.01	36	0.01
26 -0.02 33 0.00				
Milk transfer factor for Np	18	-0.02	26	-0.02
42 -0.01 45 0.00				
Fish transfer factor for Np	60	0.00	61	0.00
10 -0.05 16 -0.01				
Plant transfer factor for Th	13	0.02	21	0.02
47 0.01 50 0.00				
Meat transfer factor for Th	10	-0.03	18	-0.03
20 -0.03 27 0.00				
Milk transfer factor for Th	8	0.03	16	0.03
66 0.00 66 0.00				
Fish transfer factor for Th	64	0.00	66	0.00
46 0.01 49 0.00				
Plant transfer factor for U	23	-0.02	31	-0.02
31 -0.02 36 0.00				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Meat transfer factor for U	48	-0.01	52	-0.01
27 0.02 34 0.00				
Milk transfer factor for U	58	0.00	59	0.00
49 0.01 51 0.00				
Fish transfer factor for U	15	0.02	23	0.02
14 -0.04 20 -0.01				
Density of cover material	65	0.00	67	0.00
43 -0.01 46 0.00				
Kd of Co-60 in Contaminated Zone	21	0.02	29	0.02
21 0.03 28 0.00				
Kd of Co-60 in Unsaturated Zone 1	57	0.00	58	0.00
12 -0.04 18 -0.01				
Kd of Co-60 in Saturated Zone	17	-0.02	25	-0.02
22 -0.03 29 0.00				
Kd of Cs-137 in Contaminated Zone	1	0.20	3	0.20
1 0.99 1 0.98				
Kd of Cs-137 in Unsaturated Zone 1	32	0.01	38	0.01
6 -0.07 12 -0.01				
Kd of Cs-137 in Saturated Zone	28	-0.02	35	-0.01
4 -0.09 11 -0.01				
Kd of Sr-90 in Contaminated Zone	3	-0.04	11	-0.04
69 0.00 69 0.00				
Kd of Sr-90 in Unsaturated Zone 1	68	0.00	69	0.00
61 0.00 61 0.00				
Kd of Sr-90 in Saturated Zone	12	-0.03	20	-0.02
54 -0.01 56 0.00				
Milk transfer factor for Co	36	0.01	42	0.01
30 0.02 35 0.00				
Fish transfer factor for Co	34	-0.01	39	-0.01
39 0.02 43 0.00				
Fish transfer factor for Cs	4	0.04	12	0.04
11 0.05 17 0.01				
Meat transfer factor for Sr	52	0.01	56	0.01
68 0.00 68 0.00				
Milk transfer factor for Sr	49	0.01	53	0.01
53 -0.01 55 0.00				
Fish transfer factor for Sr	9	0.03	17	0.03
50 -0.01 52 0.00				
<hr/>				
R-SQUARE		0.07		0.07
0.98 0.98				
<hr/>				

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

-Rank is set to zero if the dose is zero or the correlation matrix is singular.

-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

1 RESRAD Regression and Correlation output 07/15/14 19:02 Page: Coef 19

Title : HB soil DCGL_Am241-Co60-Cs-137-Sr90 buried pipe

Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB DCGL_EMB PIPE-3.RAD

Coefficients for peak Sr-90 Dose				PCC	SRC
PRCC	Coefficient =			1	1
	SRRC	Repetition =			
1	1				
Description of Probabilistic Variable				Sig Coeff	Sig Coeff
Sig Coeff	Sig Coeff				
Density of contaminated zone				56	0.00
54	-0.01	12	-0.05	19	-0.03
Contaminated zone total porosity				51	-0.01
32	-0.02	9	-0.08	14	-0.04
Contaminated zone hydraulic conductivity				55	0.00
43	-0.02	48	-0.01	56	0.00
Contaminated zone b parameter				20	0.02
31	0.02	38	0.01	28	0.02
Evapotranspiration coefficient				7	-0.04
17	0.03	26	0.02	13	-0.04
Irrigation				69	0.00
28	0.02	10	0.05	65	0.00
Density of saturated zone				35	0.01
66	0.00	16	-0.04	1	0.38
Saturated zone total porosity				24	0.02
69	0.00	67	0.00	2	0.30
Saturated zone effective porosity				50	0.01
64	0.00	14	-0.04	7	0.09
Saturated zone hydraulic conductivity				1	0.13
5	0.17	8	0.11	5	0.13
Saturated zone b parameter				23	-0.02
42	-0.02	47	-0.01	31	-0.02
well pump intake depth				26	-0.02
10	-0.04	19	-0.02	33	-0.02

Uncertainty report_HB DCGL buried pipe_2m cover_revised activities.REP

Well pumping rate	52	0.00	34	-0.01
30 -0.02 11 -0.05				
Thickness of Unsaturated zone 1	2	-0.07	8	-0.07
4 -0.25 6 -0.16				
Density of Unsaturated zone 1	42	0.01	3	0.25
44 0.02 3 0.32				
Total Porosity of Unsaturated zone 1	45	0.01	6	0.11
33 0.02 5 0.18				
Effective Porosity of Unsaturated zone 1	39	0.01	4	0.15
49 0.01 7 0.13				
Hydraulic Conductivity of Unsaturated zone 1	41	0.01	47	0.01
19 0.03 28 0.02				
b Parameter of Unsaturated zone 1	11	-0.03	18	-0.03
20 0.03 29 0.02				
Mass loading for inhalation	18	-0.02	26	-0.02
68 0.00 69 0.00				
Indoor dust filtration factor	38	0.01	45	0.01
18 0.03 27 0.02				
External gamma shielding factor	5	0.04	11	0.04
11 0.04 20 0.02				
Depth of soil mixing layer	13	-0.03	21	-0.03
15 0.03 24 0.02				
Wet weight crop yield of fruit, grain and non-leafy vegetables	47	0.01	51	0.01
12 -0.04 21 -0.02				
Weathering removal constant of all vegetation	3	-0.06	9	-0.06
24 -0.03 33 -0.02				
Wet foliar interception fraction of leafy vegetables	10	0.03	17	0.03
59 0.01 61 0.00				
Kd of Am-241 in Contaminated Zone	62	0.00	62	0.00
22 -0.03 31 -0.02				
Kd of Am-241 in Unsaturated Zone 1	44	0.01	49	0.01
56 -0.01 58 -0.01				
Kd of Am-241 in Saturated Zone	48	0.01	52	0.01
23 0.03 32 0.02				
Kd of Np-237 in Contaminated Zone	15	0.03	23	0.02
9 0.04 18 0.03				
Kd of Np-237 in Unsaturated Zone 1	33	-0.01	41	-0.01
34 0.02 39 0.01				
Kd of Np-237 in Saturated Zone	64	0.00	64	0.00
55 -0.01 57 -0.01				
Kd of Th-229 in Contaminated Zone	32	0.01	40	0.01
38 -0.02 43 -0.01				
Kd of Th-229 in Unsaturated Zone 1	63	0.00	63	0.00
45 -0.01 49 -0.01				

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Kd of Th-229 in Saturated Zone	49	-0.01	53	-0.01
52 -0.01 55 -0.01				
Kd of U-233 in Contaminated Zone	67	0.00	68	0.00
41 0.02 46 0.01				
Kd of U-233 in Unsaturated Zone 1	58	0.00	58	0.00
46 -0.01 50 -0.01				
Kd of U-233 in Saturated Zone	16	0.02	24	0.02
60 -0.01 62 0.00				
Meat transfer factor for Am	12	-0.03	20	-0.03
16 0.03 25 0.02				
Milk transfer factor for Am	60	0.00	60	0.00
40 0.02 45 0.01				
Fish transfer factor for Am	19	-0.02	27	-0.02
26 0.03 35 0.02				
Plant transfer factor for Np	6	0.04	12	0.04
27 0.02 36 0.02				
Meat transfer factor for Np	59	0.00	59	0.00
13 0.03 22 0.02				
Milk transfer factor for Np	17	-0.02	25	-0.02
67 0.00 68 0.00				
Fish transfer factor for Np	57	0.00	57	0.00
14 0.03 23 0.02				
Plant transfer factor for Th	4	0.06	10	0.06
53 0.01 56 0.01				
Meat transfer factor for Th	53	0.00	54	0.00
48 -0.01 52 -0.01				
Milk transfer factor for Th	28	0.01	36	0.01
7 0.06 15 0.04				
Fish transfer factor for Th	68	0.00	69	0.00
8 0.04 17 0.03				
Plant transfer factor for U	25	-0.02	32	-0.02
51 -0.01 54 -0.01				
Meat transfer factor for U	36	0.01	43	0.01
57 -0.01 59 -0.01				
Milk transfer factor for U	22	-0.02	30	-0.02
39 -0.02 44 -0.01				
Fish transfer factor for U	43	0.01	48	0.01
47 0.01 51 0.01				
Density of cover material	65	0.00	66	0.00
25 -0.03 34 -0.02				
Kd of Co-60 in Contaminated Zone	40	-0.01	46	-0.01
58 0.01 60 0.01				
Kd of Co-60 in Unsaturated Zone 1	34	-0.01	42	-0.01
65 0.00 66 0.00				

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Kd of Co-60 in Saturated Zone	29	-0.01	37	-0.01
29 0.02 37 0.01				
Kd of Cs-137 in Contaminated Zone	30	-0.01	38	-0.01
61 0.01 63 0.00				
Kd of Cs-137 in Unsaturated Zone 1	46	-0.01	50	-0.01
63 0.00 65 0.00				
Kd of Cs-137 in Saturated Zone	37	-0.01	44	-0.01
62 0.01 64 0.00				
Kd of Sr-90 in Contaminated Zone	27	-0.02	35	-0.01
1 0.69 1 0.60				
Kd of Sr-90 in Unsaturated Zone 1	14	-0.03	22	-0.03
2 -0.51 2 -0.37				
Kd of Sr-90 in Saturated Zone	9	-0.03	16	-0.03
3 -0.40 4 -0.27				
Milk transfer factor for Co	21	-0.02	29	-0.02
37 0.02 42 0.01				
Fish transfer factor for Co	31	-0.01	39	-0.01
35 -0.02 40 -0.01				
Fish transfer factor for Cs	66	0.00	67	0.00
21 0.03 30 0.02				
Meat transfer factor for Sr	61	0.00	61	0.00
36 0.02 41 0.01				
Milk transfer factor for Sr	54	0.00	55	0.00
50 -0.01 53 -0.01				
Fish transfer factor for Sr	8	0.03	15	0.03
6 0.07 13 0.04				
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R-SQUARE		0.05		0.05
0.62	0.62			
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-Rank is set to zero if the dose is zero or the correlation matrix is singular.

-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.