**DEPARTMENT OF THE NAVY**
**BASE REALIGNMENT AND CLOSURE**
**PROGRAM MANAGEMENT OFFICE WEST**
**33000 NIXIE WAY, BLDG 50 Suite 207**
**SAN DIEGO, CA 92147**

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Ser BPMOW.dr/255
August 8, 2019

Wayne Praskins (email only)
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Nina Bacey (email only)
California Environmental Protection Agency
Department of Toxic Substance Control
700 Heinz Avenue, Bldg. F, Suite 200
Berkeley, CA 94710-2721

Tina Low (email only)
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Dear BCT Members:

SUBJECT: DRAFT ADDENDUM TO THE FIVE-YEAR REVIEW, EVALUATION OF RADIOLOGICAL REMEDIAL GOALS FOR SOIL, HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CA

Recommendations in Section 7 of the 2019 Five-Year Review for the former Hunters Point Naval Shipyard (HPNS) include a long-term protectiveness evaluation of the soil radiological remedial goals. This letter summarizes the results from an evaluation of these soil goals and provides dates and contact information for submittal of formal comments.

The full evaluation, calculations, and explanations for calculation inputs are attached (Enclosure 1). The evaluation, once finalized, will be included as an addendum to the Final 2019 Five Year Review and will complete this 5-Year Review recommendation.

## EVALUATION SUMMARY

The Navy has completed radiological remedial actions at HPNS in accordance with removal actions and records of decision for different areas of the base. The remedial goals in these documents are consistent and summarized below[1] (Table 1).

TABLE 1 – Hunters Point Radiological Remedial Goals

| **Radionuclide of Concern**[1] | **Soil Remediation Goals (pCi/g)** | |
|---|---|---|
| | **Outdoor Worker** | **Residential** |
| Americium (Am)-241 ($^{241}$Am) | 5.67 | 1.36 |
| Cesium (Cs)-137 ($^{137}$Cs) | 0.113 | 0.113 |
| Cobalt (Co)-60 ($^{60}$Co) | 0.0602 | 0.0361 |
| Europium (Eu)-152 ($^{152}$Eu) | 0.13 | 0.13 |
| Eu-154 ($^{154}$Eu) | 0.23 | 0.23 |
| Plutonium (Pu)-239 ($^{239}$Pu) | 14.0 | 2.59 |
| Radium (Ra)-226 ($^{226}$Ra) | 1.0 | 1.0 |
| Strontium (Sr)-90 ($^{90}$Sr) | 10.8 | 0.331 |
| Thorium (Th)-232 ($^{232}$Th) | 2.7 | 1.69 |
| Tritium, H-3 ($^{3}$H) | 4.23 | 2.28 |
| Uranium (U)-235+D ($^{235}$U) | 0.398 | 0.195 |
| | | |

[1] Not all of the radionuclides of concern are included in all of the documents/areas.

The Navy uses RESRAD-ONSITE (RESRAD) to estimate risk and dose from radiation exposure. RESRAD is the industry standard computer model used for radiation exposure evaluations and is used by the Navy to evaluate the soil radiation remedial goals for protectiveness.

To verify protectiveness of the radiation remedial goals, the estimated dose from each radiological constituent is converted to a risk value that is then compared to the risk management range as described in National Contingency Plan (NCP). Risk values that fall within this range are considered protective.

## RESRAD EVALUATION

As part of the 2019 Five-Year Review recommendations for HPNS, remedial goals were evaluated for protectiveness using current standards and methods. The Navy has completed its review using RESRAD and summarized results below (Table 2).

TABLE 2 – RESRAD Evaluation of Radiological Remedial Goals

| Radionuclide of Concern | Total Dose (mrem/year) | Total Risk |
|---|---|---|
| $^{241}$Am | 0.09 | 7.3E-07 |
| $^{60}$Co | 0.27 | 1.7E-06 |
| $^{137}$Cs | 0.18 | 3.2E-06 |
| $^{152}$Eu | 0.44 | 5.6E-06 |
| $^{154}$Eu | 0.84 | 7.6E-06 |
| $^{3}$H | 0.01 | 1.2E-08 |
| $^{239}$Pu | 0.13 | 6.0E-07 |
| $^{226}$Ra | 5.3 | 1.2E-04 |
| $^{90}$Sr | 0.01 | 8.4E-08 |
| $^{232}$Th | 11.5 | 2.7E-04 |
| $^{235}$U | 0.08 | 1.6E-06 |

For the evaluation, the residential scenario was used to calculate dose and risk. The residential scenario is the most conservative of future land uses and indicates that all other land uses are also protective. For this evaluation, it was also assumed that surface soils are contaminated uniformly at residential remedial goal levels. These assumptions are conservative, represent maximum dose and risk values, and are used for evaluation purposes only. Since the site is not uniformly contaminated, the actual doses and risks from exposure to radionuclides in HPNS soils are expected to be considerably less than these maximum values.

For soil radiation remedial goals, the RESRAD evaluation performed by the Navy indicates that all radiological remedial goals for soil meet current protectiveness standards and fall within the NCP risk management range. The technical write-up and calculations are included in Enclosure 1.

## PRG EVALUATION

In response to a request from the US Environmental Protection Agency (EPA), the remedial goals were also evaluated using the current version of EPA's Preliminary Remedial Goal (PRG) calculator. This evaluation is summarized below (Table 3) and calculations are included in Enclosure 1.

Table 3 - EPA PRG Evaluation of Radiological Remedial Goals

| Radionuclide of Concern | Total Risk |
|---|---|
| $^{241}$Am | 6.0E-07 |
| $^{60}$Co | 1.1E-06 |
| $^{137}$Cs | 2.0E-06 |
| $^{152}$Eu | 3.4E-06 |
| $^{154}$Eu | 4.9E-06 |
| $^{3}$H | 9.6E-06 |
| $^{239}$Pu | 6.7E-07 |
| $^{226}$Ra | 7.9E-05 |
| $^{90}$Sr | 7.9E-08 |
| $^{232}$Th | 1.7E-04 |
| $^{235}$U | 1.0E-06 |

Consistent with the RESRAD evaluation, all radiological remedial goals are within the NCP risk management range. Since the site is not uniformly contaminated, the actual risks from exposure to radionuclides in HPNS soils are expected to be considerably less than these maximum values.

**CONCLUSION**

This evaluation, once finalized, will fulfill the 5-Year Review recommendation to evaluate the long-term protectiveness of the soil radiological remediation goals. Using RESRAD and the PRG Calculator to estimate the maximum radiation dose and risk to residents from exposures to Hunters Point soils has verified that the soil radiation remediation goals are protective for all future land users.

The 30-day review period for this document ends on September 8, 2019. Official comments can be submitted in writing to me at 33000 Nixie Way, Building 50 Suite 207, San Diego, CA 92147 or by email at derek.j.robinson1@navy.mil.

Sincerely,

DEREK J. ROBINSON
BRAC Environmental Coordinator
By direction of the Director

Enclosure: (next page)

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Ser BPMOW.dr/255
August 8, 2019

Enclosure: 1. Estimated Excess Cancer Risks and Dose Equivalent Rates from Resident Exposures to Radionuclide-Containing Soils Report, Hunters Point Naval Shipyard, San Francisco, CA [August 7, 2019]

Copy to:
Lily Lee (email only)
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Dr. Sheetal Singh (email only)
California Dept. of Public Health
EMB, MS 7402
1616 Capitol Avenue
P.O. Box 997377
Sacramento, CA 95899-7377

Amy Brownell (email only)
Department of Public Health
1390 Market Street, Suite 210
San Francisco, CA 94102

# Hunters Point Naval Shipyard
# Estimated Excess Cancer Risks and Dose Equivalent Rates from Resident Exposures to Radionuclide-Containing Soils Report

**Prepared under:**
**Contract No. N44255-14-D-9013**
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**Prepared by:**
**BATTELLE**
**505 King Ave.**
**Columbus, OH 43201**

**August 7, 2019**

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# 1 Introduction

This report describes the calculation of estimated excess cancer risks and dose equivalent rates resulting from potential, future resident exposures to soils containing radionuclides at the former Hunters Point Naval Shipyard (HPNS) in San Francisco, California. HPNS was placed on the National Priorities List in 1989 and the Department of the Navy (DON) has been undertaking response actions under its Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) authority in each parcel. These actions are conducted to ensure average, radionuclide-specific radioactivity concentrations in residual soil do not exceed the remediation goals (RGs) stated in the 2006 Action Memorandum (AM) (NAVFAC, 2006). The RGs presented in Table 1 were intended to be the most conservative available and are to be added to site- and radionuclide-specific background. They were derived considering the 1991 Environmental Protection Agency (EPA) decay-corrected preliminary remediation goals (PRG) (EPA, 1991), past action memoranda, an agreement with EPA for radium (Ra)-226 ($^{226}$Ra) and the 2004 Historical Radiological Assessment (HRA).

**Table 1. Current Soil Remediation Goals from 2006 HPNS Action Memorandum**

| Radionuclide of Concern | Soil Remediation Goals (pCi/g) | |
|---|---|---|
| | Outdoor Worker | Residential [1] |
| Americium (Am)-241 ($^{241}$Am) | 5.67 | 1.36 |
| Cesium (Cs)-137 ($^{137}$Cs) | 0.113 | 0.113 |
| Cobalt (Co)-60 ($^{60}$Co) | 0.0602 | 0.0361 |
| Europium (Eu)-152 ($^{152}$Eu) | 0.13 | 0.13 |
| Eu-154 ($^{154}$Eu) | 0.23 | 0.23 |
| Plutonium (Pu)-239 ($^{239}$Pu) | 14.0 | 2.59 |
| Radium (Ra)-226 ($^{226}$Ra) | 1.0 [2] | 1.0 [2] |
| Strontium (Sr)-90 ($^{90}$Sr) | 10.8 | 0.331 |
| Thorium (Th)-232 ($^{232}$Th) | 2.7 | 1.69 |
| Tritium, H-3 ($^{3}$H) | 4.23 | 2.28 |
| Uranium (U)-235+D ($^{235}$U) | 0.398 | 0.195 |

[1] The residential remediation goals are used in this report to calculate doses and risks and are more protective than the outdoor worker RGs.
[2] The current soil RG for $^{226}$Ra is 1.0 pCi/g above background based on an agreement with the EPA.

In support of the current five-year review, the Navy's intent is to evaluate the protectiveness of the current soil RGs for future residents. Under CERCLA, cleanup goals are considered protective if excess cancer risks from site exposures remain within the $10^{-4}$ to $10^{-6}$ range. The Navy uses the industry standard model RESRAD-ONSITE to estimate radiation doses and risks from exposure to soils. The EPA has requested that the Navy also use EPA's PRG Calculator to estimate the risks from resident exposures to HPNS soils. Both models were used, and resultant doses and risks included, in this report.

RESRAD-ONSITE, Version 7.2 (http://resrad.evs.anl.gov/codes/resrad-onsite/) is a downloadable computer code, designed and maintained by Argonne National Laboratory. It is considered the industry standard for estimating the dose equivalent and related risk to human health and the environment resulting from exposure to radioactively-contaminated soils.

The PRG Calculator (https://epa-prgs.ornl.gov/cgi-bin/radionuclides/rprg_search) is an online tool to calculate screening levels for use during site scoping or to calculate PRGs based on site-specific information from the baseline risk assessment.

Section 2 provides an overview of the concepts of radioactive decay and the ingrowth of radioactive daughters (progeny) from parent radionuclides. Section 3 and Section 4 describe the use of each model, and the resultant doses and risks, using assumptions about the nature of the radionuclides in HPNS soils and about future resident exposures to those soils. Additional information about the input concentrations used, the radioactive decay and progeny ingrowth for each radionuclide of concern (ROC), and the model outputs are included in appendices.

# 2 Radionuclide Decay and Progeny Ingrowth

The term radionuclide refers to any nuclide that is unstable and undergoes radioactive decay. Radioactive decay is the spontaneous transformation of the unstable nuclide (parent) into one or more nuclides (daughters or progenies) with an accompanying release of energy or particles. "Radioactivity" or, in short, "activity" (*A*), is the rate of radioactive decay, i.e., the number of nucleus transformations per unit time, and is directly proportional to the number of unstable nuclei in a source[1]. The units of activity are curies (Ci) or becquerels (Bq). One Bq represents one disintegration (decay or transformation) per second (dps), and 1 Ci = 3.7E+10 Bq. One Ci involves a large number of transformations; therefore, a smaller unit, pCi, is often used, which is equivalent to 1E-12 Ci. Activity concentration of a radionuclide is defined as the activity (in Ci or Bq) per mass or volume of environmental media (e.g., pCi/g, pCi/L).

For a given radionuclide, the rate of decay is characterized as the half-life ($T_{1/2}$) and is the average time for half of the initial radionuclide activity (in picocuries, pCi) to decay. The production of these progenies is referred to as "ingrowth." Progenies can either be stable or radioactive. If the progeny is radioactive, decay will continue until a stable nuclide is reached. A series of sequential radioactive progeny form a decay chain. For the ROCs listed in Table 1:

- The parent radionuclides $^{60}$Co, $^{154}$Eu and $^{3}$H have no radioactive progeny.
- The parent radionuclides $^{137}$Cs and $^{90}$Sr have one radioactive progeny each.
- The parent radionuclides $^{241}$Am, $^{152}$Eu, $^{239}$Pu, $^{226}$Ra, $^{232}$Th and $^{235}$U form decay chains.

Progeny with half-lives that are short relative to that of their parent will increase in activity until they reach secular equilibrium with the parent. In secular equilibrium, the activity of the progeny equals that of the parent, or some fraction of the parent activity based on the associated branching fraction for that mode of radioactive decay. Within the first 1,000 years of parent ROC decay, the following observations are made from the decay plots in Appendix B:

- $^{241}$Am and $^{152}$Eu do not reach secular equilibrium with any progeny.
- $^{137m}$Ba reaches secular equilibrium nearly immediately with its parent $^{137}$Cs. Since $^{137}$Cs only decays to $^{137m}$Ba 94.4% of the time (the branching fraction for this decay), the maximum $^{137m}$Ba activity can only reach 94.4% of the $^{137}$Cs activity. The remaining 5.6% of $^{137}$Cs decays are to the stable progeny $^{137}$Ba.
- $^{90}$Sr and its progeny $^{90}$Y reach secular equilibrium nearly immediately.
- $^{235m}$U is the only progeny to reach secular equilibrium with its parent $^{239}$Pu.
- $^{231}$Th is the only progeny to reach secular equilibrium with its parent $^{235}$U.
- All the progenies reach secular equilibrium with the parent $^{226}$Ra according to their branching fractions.

[1] Radioactive decay is a statistically random process so this is only true if the number of radioactive atoms in the source is large.

- All progenies reach secular equilibrium with the parent $^{232}Th$ according to their branching fractions.

## 2.1 Decay and Ingrowth in RESRAD-ONSITE

RESRAD-ONSITE handles progenies from the radioactive transformation (decay) of parent radionuclides differently based on whether their half-life ($T_{1/2}$) is above or below a selected threshold called the *Cut-off Half Life*. Radionuclides having $T_{1/2}$ > cut-off are called principal radionuclides and the default cut-off value is 180 days. The progenies of any principal radionuclide down to, but not including, the next principal radionuclide in its decay chain are called associate radionuclides. RESRAD-ONSITE automatically assigns all associate radionuclides an activity concentration equal to its parent's concentration.

## 2.2 Decay and Ingrowth in PRG Calculator

The PRG Calculator currently does not model the ingrowth of progenies nor does it allow for a radionuclide decay chain to both be in secular equilibrium and continue decay throughout the exposure period. Users have three output options to handle progenies:

- Use a default option that places progenies in full secular equilibrium with their parents according to their branching fractions and neglects the decay of any radionuclide throughout the exposure period (Output Option 1 - *Assumes secular equilibrium throughout chain [no decay]*), or
- Manually enter radionuclide activities according to their state of secular equilibrium in order to capture decay for each radionuclide throughout the exposure period (Output Option 2 - *Does not assume secular equilibrium, provide results for progeny throughout chain [with decay]*), or
- Neglect progeny activities and use only parent activities in in order to capture decay for each radionuclide throughout the exposure period (Output Option 3 - *Does not assume secular equilibrium, no progeny included [with decay]*).

Output Options 1 and 2 fail to adequately model the time-dependent activities of the parents and progenies by neglecting the ingrowth of progenies as the parent decays. Output Option 3 provides the most accurate representation of parent activities and risks when the parent had no progeny, or no progeny will reach secular equilibrium with it. The use of each option is discussed in Section 4.1.

# 3 Calculation of Dose and Risk Using RESRAD-ONSITE and PRG Calculator

This section summarizes the user-provided inputs and changes to default parameter values needed to calculate the site-specific doses and risks from soil exposures presented in Table 2.

## 3.1 Use of RESRAD-ONSITE

RESRAD-ONSITE 7.2 was modified to reflect the soil exposure pathways and conditions anticipated during reuse of HPNS by residents. These modifications are presented in Table 2 and described below:

- As described in Section 2.1, users cannot input soil concentrations for radionuclides with half-lives shorter than the *Cut-off Half Life* value and their associated doses and risks are included with those or their parent. To provide as much detail as possible, the *Cut-off Half Life* value was reduced to the minimum value of 10 minutes. Source concentrations were entered for the

parent ROCs (Table 1) only and RESRAD-ONSITE then considers decay and ingrowth to determine the maximum dose and risk within a 1000-year period.

- By default, RESRAD-ONSITE integrates the doses to receptors over the exposure period starting at each calculation time. Risks are instantaneous at each calculation time by default so the option to integrate risk was selected and 257 points used for the integration during a 30-year exposure period.
- Deed restrictions will be implemented to restrict the growth of plants in HPNS soils that are intended for consumption. Residents are therefore not anticipated to consume plants, meats, milk, aquatic foods or drinking water produced on HPNS and these pathways were turned off.
- Input soil concentrations are presented in Table 6 in Appendix A.
- For the $^{232}$Th decay chain, the maximum (peak) dose and risk are from external exposure to the progeny rather than to the parent. As such, enough time is required for the ingrowth of the progeny to adequately assess their contribution to resident doses and risks. This period is found to be about 89 years by running the model once to find the time of maximum dose in the *Summary Report* and then adding this as an additional calculation time. The model is run again to obtain the peak risk at 89 years from the *Health Risk Report*.
- HPNS soil contamination is localized in impacted areas. Historically, localized has been defined as up to 3 acres (12,140 m$^2$) based on past radiological investigations, the size of the radium dial disposal area in IR-02, and the size of the interstitial debris area (NAVFAC, 2001). Soil impacted by $^{232}$Th was limited to three former building sites over an area totaling 484 m$^2$ (NAVSEA, 2004).
- Residents are assumed to spend 16.416 hours indoors and 1.752 hours outdoors during each day onsite. The occupancy factors were therefore adjusted accordingly to 0.684 indoor fraction and 0.073 outdoor fraction.

**Table 2. Site-Specific Values Used in RESRAD-ONSITE**

| Command Button | Parameter | Default Value | Site-specific Value |
|---|---|---|---|
| Change Title | Cut-off Half Life | 180 days | 10 minutes |
| | Maximum number of Points for Risk Integration | 1 | 257 |
| | Find peak pathway doses | Unchecked | Checked |
| | Time integrated probabilistic risk | Unchecked | Checked |
| Set Pathways | Plant Ingestion | On | Off |
| | Meat Ingestion | On | Off |
| | Milk Ingestion | On | Off |
| | Aquatic Foods | On | Off |
| | Drinking Water | On | Off |
| Modify Data >> Soil Concentrations | Nuclide Concentration (pCi/g) | None | See Table 6 in Appendix A |
| Modify Data >> Calculation Times | Times for Calculation (years) | 1, 3, 10, 30, 100, 300, 1000 | Add 88.9 |
| Modify Data >> Contaminated Zone | Area of contaminated zone (m$^2$) | 10,000 | 12,140 for all ROC except $^{232}$Th; 484 for $^{232}$Th |
| Modify Data >> Occupancy | Indoor time fraction | 0.500 | 0.684 |
| | Outdoor time fraction | 0.250 | 0.073 |

## 3.2 Resultant Dose and Risk from RESRAD-ONSITE

The dose equivalent rates (dose) and excess radiological cancer risks using RESRAD-ONSITE are presented in Table 3. Conservatively, these results assume resident exposure to uniform soil concentrations at the remedial goal levels throughout the exposure period.

The Total Dose and Total Risk reported from RESRAD-ONSITE were obtained from the output reports as follows:

- Total Doses are obtained from the RESRAD-ONSITE *Summary Report, Total Dose Contributions TDOSE (i,p,t) for Individual Radionuclides (i) and Pathways (p*) tables*, All Pathways* column in the following files included in Appendix C:
  - HPNS RESRAD Onsite_All ROC but Th U_10 min cut_12140 m2_Occ only_4Jun19_dose.pdf
  - HPNS RESRAD Onsite_Th only_10 min cut_484 m2_Occ only_4Jun19_dose.pdf
  - HPNS RESRAD Onsite_U only_10 min cut_12140 m2_Occ only_4Jun19_dose.pdf
- Total Risks are obtained from the RESRAD-ONSITE *Health Risk Report*, *Excess Cancer Risk CNRS(i,p,t)*** for Individual Radionuclides (i) and Pathways (p)* tables, and *All Pathways* column in the following files included in Appendix C.
  - HPNS RESRAD Onsite_All ROC but Th U_10 min cut_12140 m2_Occ only_4Jun19_risk.pdf
  - HPNS RESRAD Onsite_Th only_10 min cut_484 m2_Occ only_4Jun19_risk.pdf
  - HPNS RESRAD Onsite_U only_10 min cut_12140 m2_Occ only_4Jun19_risk.pdf

**Table 3. Estimated Resident Dose and Excess Cancer Risks from RESRAD-ONSITE**

| Parent ROC | Contributing Progeny | Time of Maximum Dose and Risk (years) | Total Dose (mrem/yr) [5] | Total Risk [5] |
|---|---|---|---|---|
| **$^{241}$Am** | | 0 | 0.085 | **7.34E-07** |
| **$^{60}$Co** | | 0 | 0.27 | **1.74E-06** |
| **$^{137}$Cs** | $^{137m}$Ba | 0 | 0.18 | **3.22E-06** |
| **$^{152}$Eu** | | 0 | 0.44 | 5.57E-06 |
| | $^{152}$Gd | | | 1.01E-22 |
| ***Total $^{152}$Eu*** | | | | ***5.57E-06*** |
| **$^{154}$Eu** | | 0 | 0.84 | **7.88E-06** |
| **$^{3}$H** | | 0 | 0.012 | **1.16E-08** |
| **$^{239}$Pu** | | 0 | 0.13 | 5.99E-07 |
| | $^{235m}$U | | | 2.27E-14 |
| | $^{235}$U | | | 3.26E-13 |
| | $^{231}$Th | | | 1.53E-14 |
| | $^{231}$Pa | | | 1.77E-17 |
| | $^{227}$Ac | | | 6.41E-19 |
| | $^{227}$Th | | | 1.03E-17 |
| | $^{223}$Fr+D | | | 4.37E-20 |
| | $^{223}$Ra+D | | | 1.64E-17 |
| | $^{211}$Pb+D | | | 1.13E-17 |
| ***Total $^{239}$Pu*** | | | | ***5.99E-07*** |

**Table 3 (continued). Estimated Resident Dose and Excess Cancer Risks from RESRAD-ONSITE**

| Parent ROC | Contributing Progeny | Time of Maximum Dose and Risk (years) | Total Dose (mrem/yr) | Total Risk |
|---|---|---|---|---|
| **$^{226}$Ra** | | 0 | 5.3 | 8.28E-07 |
| | $^{222}$Rn+D | | | 2.48E-08 |
| | $^{214}$Pb | | | 1.48E-05 |
| | $^{214}$Bi+D | | | 1.08E-04 |
| | $^{210}$Pb+D | | | 3.39E-07 |
| | $^{210}$Bi+D | | | 1.79E-08 |
| | $^{210}$Po | | | 5.92E-07 |
| ***Total $^{226}$Ra*** | | | | ***1.25E-04*** |
| **$^{90}$Sr** | | 0 | 0.0081 | 1.43E-08 |
| | $^{90}$Y | | | 6.95E-08 |
| ***Total $^{90}$Sr*** | | | | ***8.38E-08*** |
| **$^{232}$Th** | | 88.9 | 11.5 | 1.79E-07 |
| | $^{228}$Ra | | | 1.03E-06 |
| | $^{228}$Ac | | | 9.64E-05 |
| | $^{228}$Th | | | 4.76E-07 |
| | $^{224}$Ra+D | | | 1.21E-06 |
| | $^{212}$Pb | | | 1.23E-05 |
| | $^{212}$Bi+D | | | 1.63E-04 |
| ***Total $^{232}$Th*** | | | | ***2.75E-04*** |
| **$^{235}$U** | | 0 | 0.077 | 1.64E-06 |
| | $^{231}$Th | | | 7.66E-08 |
| | $^{231}$Pa | | | 1.33E-10 |
| | $^{227}$Ac | | | 6.13E-12 |
| | $^{227}$Th | | | 9.92E-11 |
| | $^{223}$Fr+D | | | 4.19E-13 |
| | $^{223}$Ra+D | | | 1.58E-10 |
| | $^{211}$Pb+D | | | 1.09E-10 |
| ***Total $^{235}$U*** | | | | ***1.72E-06*** |

As shown in Table 3, the resultant RESRAD-ONSITE risks for individual radionuclides or radionuclide decay chains are protective for residential exposures to site soils that are uniformly contaminated at the remedial goal levels. Since the site is not uniformly contaminated, the actual risks are expected to be considerably less than these maximum values.

# 4 Calculation of Dose and Risk Using PRG Calculator

## 4.1 Use of PRG Calculator

The PRG Calculator was modified to reflect the soil exposure pathways and conditions anticipated during reuse of HPNS by residents. These modifications are presented in Table 4 and described below:

- The 'Resident Soil' scenario has been selected because it is consistent with the anticipated reuse of portions of HPNS and is the most conservative scenario evaluated, i.e., other potential land uses will also be protective under this evaluation.
- The *Site Info Type* used was 'site-specific' using 'database hierarchy default' *Isotope Info Type* for all ROCs except $^{137}$Cs, $^{239}$Pu, $^{90}$Sr and $^{235}$U. The 'user-provided' option was used for these ROCs to enable adjustments to their progeny half-lives.
- The chosen *Source and decay output option* varied by ROC but consisted of three sets of calculator use. For ease of input, and to adequately capture the branching fractions of the decay chains, Output Option 1 was used for $^{226}$Ra and for $^{232}$Th. Both ROCs have sufficiently long half-lives relative to the 26-year exposure period that the decrease in activities that are neglected by this option are minimal. Output Option 2 was used for $^{137}$Cs, $^{239}$Pu, $^{90}$Sr and $^{235}$U to adjust the half-lives of their progenies. A single progeny for each ROC reaches secular equilibrium with their parent nearly immediately relative to the 26-year exposure period. If Output Option 2 is used as-is, the progenies activities and risks are underestimated because they rapidly decay without replenishment from ingrowth. By adjusting their half-lives to match their parents' half-life, their activities and risks are overestimated by neglecting their actual decay, however, this assumption was used to capture conservative estimates of risk. Output Option 3 was used for the remaining ROCs because there was no relevant progeny to be considered.
- Input soil concentrations are presented in Table 6 in Appendix A.
- The *Site area for ACF* was selected as the maximum (1,000,000 m$^2$) based on EPA Region 9 input concerning the size of all contiguous soil parcels on HPNS (an estimated 420 acres).
- The *clean soil thicknesses* for both $GSF_o$ and $GSF_b$ wereconservatively selected as 0 cm (no cover layer) since this was not part of the documented remedy on HPNS.
- The *City (Climatic Zone)* was changed to San Francisco, CA to reflect local conditions.
- The *areal extent of the site or contamination,* $A_s$, was selected as 420 acres based on EPA Region 9 input.
- The *Toggle All* box was unchecked to deselect produce for inclusion in the risk estimates based on stated restrictions on the use of homegrown produce using HPNS soils.

**Table 4. Site-Specific Parameters Used in PRG Calculator**

| Section | Parameter | Default Value | Site-Specific Value |
|---|---|---|---|
| Select Scenario | | None | Resident |
| Select Media | | None | Soil |
| Select Site Info Type | | Defaults | Site-specific |
| Select Isotope Info Type | | Database hierarchy defaults | User-provided for $^{137}$Cs, $^{239}$Pu, $^{90}$Sr and $^{235}$U. Defaults for remaining ROCs |
| Select Risk Output | | No | Yes |
| Select Individual Isotopes | | None | ROCs in Table 1 |
| Source and decay output options | | Assumes secular equilibrium throughout chain (no decay) | Assumes secular equilibrium throughout chain (no decay) used for $^{226}$Ra and for $^{232}$Th |
| | | | Does not assume secular equilibrium, provide results for progeny throughout chain (with decay) used for $^{137}$Cs, $^{239}$Pu, $^{90}$Sr and $^{235}$U |
| | | | Does not assume secular equilibrium, no progeny included (with decay) used for remaining ROCs |
| User-provided Inputs | Soil Concentration (pCi/g) | None | See Table 6 in Appendix A |
| | Radioactive Half-life (years) | Defaults | |
| Resident Exposure to Soil >> Equations and Parameters | Site area ($m^2$) for ACF | 1,000,000 | 1,000,000 |
| | Clean soil thickness (cm) for $GSF_o$ | 0 | 0 |
| | Clean soil thickness (cm) for $GSF_b$ | 0 | 0 |
| Resident Exposure to Soil >> Particulate Emission Factor Wind Driven | City (Climatic Zone) | Default (Minneapolis, MN) | San Francisco, CA |
| | Areal extent of site or contamination (acres) | 0.5 | 420 |
| Resident Exposure to Produce >> Select Produce Items to Include | | Toggle All checked | Toggle All unchecked |

## 4.2 Resultant Risk from PRG Calculator

The excess radiological cancer risks using the PRG Calculator are presented in Table 5. These results assume resident exposure to uniform soil concentrations at the remedial goal levels throughout the exposure period. Estimates of the dose equivalent rates using EPA calculators can be obtained by using their Dose Compliance Concentrations for Radionuclides (DCC) Calculator, available at https://epa-dccs.ornl.gov/cgi-bin/dose_search, in the same manner to the PRG Calculator.

The Total Risk reported from the PRG Calculator was obtained from the output reports as follows:

- For the $^{226}$Ra and $^{232}$Th decay chains, Total Risk for each ROC is in the *Site-Specific Resident Risk for Soil – Secular Equilibrium* section in the following file included in Appendix D:
    - Resident_rad_rprg_07MAY2019_All ROC_Sec eq no decay_420 ac 1M m2_no cover.pdf.
- For $^{137}$Cs, $^{239}$Pu, $^{90}$Sr and $^{235}$U, Total Risk is the sum of the parent and progeny risks for each ROC in the *Site-Specific Resident Risk for Soil – No secular equilibrium, progeny included (with decay)* section in the following file included in Appendix D:

- Resident_rad_rprg_15MAY2019_Cs Pu Sr U_progeny HL adjust w decay_420 ac 1M m2_no cover.pdf.

- For $^{241}$Am, $^{60}$Co, $^{152}$Eu, $^{154}$Eu, and $^{3}$H, is from the ROC only in the *Site-Specific Resident Risk for Soil – No secular equilibrium, no progeny (with decay)* section in the following file included in Appendix D:
  - Resident_rad_rprg_15MAY2019_Am Co Eu H_no progeny w decay_420 ac 1M m2_no cover.pdf.

**Table 5. Estimated Excess Cancer Risks from PRG Calculator**

| Parent ROC | Contributing Progeny | Total Risk |
|---|---|---|
| **$^{241}$Am** | | **5.95E-07** |
| **$^{60}$Co** | | **1.09E-06** |
| **$^{137}$Cs** | | 4.46E-09 |
| | $^{137m}$Ba | 1.98E-06 |
| ***Total $^{137}$Cs*** | | ***1.98E-06*** |
| **$^{152}$Eu** | | **3.36E-06** |
| **$^{154}$Eu** | | **4.87E-06** |
| **$^{3}$H** | | **9.61E-06** |
| **$^{239}$Pu** | | 6.71E-07 |
| | $^{235m}$U | 4.78E-14 |
| ***Total $^{239}$Pu*** | | ***6.71E-07*** |
| ***Total $^{226}$Ra*** | | ***7.87E-05*** |
| **$^{90}$Sr** | | 2.47E-08 |
| | $^{90}$Y | 5.40E-08 |
| ***Total $^{90}$Sr*** | | ***7.87E-08*** |
| ***Total $^{232}$Th*** | | ***1.72E-04*** |
| **$^{235}$U** | | 9.61E-07 |
| | $^{231}$Th | 4.33E-08 |
| ***Total $^{235}$U*** | | ***1.00E-06*** |

As shown in Table 5, the resultant PRG Calculator risks for individual radionuclides or radionuclide decay chains are protective for residential exposures to site soils that are uniformly contaminated at the remedial goal levels. Since the site is not uniformly contaminated, the actual risks are expected to be considerably less than these maximum values.

# 5 Summary

This report describes the use of RESRAD-ONSITE and the PRG Calculator to estimate the doses and excess cancer risks to residents from exposures to HPNS soils uniformly contaminated at the residential remediation goal levels. The assumptions and methods used in this report are very conservative and the use of additional site-specific data and refined exposure scenarios would result in more realistic and lower dose and risk estimates. However, the current estimated risks remain within the $10^{-4}$ to $10^{-6}$ range using both models, indicating that remedial goals in the 2006 Action Memorandum are protective for future residential exposures.

# 6 References

Naval Facilities Engineering Command (NAVFAC), Southwest. 2006. *Final – Basewide Radiological Removal Action: Action Memorandum – Revision 2006, Hunters Point Shipyard, San Francisco, CA*. April.

Naval Facilities Engineering Command (NAVFAC), Southwest. 2001. *Final – Basewide Radiological Removal Action: Action Memorandum, Hunters Point Shipyard, San Francisco, CA*. November.

Naval Sea Systems Command (NAVSEA), Radiological Affairs support Office. 2004. *Hunters Point Shipyard – Final Historical Radiological Assessment: History of the Use of General Radioactive Materials, 1939-2003*.

# Appendix A. Radionuclide of Concern Input Concentrations

Table 6 presents the input concentrations used in RESRAD-ONSITE and in the PRG Calculator to calculate resident doses and risks. The progeny concentrations are adjusted based on the branching fraction of its parent's decay and the state of equilibrium of the decay chain.

**Table 6. Input Soil Concentrations**

| Parent ROC | Contributing Progeny [1] | Residential Soil RG (pCi/g) | Branching Fraction | Input Concentration (pCi/g) | |
|---|---|---|---|---|---|
| | | | | RESRAD-ONSITE | PRG Calculator |
| **$^{241}$Am** | [1] | 1.36 | 1 | 1.36 | 1.36 |
| **$^{137}$Cs** | | 0.113 | 1 | 0.113 | 0.113 |
| | $^{137m}$Ba [2] | | 0.9440 | | 0.107 [3] |
| **$^{60}$Co** | | 0.0361 | 1 | 0.0361 | 0.0361 |
| **$^{152}$Eu** | [1] | 0.13 | 1 | 0.13 | 0.13 |
| **$^{154}$Eu** | | 0.23 | 1 | 0.23 | 0.23 |
| **$^{3}$H** | | 2.28 | 1 | 2.28 | 2.28 |
| **$^{239}$Pu** | | 2.59 | 1 | 2.59 | 2.59 |
| | $^{235m}$U [2] | | 0.9994 | | 2.59 |
| **$^{226}$Ra** | [4] | 1.0 | 1 | 1.0 | 1.0 |
| **$^{90}$Sr** | | 0.331 | 1 | 0.331 | 0.331 |
| | $^{90}$Y [2] | | 0.9978 | | 0.331 |
| **$^{232}$Th** | [4] | 1.69 | 1 | 1.69 | 1.69 |
| **$^{235}$U** | | 0.195 | 1 | 0.195 | 0.195 |
| | $^{231}$Th [2] | | 1 | | 0.195 |

[1] The progeny of $^{241}$Am and $^{152}$Eu do not reach secular equilibrium with their parent and are not included in the modeling.

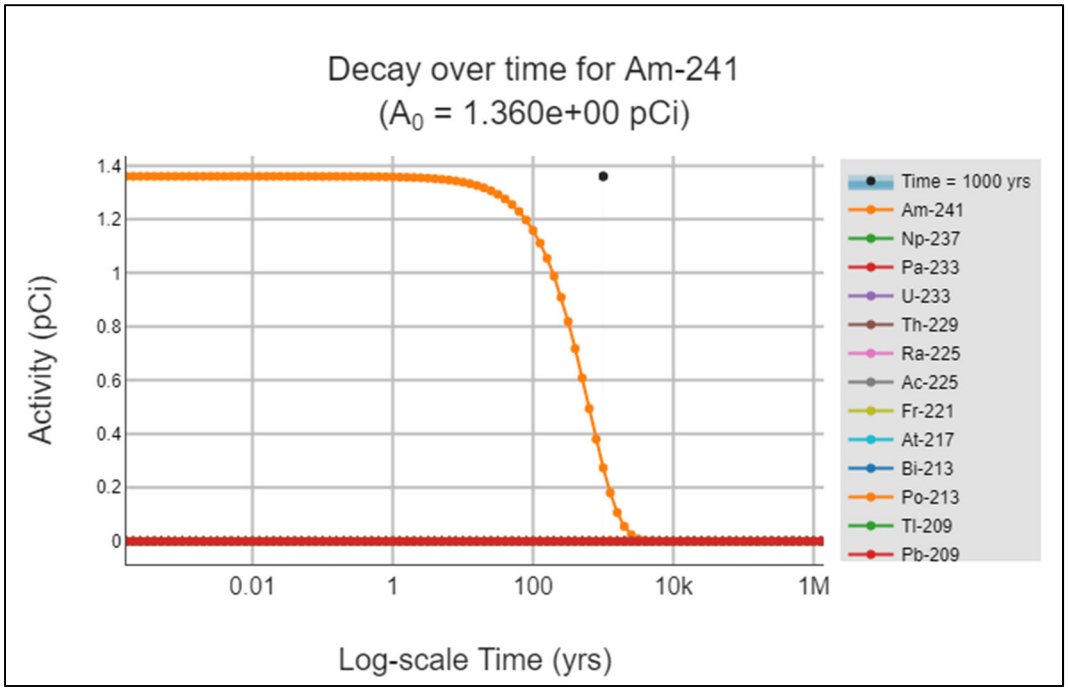
[2] These progeny half-lives are very short compared to those of their parents. Since the PRG Calculator does not model ingrowth, short-lived progeny that are initially present decay away rapidly without replenishment, resulting in an underestimation of their actual contribution to resident risks. Their half-lives are adjusted in the PRG Calculator to those of their parents to simulate their presence throughout the exposure period. This results in a risk overestimation but was chosen to remain conservative. In RESRAD-ONSITE, their ingrowth and decay are modeled automatically.

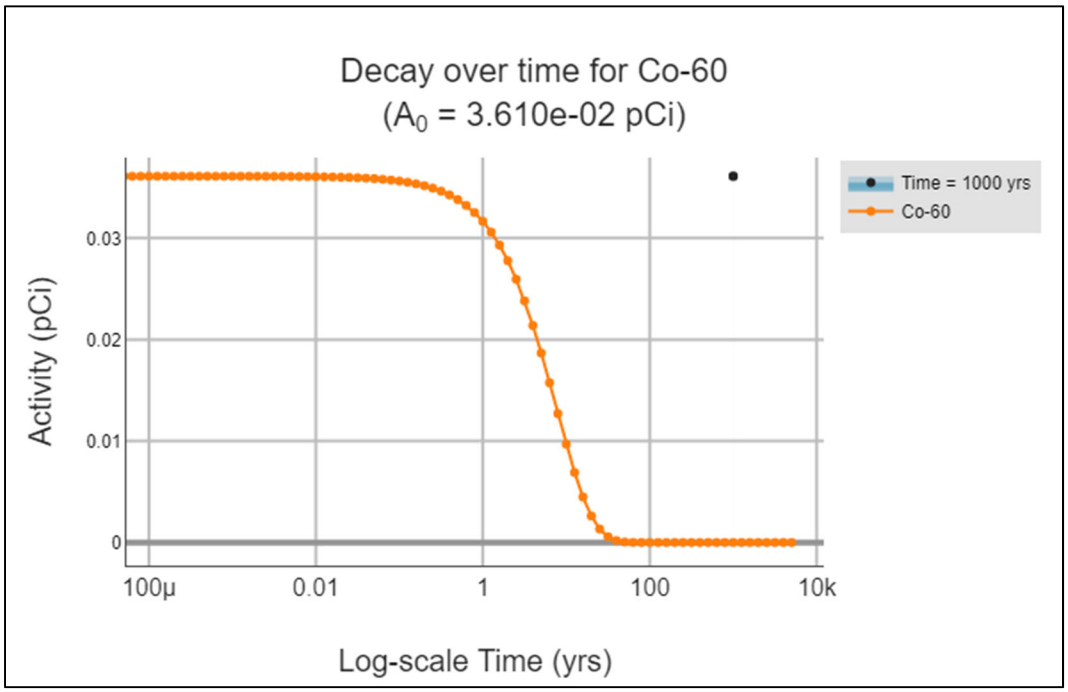
[3] The input concentration of $^{137m}$Ba in the PRG Calculator is reduced by the branching fraction (0.113 x 0.944 = 0.107 pCi/g).

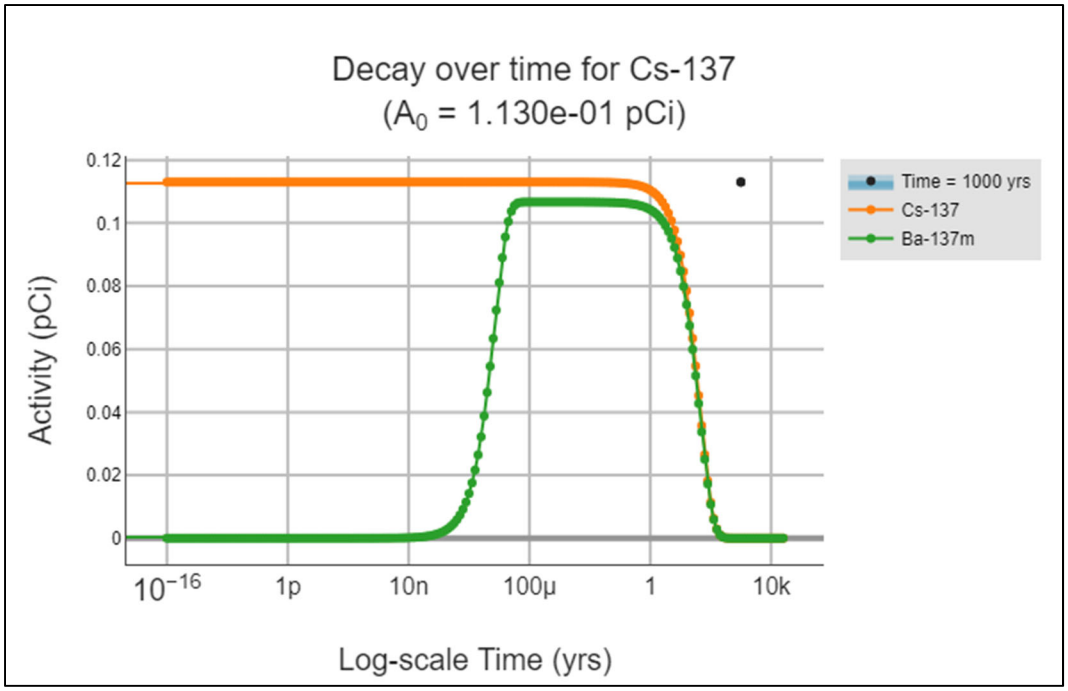
[4] Concentrations for the progenies of $^{226}$Ra and $^{232}$Th are included in the PRG Calculator by using the *Assumes secular equilibrium throughout chain (no decay)* output option. In RESRAD-ONSITE, their ingrowth and decay are modeled automatically.

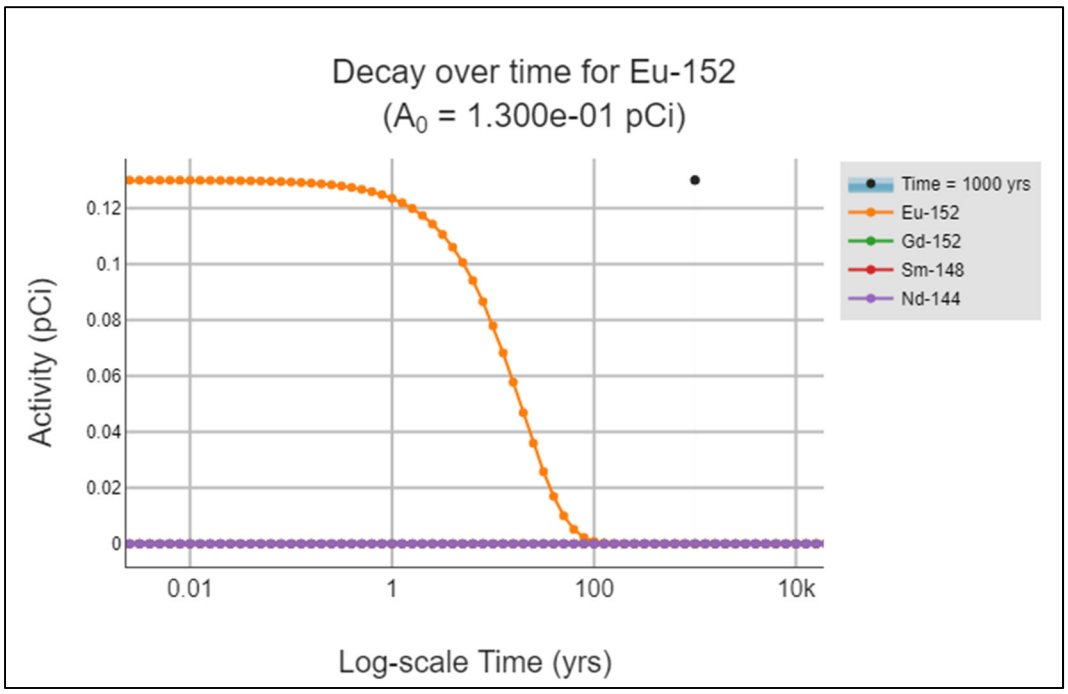
## Appendix B. Radioactive Decay Plots

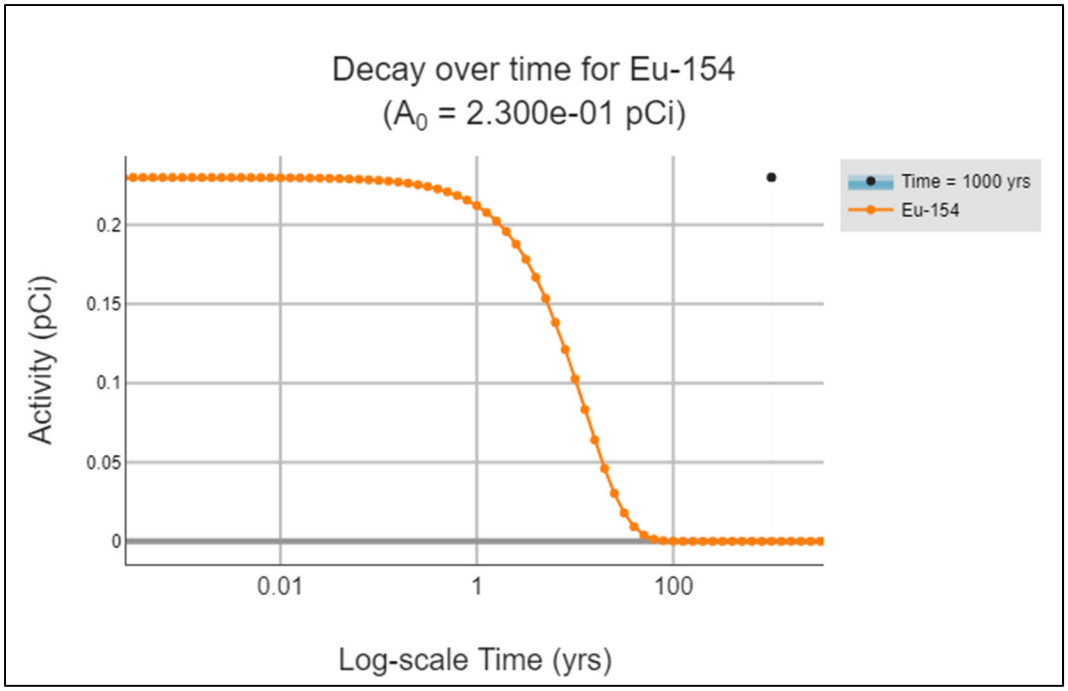
The following plots of radioactive decay for each parent ROC were generated using the Decay Chain Activity Projection Tool (https://rais.ornl.gov/cgi-bin/chain/chain.pl) developed by Oak Ridge National Laboratory (ORNL).

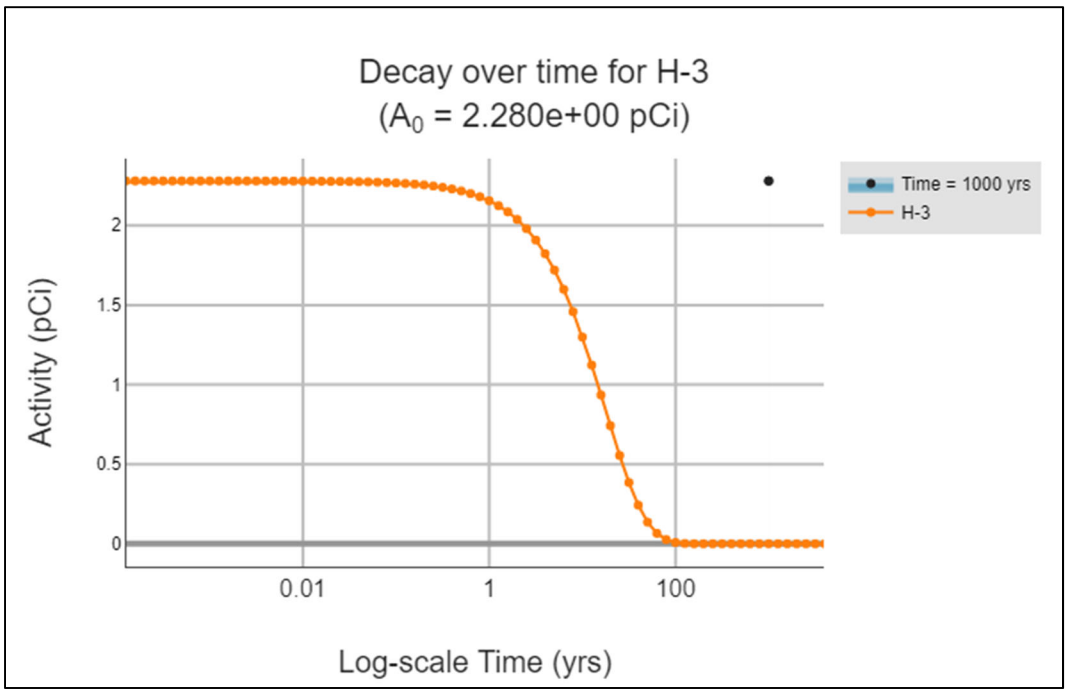


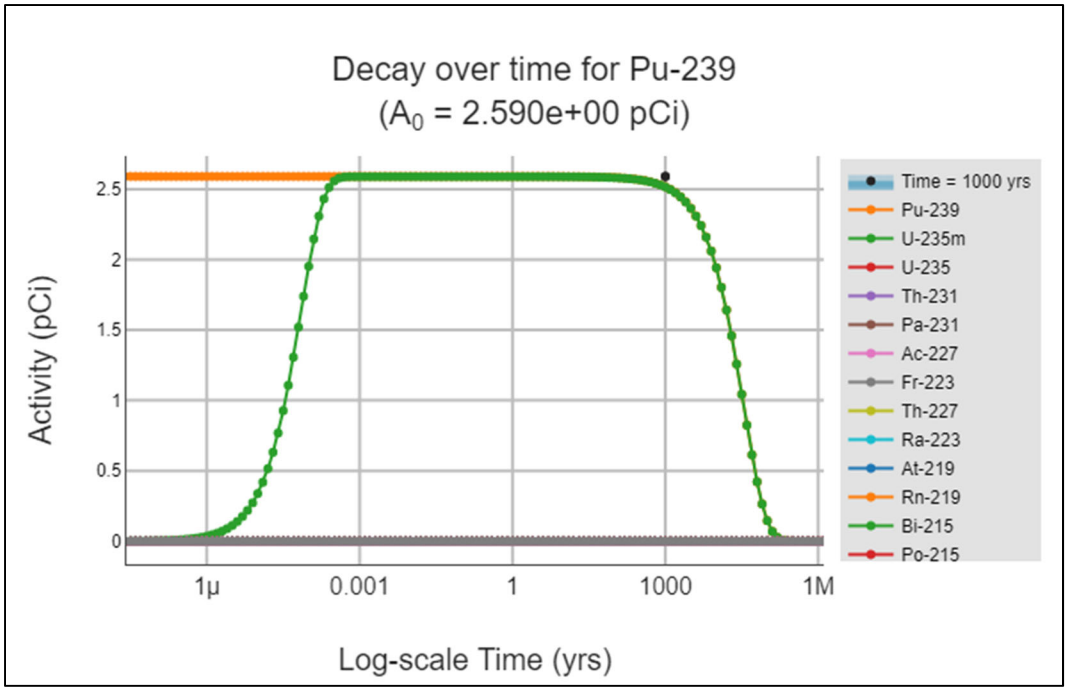



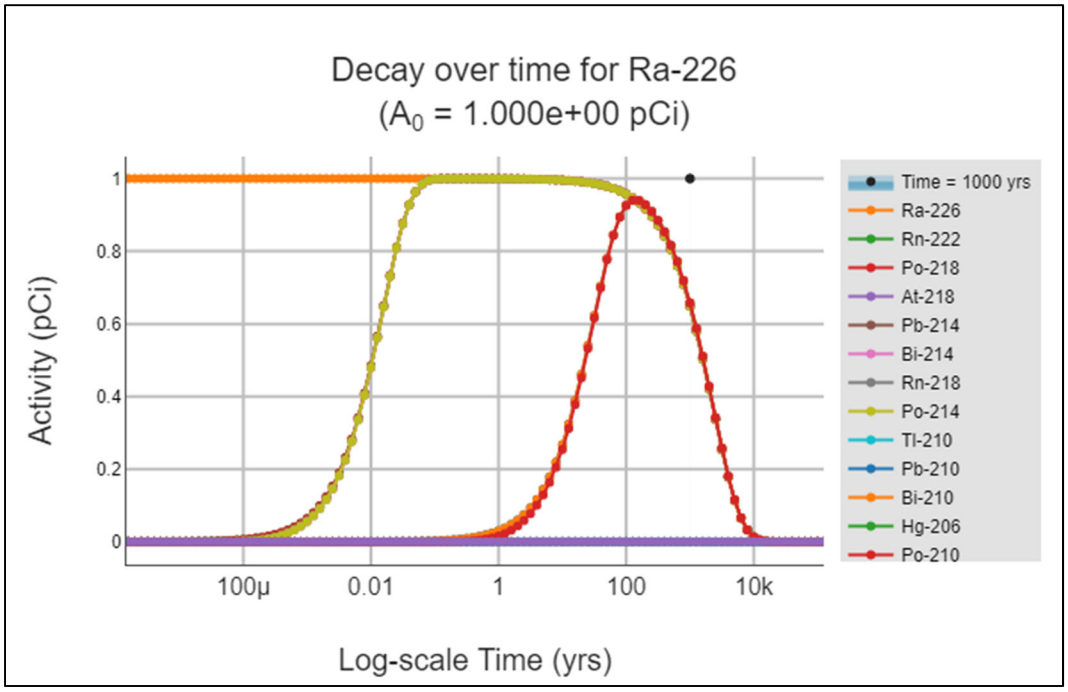

Decay over time for Cs-137
($A_0$ = 1.130e-01 pCi)
Activity (pCi)
0.12
0.1
0.08
0.06
0.04
0.02
0
$10^{-16}$
1p
10n
100μ
1
10k
Log-scale Time (yrs)
Time = 1000 yrs
Cs-137
Ba-137m

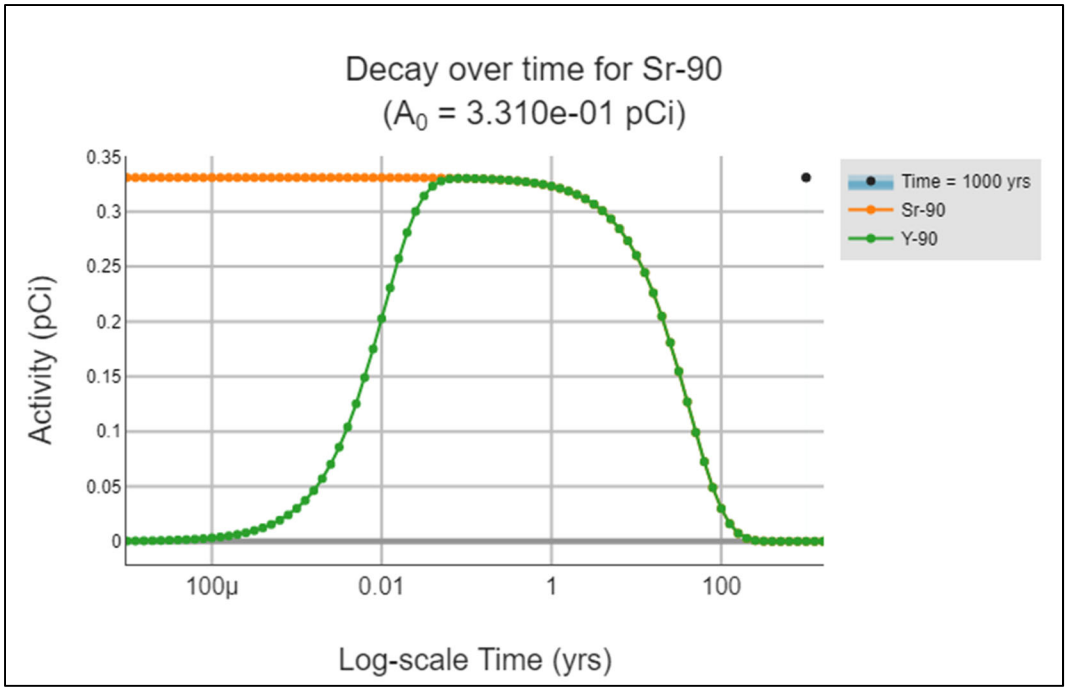

Decay over time for Eu-152
($A_0$ = 1.300e-01 pCi)
Activity (pCi)
0.12
0.1
0.08
0.06
0.04
0.02
0
0.01
1
100
10k
Log-scale Time (yrs)
Time = 1000 yrs
Eu-152
Gd-152
Sm-148
Nd-144

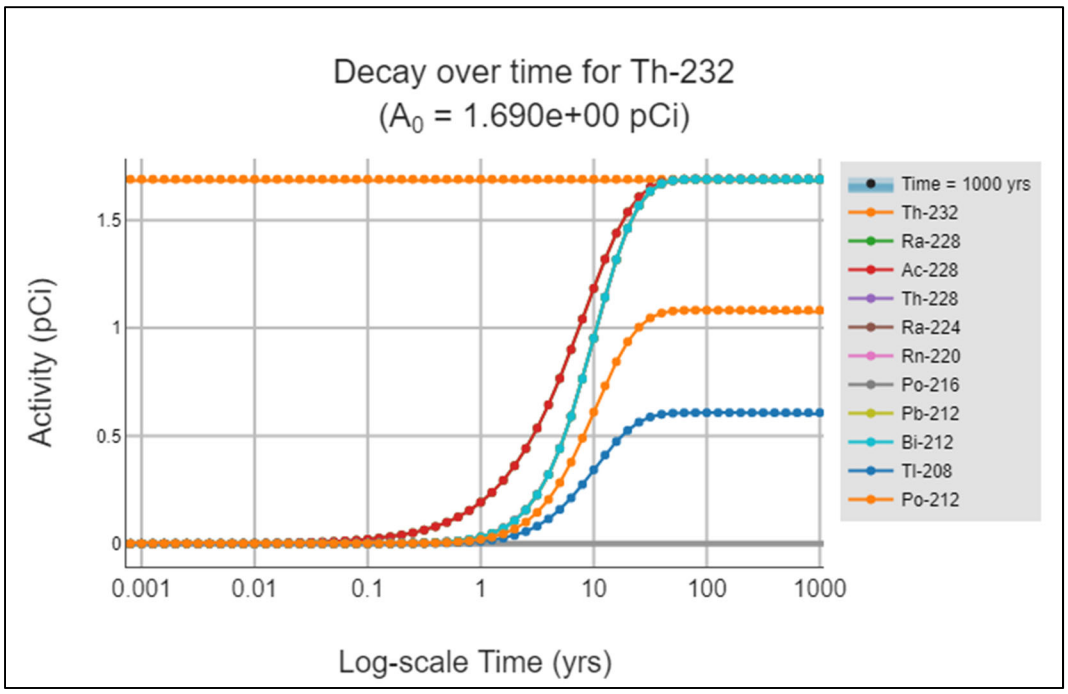

Decay over time for Eu-154
($A_0$ = 2.300e-01 pCi)
Activity (pCi)
0.2
0.15
0.1
0.05
0
0.01
1
100
Log-scale Time (yrs)
Time = 1000 yrs
Eu-154

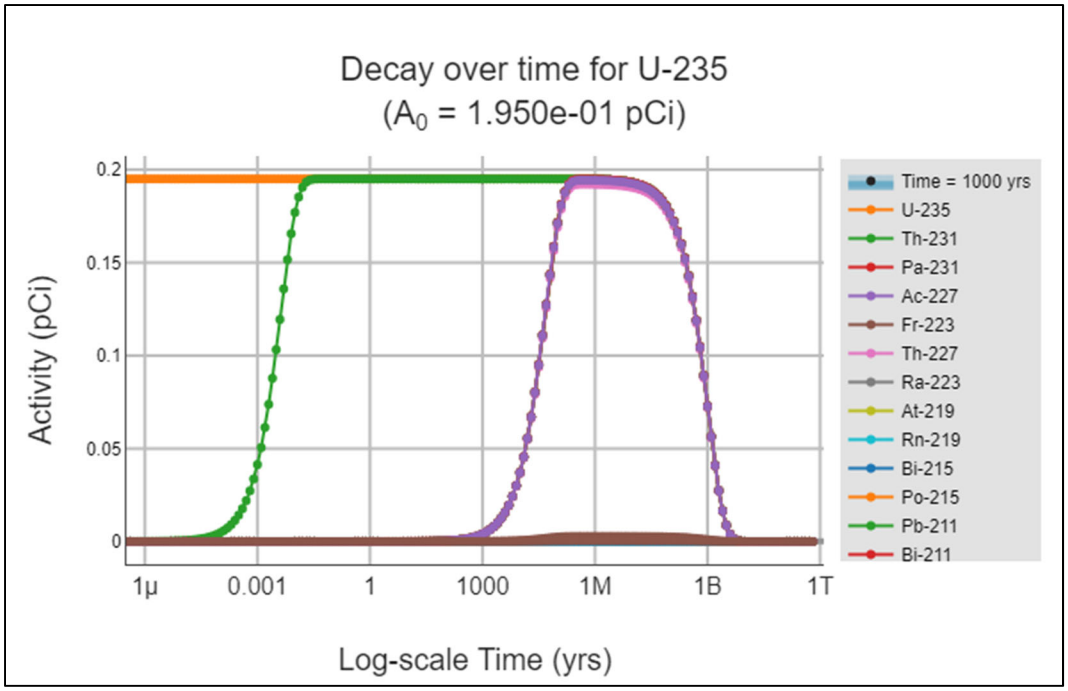

Decay over time for H-3
($A_0$ = 2.280e+00 pCi)
Activity (pCi)
2
1.5
1
0.5
0
0.01
1
100
Log-scale Time (yrs)
Time = 1000 yrs
H-3


Decay over time for Pu-239
($A_0$ = 2.590e+00 pCi)
Activity (pCi)
2.5
2
1.5
1
0.5
0
1μ
0.001
1
1000
1M
Log-scale Time (yrs)
Time = 1000 yrs
Pu-239
U-235m
U-235
Th-231
Pa-231
Ac-227
Fr-223
Th-227
Ra-223
At-219
Rn-219
Bi-215
Po-215


Decay over time for Ra-226
($A_0$ = 1.000e+00 pCi)
Activity (pCi)
1
0.8
0.6
0.4
0.2
0
100μ
0.01
1
100
10k
Log-scale Time (yrs)
Time = 1000 yrs
Ra-226
Rn-222
Po-218
At-218
Pb-214
Bi-214
Rn-218
Po-214
Tl-210
Pb-210
Bi-210
Hg-206
Po-210


Decay over time for Sr-90
($A_0$ = 3.310e-01 pCi)
Activity (pCi)
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
100µ
0.01
1
100
Log-scale Time (yrs)
Time = 1000 yrs
Sr-90
Y-90


Decay over time for Th-232
($A_0$ = 1.690e+00 pCi)
Activity (pCi)
1.5
1
0.5
0
0.001
0.01
0.1
1
10
100
1000
Log-scale Time (yrs)
Time = 1000 yrs
Th-232
Ra-228
Ac-228
Th-228
Ra-224
Rn-220
Po-216
Pb-212
Bi-212
Tl-208
Po-212


Decay over time for U-235
($A_0$ = 1.950e-01 pCi)
Activity (pCi)
0.2
0.15
0.1
0.05
0
1μ
0.001
1
1000
1M
1B
1T
Log-scale Time (yrs)
Time = 1000 yrs
U-235
Th-231
Pa-231
Ac-227
Fr-223
Th-227
Ra-223
At-219
Rn-219
Bi-215
Po-215
Pb-211
Bi-211

# Appendix C. RESRAD-ONSITE Output Files

Summary : RESRAD Default Parameters
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE28.RAD

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Dose Conversion Factor (and Related) Parameter Summary
Dose Library: DOE STD-1196-2011 (Reference Person)

| 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: DCFPAK3.02) | 5.286E-02 | 5.286E-02 | DCF1( 1) |
| A-1 | Ac-227 (Source: DCFPAK3.02) | 2.615E-04 | 2.615E-04 | DCF1( 2) |
| A-1 | Am-241 (Source: DCFPAK3.02) | 3.717E-02 | 3.717E-02 | DCF1( 3) |
| A-1 | At-217 (Source: DCFPAK3.02) | 1.186E-03 | 1.186E-03 | DCF1( 4) |
| A-1 | At-218 (Source: DCFPAK3.02) | 5.567E-05 | 5.567E-05 | DCF1( 5) |
| A-1 | At-219 (Source: DCFPAK3.02) | 0.000E+00 | 0.000E+00 | DCF1( 6) |
| A-1 | Ba-137m (Source: DCFPAK3.02) | 3.381E+00 | 3.381E+00 | DCF1( 7) |
| A-1 | Bi-210 (Source: DCFPAK3.02) | 5.473E-03 | 5.473E-03 | DCF1( 8) |
| A-1 | Bi-211 (Source: DCFPAK3.02) | 2.410E-01 | 2.410E-01 | DCF1( 9) |
| A-1 | Bi-213 (Source: DCFPAK3.02) | 6.874E-01 | 6.874E-01 | DCF1( 10) |
| A-1 | Bi-214 (Source: DCFPAK3.02) | 9.135E+00 | 9.135E+00 | DCF1( 11) |
| A-1 | Bi-215 (Source: DCFPAK3.02) | 1.369E+00 | 1.369E+00 | DCF1( 12) |
| A-1 | Co-60 (Source: DCFPAK3.02) | 1.539E+01 | 1.539E+01 | DCF1( 13) |
| A-1 | Cs-137 (Source: DCFPAK3.02) | 8.686E-04 | 8.686E-04 | DCF1( 14) |
| A-1 | Eu-152 (Source: DCFPAK3.02) | 6.743E+00 | 6.743E+00 | DCF1( 15) |
| A-1 | Eu-154 (Source: DCFPAK3.02) | 7.285E+00 | 7.285E+00 | DCF1( 16) |
| A-1 | Fr-221 (Source: DCFPAK3.02) | 1.332E-01 | 1.332E-01 | DCF1( 17) |
| A-1 | Fr-223 (Source: DCFPAK3.02) | 1.758E-01 | 1.758E-01 | DCF1( 18) |
| A-1 | Gd-152 (Source: DCFPAK3.02) | 0.000E+00 | 0.000E+00 | DCF1( 19) |
| A-1 | H-3 (Source: DCFPAK3.02) | 0.000E+00 | 0.000E+00 | DCF1( 20) |
| A-1 | Hg-206 (Source: DCFPAK3.02) | 6.127E-01 | 6.127E-01 | DCF1( 21) |
| A-1 | Nd-144 (Source: DCFPAK3.02) | 0.000E+00 | 0.000E+00 | DCF1( 22) |
| A-1 | Np-237 (Source: DCFPAK3.02) | 6.706E-02 | 6.706E-02 | DCF1( 23) |
| A-1 | Pa-231 (Source: DCFPAK3.02) | 1.608E-01 | 1.608E-01 | DCF1( 24) |
| A-1 | Pa-233 (Source: DCFPAK3.02) | 1.018E+00 | 1.018E+00 | DCF1( 25) |
| A-1 | Pb-209 (Source: DCFPAK3.02) | 7.528E-04 | 7.528E-04 | DCF1( 26) |
| A-1 | Pb-210 (Source: DCFPAK3.02) | 2.092E-03 | 2.092E-03 | DCF1( 27) |
| A-1 | Pb-211 (Source: DCFPAK3.02) | 3.680E-01 | 3.680E-01 | DCF1( 28) |
| A-1 | Pb-214 (Source: DCFPAK3.02) | 1.257E+00 | 1.257E+00 | DCF1( 29) |
| A-1 | Po-210 (Source: DCFPAK3.02) | 5.641E-05 | 5.641E-05 | DCF1( 30) |
| A-1 | Po-211 (Source: DCFPAK3.02) | 4.707E-02 | 4.707E-02 | DCF1( 31) |
| A-1 | Po-213 (Source: DCFPAK3.02) | 2.167E-04 | 2.167E-04 | DCF1( 32) |
| A-1 | Po-214 (Source: DCFPAK3.02) | 4.801E-04 | 4.801E-04 | DCF1( 33) |
| A-1 | Po-215 (Source: DCFPAK3.02) | 9.452E-04 | 9.452E-04 | DCF1( 34) |
| A-1 | Po-218 (Source: DCFPAK3.02) | 9.228E-09 | 9.228E-09 | DCF1( 35) |
| A-1 | Pu-239 (Source: DCFPAK3.02) | 2.765E-04 | 2.765E-04 | DCF1( 36) |
| A-1 | Ra-223 (Source: DCFPAK3.02) | 5.791E-01 | 5.791E-01 | DCF1( 37) |
| A-1 | Ra-225 (Source: DCFPAK3.02) | 8.910E-03 | 8.910E-03 | DCF1( 38) |
| A-1 | Ra-226 (Source: DCFPAK3.02) | 3.176E-02 | 3.176E-02 | DCF1( 39) |
| A-1 | Rn-218 (Source: DCFPAK3.02) | 4.259E-03 | 4.259E-03 | DCF1( 40) |
| A-1 | Rn-219 (Source: DCFPAK3.02) | 2.970E-01 | 2.970E-01 | DCF1( 41) |
| A-1 | Rn-222 (Source: DCFPAK3.02) | 2.130E-03 | 2.130E-03 | DCF1( 42) |
| A-1 | Sm-148 (Source: DCFPAK3.02) | 0.000E+00 | 0.000E+00 | DCF1( 43) |
| A-1 | Sr-90 (Source: DCFPAK3.02) | 6.463E-04 | 6.463E-04 | DCF1( 44) |
| A-1 | Th-227 (Source: DCFPAK3.02) | 5.641E-01 | 5.641E-01 | DCF1( 45) |
| A-1 | Th-229 (Source: DCFPAK3.02) | 2.877E-01 | 2.877E-01 | DCF1( 46) |
| A-1 | Th-231 (Source: DCFPAK3.02) | 3.250E-02 | 3.250E-02 | DCF1( 47) |
| A-1 | Tl-206 (Source: DCFPAK3.02) | 1.278E-02 | 1.278E-02 | DCF1( 48) |
| A-1 | Tl-207 (Source: DCFPAK3.02) | 2.391E-02 | 2.391E-02 | DCF1( 49) |

Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DOE STD-1196-2011 (Reference Person)

| Menu | Parameter | Current Value# | Base Case* | Parameter Name |
|---|---|---|---|---|
| A-1 | Tl-209 (Source: DCFPAK3.02) | 1.287E+01 | 1.287E+01 | DCF1( 50) |
| A-1 | Tl-210 (Source: DCFPAK3.02) | 1.677E+01 | 1.677E+01 | DCF1( 51) |
| A-1 | U-233 (Source: DCFPAK3.02) | 9.191E-04 | 9.191E-04 | DCF1( 52) |
| A-1 | U-235 (Source: DCFPAK3.02) | 7.005E-01 | 7.005E-01 | DCF1( 53) |
| A-1 | U-235m (Source: DCFPAK3.02) | 0.000E+00 | 0.000E+00 | DCF1( 54) |
| A-1 | Y-90 (Source: DCFPAK3.02) | 4.016E-02 | 4.016E-02 | DCF1( 55) |
| | | | | |
| B-1 | Dose conversion factors for inhalation, mrem/pCi: | | | |
| B-1 | Ac-225+D | 3.397E-02 | 3.397E-02 | DCF2( 1) |
| B-1 | Ac-227 | 5.957E-01 | 5.957E-01 | DCF2( 2) |
| B-1 | Am-241 | 3.630E-01 | 3.630E-01 | DCF2( 5) |
| B-1 | Bi-210 | 5.402E-04 | 5.402E-04 | DCF2( 6) |
| B-1 | Bi-210+D | 5.402E-04 | 5.402E-04 | DCF2( 7) |
| B-1 | Bi-213+D | 1.313E-04 | 1.313E-04 | DCF2( 8) |
| B-1 | Bi-214+D | 6.364E-05 | 6.364E-05 | DCF2( 9) |
| B-1 | Co-60 | 1.221E-04 | 1.221E-04 | DCF2( 12) |
| B-1 | Cs-137+D | 1.543E-04 | 1.543E-04 | DCF2( 13) |
| B-1 | Eu-152 | 3.674E-04 | 3.674E-04 | DCF2( 14) |
| B-1 | Eu-154 | 4.255E-04 | 4.255E-04 | DCF2( 16) |
| B-1 | Fr-223 | 4.921E-05 | 4.921E-05 | DCF2( 17) |
| B-1 | Fr-223+D | 4.921E-05 | 4.921E-05 | DCF2( 18) |
| B-1 | Gd-152 | 7.437E-02 | 7.437E-02 | DCF2( 19) |
| B-1 | H-3 | 1.069E-06 | 1.069E-06 | DCF2( 20) |
| B-1 | Nd-144 | 7.437E-02 | 7.437E-02 | DCF2( 21) |
| B-1 | Np-237 | 1.868E-01 | 1.868E-01 | DCF2( 22) |
| B-1 | Pa-231 | 8.769E-01 | 8.769E-01 | DCF2( 23) |
| B-1 | Pa-233 | 1.687E-05 | 1.687E-05 | DCF2( 26) |
| B-1 | Pb-209 | 2.583E-07 | 2.583E-07 | DCF2( 27) |
| B-1 | Pb-210 | 2.231E-02 | 2.231E-02 | DCF2( 28) |
| B-1 | Pb-210+D | 2.231E-02 | 2.231E-02 | DCF2( 30) |
| B-1 | Pb-211+D | 5.032E-05 | 5.032E-05 | DCF2( 31) |
| B-1 | Pb-214 | 5.920E-05 | 5.920E-05 | DCF2( 32) |
| B-1 | Po-210 | 1.732E-02 | 1.732E-02 | DCF2( 35) |
| B-1 | Pu-239 | 4.477E-01 | 4.477E-01 | DCF2( 36) |
| B-1 | Ra-223+D | 3.474E-02 | 3.474E-02 | DCF2( 42) |
| B-1 | Ra-225 | 3.112E-02 | 3.112E-02 | DCF2( 43) |
| B-1 | Ra-226 | 3.811E-02 | 3.811E-02 | DCF2( 44) |
| B-1 | Rn-222+D | 0.000E+00 | 0.000E+00 | DCF2( 53) |
| B-1 | Rn-222+D1 | 0.000E+00 | 0.000E+00 | DCF2( 56) |
| B-1 | Rn-222+D2 | 0.000E+00 | 0.000E+00 | DCF2( 59) |
| B-1 | Sm-148 | 7.770E-02 | 7.770E-02 | DCF2( 62) |
| B-1 | Sr-90 | 6.068E-04 | 6.068E-04 | DCF2( 63) |
| B-1 | Th-227 | 4.144E-02 | 4.144E-02 | DCF2( 64) |
| B-1 | Th-229 | 9.213E-01 | 9.213E-01 | DCF2( 65) |
| B-1 | Th-231 | 1.399E-06 | 1.399E-06 | DCF2( 66) |
| B-1 | U-233 | 3.811E-02 | 3.811E-02 | DCF2( 69) |
| B-1 | U-235 | 3.378E-02 | 3.378E-02 | DCF2( 70) |
| B-1 | U-235m | 3.393E-12 | 3.393E-12 | DCF2( 73) |
| B-1 | Y-90 | 6.549E-06 | 6.549E-06 | DCF2( 76) |

Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DOE STD-1196-2011 (Reference Person)

| Menu | Parameter | Current Value# | Base Case* | Parameter Name |
|---|---|---|---|---|
| D-1 | Dose conversion factors for ingestion, mrem/pCi: | | | |
| D-1 | Ac-225+D | 1.935E-04 | 1.935E-04 | DCF3( 1) |
| D-1 | Ac-227 | 1.450E-03 | 1.450E-03 | DCF3( 2) |
| D-1 | Am-241 | 8.806E-04 | 8.806E-04 | DCF3( 5) |
| D-1 | Bi-210 | 6.660E-06 | 6.660E-06 | DCF3( 6) |
| D-1 | Bi-210+D | 6.660E-06 | 6.660E-06 | DCF3( 7) |
| D-1 | Bi-213+D | 9.916E-07 | 9.916E-07 | DCF3( 8) |
| D-1 | Bi-214+D | 5.513E-07 | 5.513E-07 | DCF3( 9) |
| D-1 | Co-60 | 2.031E-05 | 2.031E-05 | DCF3( 12) |
| D-1 | Cs-137+D | 4.921E-05 | 4.921E-05 | DCF3( 13) |
| D-1 | Eu-152 | 6.438E-06 | 6.438E-06 | DCF3( 14) |
| D-1 | Eu-154 | 9.657E-06 | 9.657E-06 | DCF3( 16) |
| D-1 | Fr-223 | 1.195E-05 | 1.195E-05 | DCF3( 17) |
| D-1 | Fr-223+D | 1.195E-05 | 1.195E-05 | DCF3( 18) |
| D-1 | Gd-152 | 1.968E-04 | 1.968E-04 | DCF3( 19) |
| D-1 | H-3 | 1.695E-07 | 1.695E-07 | DCF3( 20) |
| D-1 | Nd-144 | 1.954E-04 | 1.954E-04 | DCF3( 21) |
| D-1 | Np-237 | 4.625E-04 | 4.625E-04 | DCF3( 22) |
| D-1 | Pa-231 | 2.068E-03 | 2.068E-03 | DCF3( 23) |
| D-1 | Pa-233 | 4.884E-06 | 4.884E-06 | DCF3( 26) |
| D-1 | Pb-209 | 2.764E-07 | 2.764E-07 | DCF3( 27) |
| D-1 | Pb-210 | 3.774E-03 | 3.774E-03 | DCF3( 28) |
| D-1 | Pb-210+D | 3.774E-03 | 3.774E-03 | DCF3( 30) |
| D-1 | Pb-211+D | 9.694E-07 | 9.694E-07 | DCF3( 31) |
| D-1 | Pb-214 | 7.363E-07 | 7.363E-07 | DCF3( 32) |
| D-1 | Po-210 | 6.475E-03 | 6.475E-03 | DCF3( 35) |
| D-1 | Pu-239 | 1.066E-03 | 1.066E-03 | DCF3( 36) |
| D-1 | Ra-223+D | 8.029E-04 | 8.029E-04 | DCF3( 42) |
| D-1 | Ra-225 | 8.806E-04 | 8.806E-04 | DCF3( 43) |
| D-1 | Ra-226 | 1.676E-03 | 1.676E-03 | DCF3( 44) |
| D-1 | Rn-222+D | 0.000E+00 | 0.000E+00 | DCF3( 53) |
| D-1 | Rn-222+D1 | 0.000E+00 | 0.000E+00 | DCF3( 56) |
| D-1 | Rn-222+D2 | 0.000E+00 | 0.000E+00 | DCF3( 59) |
| D-1 | Sm-148 | 2.035E-04 | 2.035E-04 | DCF3( 62) |
| D-1 | Sr-90 | 1.332E-04 | 1.332E-04 | DCF3( 63) |
| D-1 | Th-227 | 5.439E-05 | 5.439E-05 | DCF3( 64) |
| D-1 | Th-229 | 2.253E-03 | 2.253E-03 | DCF3( 65) |
| D-1 | Th-231 | 1.706E-06 | 1.706E-06 | DCF3( 66) |
| D-1 | U-233 | 2.227E-04 | 2.227E-04 | DCF3( 69) |
| D-1 | U-235 | 2.031E-04 | 2.031E-04 | DCF3( 70) |
| D-1 | U-235m | 2.153E-11 | 2.153E-11 | DCF3( 73) |
| D-1 | Y-90 | 1.369E-05 | 1.369E-05 | DCF3( 76) |
| | | | | |
| D-34 | Food transfer factors: | | | |
| D-34 | Ac-225+D , plant/soil concentration ratio, dimensionless | 2.500E-03 | 2.500E-03 | RTF( 1,1) |
| D-34 | Ac-225+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 2.000E-05 | 2.000E-05 | RTF( 1,2) |
| D-34 | Ac-225+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 2.000E-05 | 2.000E-05 | RTF( 1,3) |
| D-34 | | | | |

Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DOE STD-1196-2011 (Reference Person)

| Menu | Parameter | Current Value# | Base Case* | Parameter Name |
|---|---|---|---|---|
| D-34 | Ac-227 , plant/soil concentration ratio, dimensionless | 2.500E-03 | 2.500E-03 | RTF( 2,1) |
| D-34 | Ac-227 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 2.000E-05 | 2.000E-05 | RTF( 2,2) |
| D-34 | Ac-227 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 2.000E-05 | 2.000E-05 | RTF( 2,3) |
| D-34 | | | | |
| D-34 | Am-241 , plant/soil concentration ratio, dimensionless | 1.000E-03 | 1.000E-03 | RTF( 5,1) |
| D-34 | Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 5.000E-05 | 5.000E-05 | RTF( 5,2) |
| D-34 | Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 2.000E-06 | 2.000E-06 | RTF( 5,3) |
| D-34 | | | | |
| D-34 | Bi-210 , plant/soil concentration ratio, dimensionless | 1.000E-01 | 1.000E-01 | RTF( 6,1) |
| D-34 | Bi-210 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 2.000E-03 | 2.000E-03 | RTF( 6,2) |
| D-34 | Bi-210 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-04 | 5.000E-04 | RTF( 6,3) |
| D-34 | | | | |
| D-34 | Bi-210+D , plant/soil concentration ratio, dimensionless | 1.000E-01 | 1.000E-01 | RTF( 7,1) |
| D-34 | Bi-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 2.000E-03 | 2.000E-03 | RTF( 7,2) |
| D-34 | Bi-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-04 | 5.000E-04 | RTF( 7,3) |
| D-34 | | | | |
| D-34 | Bi-213+D , plant/soil concentration ratio, dimensionless | 1.000E-01 | 1.000E-01 | RTF( 8,1) |
| D-34 | Bi-213+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 2.000E-03 | 2.000E-03 | RTF( 8,2) |
| D-34 | Bi-213+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-04 | 5.000E-04 | RTF( 8,3) |
| D-34 | | | | |
| D-34 | Bi-214+D , plant/soil concentration ratio, dimensionless | 1.000E-01 | 1.000E-01 | RTF( 9,1) |
| D-34 | Bi-214+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 2.000E-03 | 2.000E-03 | RTF( 9,2) |
| D-34 | Bi-214+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-04 | 5.000E-04 | RTF( 9,3) |
| D-34 | | | | |
| D-34 | Co-60 , plant/soil concentration ratio, dimensionless | 8.000E-02 | 8.000E-02 | RTF( 12,1) |
| D-34 | Co-60 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 2.000E-02 | 2.000E-02 | RTF( 12,2) |
| D-34 | Co-60 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 2.000E-03 | 2.000E-03 | RTF( 12,3) |
| D-34 | | | | |
| D-34 | Cs-137+D , plant/soil concentration ratio, dimensionless | 4.000E-02 | 4.000E-02 | RTF( 13,1) |
| D-34 | Cs-137+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 3.000E-02 | 3.000E-02 | RTF( 13,2) |
| D-34 | Cs-137+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 8.000E-03 | 8.000E-03 | RTF( 13,3) |
| D-34 | | | | |
| D-34 | Eu-152 , plant/soil concentration ratio, dimensionless | 2.500E-03 | 2.500E-03 | RTF( 14,1) |
| D-34 | Eu-152 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 2.000E-03 | 2.000E-03 | RTF( 14,2) |
| D-34 | Eu-152 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-05 | 5.000E-05 | RTF( 14,3) |
| D-34 | | | | |
| D-34 | Eu-154 , plant/soil concentration ratio, dimensionless | 2.500E-03 | 2.500E-03 | RTF( 16,1) |
| D-34 | Eu-154 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 2.000E-03 | 2.000E-03 | RTF( 16,2) |
| D-34 | Eu-154 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-05 | 5.000E-05 | RTF( 16,3) |
| D-34 | | | | |
| D-34 | Fr-223 , plant/soil concentration ratio, dimensionless | 3.000E-02 | 3.000E-02 | RTF( 17,1) |
| D-34 | Fr-223 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 3.000E-02 | 3.000E-02 | RTF( 17,2) |
| D-34 | Fr-223 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 8.000E-03 | 8.000E-03 | RTF( 17,3) |
| D-34 | | | | |
| D-34 | Fr-223+D , plant/soil concentration ratio, dimensionless | 3.000E-02 | 3.000E-02 | RTF( 18,1) |
| D-34 | Fr-223+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 3.000E-02 | 3.000E-02 | RTF( 18,2) |
| D-34 | Fr-223+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 8.000E-03 | 8.000E-03 | RTF( 18,3) |
| D-34 | | | | |

Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DOE STD-1196-2011 (Reference Person)

| Menu | Parameter | Current Value# | Base Case* | Parameter Name |
|---|---|---|---|---|
| D-34 | Gd-152 , plant/soil concentration ratio, dimensionless | 2.500E-03 | 2.500E-03 | RTF( 19,1) |
| D-34 | Gd-152 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 2.000E-03 | 2.000E-03 | RTF( 19,2) |
| D-34 | Gd-152 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 2.000E-05 | 2.000E-05 | RTF( 19,3) |
| D-34 | | | | |
| D-34 | H-3 , plant/soil concentration ratio, dimensionless | 4.800E+00 | 4.800E+00 | RTF( 20,1) |
| D-34 | H-3 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.200E-02 | 1.200E-02 | RTF( 20,2) |
| D-34 | H-3 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 1.000E-02 | 1.000E-02 | RTF( 20,3) |
| D-34 | | | | |
| D-34 | Nd-144 , plant/soil concentration ratio, dimensionless | 2.400E-03 | 2.400E-03 | RTF( 21,1) |
| D-34 | Nd-144 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 2.000E-03 | 2.000E-03 | RTF( 21,2) |
| D-34 | Nd-144 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 2.000E-05 | 2.000E-05 | RTF( 21,3) |
| D-34 | | | | |
| D-34 | Np-237 , plant/soil concentration ratio, dimensionless | 2.000E-02 | 2.000E-02 | RTF( 22,1) |
| D-34 | Np-237 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.000E-03 | 1.000E-03 | RTF( 22,2) |
| D-34 | Np-237 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-06 | 5.000E-06 | RTF( 22,3) |
| D-34 | | | | |
| D-34 | Pa-231 , plant/soil concentration ratio, dimensionless | 1.000E-02 | 1.000E-02 | RTF( 23,1) |
| D-34 | Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 5.000E-03 | 5.000E-03 | RTF( 23,2) |
| D-34 | Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-06 | 5.000E-06 | RTF( 23,3) |
| D-34 | | | | |
| D-34 | Pa-233 , plant/soil concentration ratio, dimensionless | 1.000E-02 | 1.000E-02 | RTF( 26,1) |
| D-34 | Pa-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 5.000E-03 | 5.000E-03 | RTF( 26,2) |
| D-34 | Pa-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-06 | 5.000E-06 | RTF( 26,3) |
| D-34 | | | | |
| D-34 | Pb-209 , plant/soil concentration ratio, dimensionless | 1.000E-02 | 1.000E-02 | RTF( 27,1) |
| D-34 | Pb-209 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 8.000E-04 | 8.000E-04 | RTF( 27,2) |
| D-34 | Pb-209 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 3.000E-04 | 3.000E-04 | RTF( 27,3) |
| D-34 | | | | |
| D-34 | Pb-210 , plant/soil concentration ratio, dimensionless | 1.000E-02 | 1.000E-02 | RTF( 28,1) |
| D-34 | Pb-210 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 8.000E-04 | 8.000E-04 | RTF( 28,2) |
| D-34 | Pb-210 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 3.000E-04 | 3.000E-04 | RTF( 28,3) |
| D-34 | | | | |
| D-34 | Pb-210+D , plant/soil concentration ratio, dimensionless | 1.000E-02 | 1.000E-02 | RTF( 30,1) |
| D-34 | Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 8.000E-04 | 8.000E-04 | RTF( 30,2) |
| D-34 | Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 3.000E-04 | 3.000E-04 | RTF( 30,3) |
| D-34 | | | | |
| D-34 | Pb-211+D , plant/soil concentration ratio, dimensionless | 1.000E-02 | 1.000E-02 | RTF( 31,1) |
| D-34 | Pb-211+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 8.000E-04 | 8.000E-04 | RTF( 31,2) |
| D-34 | Pb-211+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 3.000E-04 | 3.000E-04 | RTF( 31,3) |
| D-34 | | | | |
| D-34 | Pb-214 , plant/soil concentration ratio, dimensionless | 1.000E-02 | 1.000E-02 | RTF( 32,1) |
| D-34 | Pb-214 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 8.000E-04 | 8.000E-04 | RTF( 32,2) |
| D-34 | Pb-214 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 3.000E-04 | 3.000E-04 | RTF( 32,3) |
| D-34 | | | | |
| D-34 | Po-210 , plant/soil concentration ratio, dimensionless | 1.000E-03 | 1.000E-03 | RTF( 35,1) |
| D-34 | Po-210 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 5.000E-03 | 5.000E-03 | RTF( 35,2) |
| D-34 | Po-210 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 3.400E-04 | 3.400E-04 | RTF( 35,3) |
| D-34 | | | | |

Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DOE STD-1196-2011 (Reference Person)

| Menu | Parameter | Current Value# | Base Case* | Parameter Name |
|---|---|---|---|---|
| D-34 | Pu-239 , plant/soil concentration ratio, dimensionless | 1.000E-03 | 1.000E-03 | RTF( 36,1) |
| D-34 | Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.000E-04 | 1.000E-04 | RTF( 36,2) |
| D-34 | Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 1.000E-06 | 1.000E-06 | RTF( 36,3) |
| D-34 | | | | |
| D-34 | Ra-223+D , plant/soil concentration ratio, dimensionless | 4.000E-02 | 4.000E-02 | RTF( 42,1) |
| D-34 | Ra-223+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.000E-03 | 1.000E-03 | RTF( 42,2) |
| D-34 | Ra-223+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 1.000E-03 | 1.000E-03 | RTF( 42,3) |
| D-34 | | | | |
| D-34 | Ra-225 , plant/soil concentration ratio, dimensionless | 4.000E-02 | 4.000E-02 | RTF( 43,1) |
| D-34 | Ra-225 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.000E-03 | 1.000E-03 | RTF( 43,2) |
| D-34 | Ra-225 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 1.000E-03 | 1.000E-03 | RTF( 43,3) |
| D-34 | | | | |
| D-34 | Ra-226 , plant/soil concentration ratio, dimensionless | 4.000E-02 | 4.000E-02 | RTF( 44,1) |
| D-34 | Ra-226 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.000E-03 | 1.000E-03 | RTF( 44,2) |
| D-34 | Ra-226 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 1.000E-03 | 1.000E-03 | RTF( 44,3) |
| D-34 | | | | |
| D-34 | Rn-222+D , plant/soil concentration ratio, dimensionless | 0.000E+00 | 0.000E+00 | RTF( 53,1) |
| D-34 | Rn-222+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 0.000E+00 | 0.000E+00 | RTF( 53,2) |
| D-34 | Rn-222+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 0.000E+00 | 0.000E+00 | RTF( 53,3) |
| D-34 | | | | |
| D-34 | Rn-222+D1 , plant/soil concentration ratio, dimensionless | 0.000E+00 | 0.000E+00 | RTF( 56,1) |
| D-34 | Rn-222+D1 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 0.000E+00 | 0.000E+00 | RTF( 56,2) |
| D-34 | Rn-222+D1 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 0.000E+00 | 0.000E+00 | RTF( 56,3) |
| D-34 | | | | |
| D-34 | Rn-222+D2 , plant/soil concentration ratio, dimensionless | 0.000E+00 | 0.000E+00 | RTF( 59,1) |
| D-34 | Rn-222+D2 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 0.000E+00 | 0.000E+00 | RTF( 59,2) |
| D-34 | Rn-222+D2 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 0.000E+00 | 0.000E+00 | RTF( 59,3) |
| D-34 | | | | |
| D-34 | Sm-148 , plant/soil concentration ratio, dimensionless | 2.500E-03 | 2.500E-03 | RTF( 62,1) |
| D-34 | Sm-148 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 2.000E-03 | 2.000E-03 | RTF( 62,2) |
| D-34 | Sm-148 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 2.000E-05 | 2.000E-05 | RTF( 62,3) |
| D-34 | | | | |
| D-34 | Sr-90 , plant/soil concentration ratio, dimensionless | 3.000E-01 | 3.000E-01 | RTF( 63,1) |
| D-34 | Sr-90 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 8.000E-03 | 8.000E-03 | RTF( 63,2) |
| D-34 | Sr-90 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 2.000E-03 | 2.000E-03 | RTF( 63,3) |
| D-34 | | | | |
| D-34 | Th-227 , plant/soil concentration ratio, dimensionless | 1.000E-03 | 1.000E-03 | RTF( 64,1) |
| D-34 | Th-227 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.000E-04 | 1.000E-04 | RTF( 64,2) |
| D-34 | Th-227 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-06 | 5.000E-06 | RTF( 64,3) |
| D-34 | | | | |
| D-34 | Th-229 , plant/soil concentration ratio, dimensionless | 1.000E-03 | 1.000E-03 | RTF( 65,1) |
| D-34 | Th-229 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.000E-04 | 1.000E-04 | RTF( 65,2) |
| D-34 | Th-229 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-06 | 5.000E-06 | RTF( 65,3) |
| D-34 | | | | |
| D-34 | Th-231 , plant/soil concentration ratio, dimensionless | 1.000E-03 | 1.000E-03 | RTF( 66,1) |
| D-34 | Th-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.000E-04 | 1.000E-04 | RTF( 66,2) |
| D-34 | Th-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-06 | 5.000E-06 | RTF( 66,3) |
| D-34 | | | | |

Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DOE STD-1196-2011 (Reference Person)

| Menu | Parameter | Current Value# | Base Case* | Parameter Name |
|---|---|---|---|---|
| D-34 | U-233 , plant/soil concentration ratio, dimensionless | 2.500E-03 | 2.500E-03 | RTF( 69,1) |
| D-34 | U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 3.400E-04 | 3.400E-04 | RTF( 69,2) |
| D-34 | U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 6.000E-04 | 6.000E-04 | RTF( 69,3) |
| D-34 | | | | |
| D-34 | U-235 , plant/soil concentration ratio, dimensionless | 2.500E-03 | 2.500E-03 | RTF( 70,1) |
| D-34 | U-235 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 3.400E-04 | 3.400E-04 | RTF( 70,2) |
| D-34 | U-235 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 6.000E-04 | 6.000E-04 | RTF( 70,3) |
| D-34 | | | | |
| D-34 | U-235m , plant/soil concentration ratio, dimensionless | 2.500E-03 | 2.500E-03 | RTF( 73,1) |
| D-34 | U-235m , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 3.400E-04 | 3.400E-04 | RTF( 73,2) |
| D-34 | U-235m , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 6.000E-04 | 6.000E-04 | RTF( 73,3) |
| D-34 | | | | |
| D-34 | Y-90 , plant/soil concentration ratio, dimensionless | 2.500E-03 | 2.500E-03 | RTF( 76,1) |
| D-34 | Y-90 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 2.000E-03 | 2.000E-03 | RTF( 76,2) |
| D-34 | Y-90 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 2.000E-05 | 2.000E-05 | RTF( 76,3) |
| | | | | |
| D-5 | Bioaccumulation factors, fresh water, L/kg: | | | |
| D-5 | Ac-225+D , fish | 1.500E+01 | 1.500E+01 | BIOFAC( 1,1) |
| D-5 | Ac-225+D , crustacea and mollusks | 1.000E+03 | 1.000E+03 | BIOFAC( 1,2) |
| D-5 | | | | |
| D-5 | Ac-227 , fish | 1.500E+01 | 1.500E+01 | BIOFAC( 2,1) |
| D-5 | Ac-227 , crustacea and mollusks | 1.000E+03 | 1.000E+03 | BIOFAC( 2,2) |
| D-5 | | | | |
| D-5 | Am-241 , fish | 3.000E+01 | 3.000E+01 | BIOFAC( 5,1) |
| D-5 | Am-241 , crustacea and mollusks | 1.000E+03 | 1.000E+03 | BIOFAC( 5,2) |
| D-5 | | | | |
| D-5 | Bi-210 , fish | 1.500E+01 | 1.500E+01 | BIOFAC( 6,1) |
| D-5 | Bi-210 , crustacea and mollusks | 1.000E+01 | 1.000E+01 | BIOFAC( 6,2) |
| D-5 | | | | |
| D-5 | Bi-210+D , fish | 1.500E+01 | 1.500E+01 | BIOFAC( 7,1) |
| D-5 | Bi-210+D , crustacea and mollusks | 1.000E+01 | 1.000E+01 | BIOFAC( 7,2) |
| D-5 | | | | |
| D-5 | Bi-213+D , fish | 1.500E+01 | 1.500E+01 | BIOFAC( 8,1) |
| D-5 | Bi-213+D , crustacea and mollusks | 1.000E+01 | 1.000E+01 | BIOFAC( 8,2) |
| D-5 | | | | |
| D-5 | Bi-214+D , fish | 1.500E+01 | 1.500E+01 | BIOFAC( 9,1) |
| D-5 | Bi-214+D , crustacea and mollusks | 1.000E+01 | 1.000E+01 | BIOFAC( 9,2) |
| D-5 | | | | |
| D-5 | Co-60 , fish | 3.000E+02 | 3.000E+02 | BIOFAC( 12,1) |
| D-5 | Co-60 , crustacea and mollusks | 2.000E+02 | 2.000E+02 | BIOFAC( 12,2) |
| D-5 | | | | |
| D-5 | Cs-137+D , fish | 2.000E+03 | 2.000E+03 | BIOFAC( 13,1) |
| D-5 | Cs-137+D , crustacea and mollusks | 1.000E+02 | 1.000E+02 | BIOFAC( 13,2) |
| D-5 | | | | |
| D-5 | Eu-152 , fish | 5.000E+01 | 5.000E+01 | BIOFAC( 14,1) |
| D-5 | Eu-152 , crustacea and mollusks | 1.000E+03 | 1.000E+03 | BIOFAC( 14,2) |
| D-5 | | | | |
| D-5 | Eu-154 , fish | 5.000E+01 | 5.000E+01 | BIOFAC( 16,1) |
| D-5 | Eu-154 , crustacea and mollusks | 1.000E+03 | 1.000E+03 | BIOFAC( 16,2) |
| D-5 | | | | |

Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DOE STD-1196-2011 (Reference Person)

| Menu | Parameter | Current Value# | Base Case* | Parameter Name |
|---|---|---|---|---|
| D-5 | Fr-223 , fish | 3.000E+01 | 3.000E+01 | BIOFAC( 17,1) |
| D-5 | Fr-223 , crustacea and mollusks | 0.000E+00 | -1.000E+00 | BIOFAC( 17,2) |
| D-5 | | | | |
| D-5 | Fr-223+D , fish | 3.000E+01 | 3.000E+01 | BIOFAC( 18,1) |
| D-5 | Fr-223+D , crustacea and mollusks | 0.000E+00 | -1.000E+00 | BIOFAC( 18,2) |
| D-5 | | | | |
| D-5 | Gd-152 , fish | 2.500E+01 | 2.500E+01 | BIOFAC( 19,1) |
| D-5 | Gd-152 , crustacea and mollusks | 1.000E+03 | 1.000E+03 | BIOFAC( 19,2) |
| D-5 | | | | |
| D-5 | H-3 , fish | 1.000E+00 | 1.000E+00 | BIOFAC( 20,1) |
| D-5 | H-3 , crustacea and mollusks | 1.000E+00 | 1.000E+00 | BIOFAC( 20,2) |
| D-5 | | | | |
| D-5 | Nd-144 , fish | 1.000E+02 | 1.000E+02 | BIOFAC( 21,1) |
| D-5 | Nd-144 , crustacea and mollusks | 1.000E+03 | 1.000E+03 | BIOFAC( 21,2) |
| D-5 | | | | |
| D-5 | Np-237 , fish | 3.000E+01 | 3.000E+01 | BIOFAC( 22,1) |
| D-5 | Np-237 , crustacea and mollusks | 4.000E+02 | 4.000E+02 | BIOFAC( 22,2) |
| D-5 | | | | |
| D-5 | Pa-231 , fish | 1.000E+01 | 1.000E+01 | BIOFAC( 23,1) |
| D-5 | Pa-231 , crustacea and mollusks | 1.100E+02 | 1.100E+02 | BIOFAC( 23,2) |
| D-5 | | | | |
| D-5 | Pa-233 , fish | 1.000E+01 | 1.000E+01 | BIOFAC( 26,1) |
| D-5 | Pa-233 , crustacea and mollusks | 1.100E+02 | 1.100E+02 | BIOFAC( 26,2) |
| D-5 | | | | |
| D-5 | Pb-209 , fish | 3.000E+02 | 3.000E+02 | BIOFAC( 27,1) |
| D-5 | Pb-209 , crustacea and mollusks | 1.000E+02 | 1.000E+02 | BIOFAC( 27,2) |
| D-5 | | | | |
| D-5 | Pb-210 , fish | 3.000E+02 | 3.000E+02 | BIOFAC( 28,1) |
| D-5 | Pb-210 , crustacea and mollusks | 1.000E+02 | 1.000E+02 | BIOFAC( 28,2) |
| D-5 | | | | |
| D-5 | Pb-210+D , fish | 3.000E+02 | 3.000E+02 | BIOFAC( 30,1) |
| D-5 | Pb-210+D , crustacea and mollusks | 1.000E+02 | 1.000E+02 | BIOFAC( 30,2) |
| D-5 | | | | |
| D-5 | Pb-211+D , fish | 3.000E+02 | 3.000E+02 | BIOFAC( 31,1) |
| D-5 | Pb-211+D , crustacea and mollusks | 1.000E+02 | 1.000E+02 | BIOFAC( 31,2) |
| D-5 | | | | |
| D-5 | Pb-214 , fish | 3.000E+02 | 3.000E+02 | BIOFAC( 32,1) |
| D-5 | Pb-214 , crustacea and mollusks | 1.000E+02 | 1.000E+02 | BIOFAC( 32,2) |
| D-5 | | | | |
| D-5 | Po-210 , fish | 1.000E+02 | 1.000E+02 | BIOFAC( 35,1) |
| D-5 | Po-210 , crustacea and mollusks | 2.000E+04 | 2.000E+04 | BIOFAC( 35,2) |
| D-5 | | | | |
| D-5 | Pu-239 , fish | 3.000E+01 | 3.000E+01 | BIOFAC( 36,1) |
| D-5 | Pu-239 , crustacea and mollusks | 1.000E+02 | 1.000E+02 | BIOFAC( 36,2) |
| D-5 | | | | |
| D-5 | Ra-223+D , fish | 5.000E+01 | 5.000E+01 | BIOFAC( 42,1) |
| D-5 | Ra-223+D , crustacea and mollusks | 2.500E+02 | 2.500E+02 | BIOFAC( 42,2) |
| D-5 | | | | |
| D-5 | Ra-225 , fish | 5.000E+01 | 5.000E+01 | BIOFAC( 43,1) |
| D-5 | Ra-225 , crustacea and mollusks | 2.500E+02 | 2.500E+02 | BIOFAC( 43,2) |

Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DOE STD-1196-2011 (Reference Person)

| Menu | Parameter | Current Value# | Base Case* | Parameter Name |
|---|---|---|---|---|
| D-5 | Ra-226 , fish | 5.000E+01 | 5.000E+01 | BIOFAC( 44,1) |
| D-5 | Ra-226 , crustacea and mollusks | 2.500E+02 | 2.500E+02 | BIOFAC( 44,2) |
| D-5 | | | | |
| D-5 | Rn-222+D , fish | 0.000E+00 | 0.000E+00 | BIOFAC( 53,1) |
| D-5 | Rn-222+D , crustacea and mollusks | 0.000E+00 | 0.000E+00 | BIOFAC( 53,2) |
| D-5 | | | | |
| D-5 | Rn-222+D1 , fish | 0.000E+00 | 0.000E+00 | BIOFAC( 56,1) |
| D-5 | Rn-222+D1 , crustacea and mollusks | 0.000E+00 | 0.000E+00 | BIOFAC( 56,2) |
| D-5 | | | | |
| D-5 | Rn-222+D2 , fish | 0.000E+00 | 0.000E+00 | BIOFAC( 59,1) |
| D-5 | Rn-222+D2 , crustacea and mollusks | 0.000E+00 | 0.000E+00 | BIOFAC( 59,2) |
| D-5 | | | | |
| D-5 | Sm-148 , fish | 2.500E+01 | 2.500E+01 | BIOFAC( 62,1) |
| D-5 | Sm-148 , crustacea and mollusks | 1.000E+03 | 1.000E+03 | BIOFAC( 62,2) |
| D-5 | | | | |
| D-5 | Sr-90 , fish | 6.000E+01 | 6.000E+01 | BIOFAC( 63,1) |
| D-5 | Sr-90 , crustacea and mollusks | 1.000E+02 | 1.000E+02 | BIOFAC( 63,2) |
| D-5 | | | | |
| D-5 | Th-227 , fish | 1.000E+02 | 1.000E+02 | BIOFAC( 64,1) |
| D-5 | Th-227 , crustacea and mollusks | 5.000E+02 | 5.000E+02 | BIOFAC( 64,2) |
| D-5 | | | | |
| D-5 | Th-229 , fish | 1.000E+02 | 1.000E+02 | BIOFAC( 65,1) |
| D-5 | Th-229 , crustacea and mollusks | 5.000E+02 | 5.000E+02 | BIOFAC( 65,2) |
| D-5 | | | | |
| D-5 | Th-231 , fish | 1.000E+02 | 1.000E+02 | BIOFAC( 66,1) |
| D-5 | Th-231 , crustacea and mollusks | 5.000E+02 | 5.000E+02 | BIOFAC( 66,2) |
| D-5 | | | | |
| D-5 | U-233 , fish | 1.000E+01 | 1.000E+01 | BIOFAC( 69,1) |
| D-5 | U-233 , crustacea and mollusks | 6.000E+01 | 6.000E+01 | BIOFAC( 69,2) |
| D-5 | | | | |
| D-5 | U-235 , fish | 1.000E+01 | 1.000E+01 | BIOFAC( 70,1) |
| D-5 | U-235 , crustacea and mollusks | 6.000E+01 | 6.000E+01 | BIOFAC( 70,2) |
| D-5 | | | | |
| D-5 | U-235m , fish | 1.000E+01 | 1.000E+01 | BIOFAC( 73,1) |
| D-5 | U-235m , crustacea and mollusks | 6.000E+01 | 6.000E+01 | BIOFAC( 73,2) |
| D-5 | | | | |
| D-5 | Y-90 , fish | 3.000E+01 | 3.000E+01 | BIOFAC( 76,1) |
| D-5 | Y-90 , crustacea and mollusks | 1.000E+03 | 1.000E+03 | BIOFAC( 76,2) |

#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.

Site-Specific Parameter Summary

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R011 | Area of contaminated zone (m**2) | 1.214E+04 | 1.000E+04 | --- | AREA |
| R011 | Thickness of contaminated zone (m) | 2.000E+00 | 2.000E+00 | --- | THICK0 |
| R011 | Fraction of contamination that is submerged | 0.000E+00 | 0.000E+00 | --- | SUBMFRACT |
| R011 | Length parallel to aquifer flow (m) | not used | 1.000E+02 | --- | LCZPAQ |
| R011 | Basic radiation dose limit (mrem/yr) | 1.200E+01 | 3.000E+01 | --- | BRDL |
| R011 | Time since placement of material (yr) | 0.000E+00 | 0.000E+00 | --- | TI |
| R011 | Times for calculations (yr) | 1.000E+00 | 1.000E+00 | --- | T( 2) |
| R011 | Times for calculations (yr) | 3.000E+00 | 3.000E+00 | --- | T( 3) |
| R011 | Times for calculations (yr) | 1.000E+01 | 1.000E+01 | --- | T( 4) |
| R011 | Times for calculations (yr) | 3.000E+01 | 3.000E+01 | --- | T( 5) |
| R011 | Times for calculations (yr) | 8.890E+01 | 1.000E+02 | --- | T( 6) |
| R011 | Times for calculations (yr) | 1.000E+02 | 3.000E+02 | --- | T( 7) |
| R011 | Times for calculations (yr) | 3.000E+02 | 1.000E+03 | --- | T( 8) |
| R011 | Times for calculations (yr) | 1.000E+03 | 0.000E+00 | --- | T( 9) |
| R011 | Times for calculations (yr) | not used | 0.000E+00 | --- | T(10) |
| | | | | | |
| R012 | Initial principal radionuclide (pCi/g): Am-241 | 1.360E+00 | 0.000E+00 | --- | S1(5) |
| R012 | Initial principal radionuclide (pCi/g): Co-60 | 3.610E-02 | 0.000E+00 | --- | S1(12) |
| R012 | Initial principal radionuclide (pCi/g): Cs-137 | 1.130E-01 | 0.000E+00 | --- | S1(13) |
| R012 | Initial principal radionuclide (pCi/g): Eu-152 | 1.300E-01 | 0.000E+00 | --- | S1(14) |
| R012 | Initial principal radionuclide (pCi/g): Eu-154 | 2.300E-01 | 0.000E+00 | --- | S1(16) |
| R012 | Initial principal radionuclide (pCi/g): H-3 | 2.280E+00 | 0.000E+00 | --- | S1(20) |
| R012 | Initial principal radionuclide (pCi/g): Pu-239 | 2.590E+00 | 0.000E+00 | --- | S1(36) |
| R012 | Initial principal radionuclide (pCi/g): Ra-226 | 1.000E+00 | 0.000E+00 | --- | S1(44) |
| R012 | Initial principal radionuclide (pCi/g): Sr-90 | 3.310E-01 | 0.000E+00 | --- | S1(63) |
| R012 | Concentration in groundwater (pCi/L): Am-241 | not used | 0.000E+00 | --- | W1( 5) |
| R012 | Concentration in groundwater (pCi/L): Co-60 | not used | 0.000E+00 | --- | W1(12) |
| R012 | Concentration in groundwater (pCi/L): Cs-137 | not used | 0.000E+00 | --- | W1(13) |
| R012 | Concentration in groundwater (pCi/L): Eu-152 | not used | 0.000E+00 | --- | W1(14) |
| R012 | Concentration in groundwater (pCi/L): Eu-154 | not used | 0.000E+00 | --- | W1(16) |
| R012 | Concentration in groundwater (pCi/L): H-3 | not used | 0.000E+00 | --- | W1(20) |
| R012 | Concentration in groundwater (pCi/L): Pu-239 | not used | 0.000E+00 | --- | W1(36) |
| R012 | Concentration in groundwater (pCi/L): Ra-226 | not used | 0.000E+00 | --- | W1(44) |
| R012 | Concentration in groundwater (pCi/L): Sr-90 | not used | 0.000E+00 | --- | W1(63) |
| | | | | | |
| R013 | Cover depth (m) | 0.000E+00 | 0.000E+00 | --- | COVER0 |
| R013 | Density of cover material (g/cm**3) | not used | 1.500E+00 | --- | DENSCV |
| R013 | Cover depth erosion rate (m/yr) | not used | 1.000E-03 | --- | VCV |
| R013 | Density of contaminated zone (g/cm**3) | 1.500E+00 | 1.500E+00 | --- | DENSCZ |
| R013 | Contaminated zone erosion rate (m/yr) | 1.000E-03 | 1.000E-03 | --- | VCZ |
| R013 | Contaminated zone total porosity | 4.000E-01 | 4.000E-01 | --- | TPCZ |
| R013 | Contaminated zone field capacity | 2.000E-01 | 2.000E-01 | --- | FCCZ |
| R013 | Contaminated zone hydraulic conductivity (m/yr) | 1.000E+01 | 1.000E+01 | --- | HCCZ |
| R013 | Contaminated zone b parameter | 5.300E+00 | 5.300E+00 | --- | BCZ |
| R013 | Average annual wind speed (m/sec) | 2.000E+00 | 2.000E+00 | --- | WIND |
| R013 | Humidity in air (g/m**3) | 8.000E+00 | 8.000E+00 | --- | HUMID |
| R013 | Evapotranspiration coefficient | 5.000E-01 | 5.000E-01 | --- | EVAPTR |
| R013 | Precipitation (m/yr) | 1.000E+00 | 1.000E+00 | --- | PRECIP |
| R013 | Irrigation (m/yr) | 2.000E-01 | 2.000E-01 | --- | RI |
| R013 | Irrigation mode | overhead | overhead | --- | IDITCH |

Site-Specific Parameter Summary (continued)

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R013 | Runoff coefficient | 2.000E-01 | 2.000E-01 | --- | RUNOFF |
| R013 | Watershed area for nearby stream or pond (m**2) | not used | 1.000E+06 | --- | WAREA |
| R013 | Accuracy for water/soil computations | not used | 1.000E-03 | Romberg failures occurred | EPS |
| | | | | | |
| R014 | Density of saturated zone (g/cm**3) | not used | 1.500E+00 | --- | DENSAQ |
| R014 | Saturated zone total porosity | not used | 4.000E-01 | --- | TPSZ |
| R014 | Saturated zone effective porosity | not used | 2.000E-01 | --- | EPSZ |
| R014 | Saturated zone field capacity | not used | 2.000E-01 | --- | FCSZ |
| R014 | Saturated zone hydraulic conductivity (m/yr) | not used | 1.000E+02 | --- | HCSZ |
| R014 | Saturated zone hydraulic gradient | not used | 2.000E-02 | --- | HGWT |
| R014 | Saturated zone b parameter | not used | 5.300E+00 | --- | BSZ |
| R014 | Water table drop rate (m/yr) | not used | 1.000E-03 | --- | VWT |
| R014 | Well pump intake depth (m below water table) | not used | 1.000E+01 | --- | DWIBWT |
| R014 | Model: Nondispersion (ND) or Mass-Balance (MB) | not used | ND | --- | MODEL |
| R014 | Well pumping rate (m**3/yr) | not used | 2.500E+02 | --- | UW |
| | | | | | |
| R015 | Number of unsaturated zone strata | not used | 1 | --- | NS |
| R015 | Unsat. zone 1, thickness (m) | not used | 4.000E+00 | --- | H(1) |
| R015 | Unsat. zone 1, soil density (g/cm**3) | not used | 1.500E+00 | --- | DENSUZ(1) |
| R015 | Unsat. zone 1, total porosity | not used | 4.000E-01 | --- | TPUZ(1) |
| R015 | Unsat. zone 1, effective porosity | not used | 2.000E-01 | --- | EPUZ(1) |
| R015 | Unsat. zone 1, field capacity | not used | 2.000E-01 | --- | FCUZ(1) |
| R015 | Unsat. zone 1, soil-specific b parameter | not used | 5.300E+00 | --- | BUZ(1) |
| R015 | Unsat. zone 1, hydraulic conductivity (m/yr) | not used | 1.000E+01 | --- | HCUZ(1) |
| | | | | | |
| R016 | Distribution coefficients for Am-241 | | | | |
| R016 | Contaminated zone (cm**3/g) | 2.000E+01 | 2.000E+01 | --- | DCNUCC( 5) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 2.000E+01 | --- | DCNUCU( 5,1) |
| R016 | Saturated zone (cm**3/g) | not used | 2.000E+01 | --- | DCNUCS( 5) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 8.245E-03 | ALEACH( 5) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK( 5) |
| | | | | | |
| R016 | Distribution coefficients for Co-60 | | | | |
| R016 | Contaminated zone (cm**3/g) | 1.000E+03 | 1.000E+03 | --- | DCNUCC(12) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 1.000E+03 | --- | DCNUCU(12,1) |
| R016 | Saturated zone (cm**3/g) | not used | 1.000E+03 | --- | DCNUCS(12) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 1.666E-04 | ALEACH(12) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(12) |
| | | | | | |
| R016 | Distribution coefficients for Cs-137 | | | | |
| R016 | Contaminated zone (cm**3/g) | 4.600E+03 | 4.600E+03 | --- | DCNUCC(13) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 4.600E+03 | --- | DCNUCU(13,1) |
| R016 | Saturated zone (cm**3/g) | not used | 4.600E+03 | --- | DCNUCS(13) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 3.623E-05 | ALEACH(13) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(13) |

Site-Specific Parameter Summary (continued)

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R016 | Distribution coefficients for Eu-152 | | | | |
| R016 | Contaminated zone (cm**3/g) | -1.000E+00 | -1.000E+00 | 8.249E+02 | DCNUCC(14) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | -1.000E+00 | --- | DCNUCU(14,1) |
| R016 | Saturated zone (cm**3/g) | not used | -1.000E+00 | --- | DCNUCS(14) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.020E-04 | ALEACH(14) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(14) |
| | | | | | |
| R016 | Distribution coefficients for Eu-154 | | | | |
| R016 | Contaminated zone (cm**3/g) | -1.000E+00 | -1.000E+00 | 8.249E+02 | DCNUCC(16) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | -1.000E+00 | --- | DCNUCU(16,1) |
| R016 | Saturated zone (cm**3/g) | not used | -1.000E+00 | --- | DCNUCS(16) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.020E-04 | ALEACH(16) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(16) |
| | | | | | |
| R016 | Distribution coefficients for H-3 | | | | |
| R016 | Contaminated zone (cm**3/g) | 0.000E+00 | 0.000E+00 | --- | DCNUCC(20) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 0.000E+00 | --- | DCNUCU(20,1) |
| R016 | Saturated zone (cm**3/g) | not used | 0.000E+00 | --- | DCNUCS(20) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 7.790E-01 | ALEACH(20) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(20) |
| | | | | | |
| R016 | Distribution coefficients for Pu-239 | | | | |
| R016 | Contaminated zone (cm**3/g) | 2.000E+03 | 2.000E+03 | --- | DCNUCC(36) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 2.000E+03 | --- | DCNUCU(36,1) |
| R016 | Saturated zone (cm**3/g) | not used | 2.000E+03 | --- | DCNUCS(36) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 8.332E-05 | ALEACH(36) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(36) |
| | | | | | |
| R016 | Distribution coefficients for Ra-226 | | | | |
| R016 | Contaminated zone (cm**3/g) | 7.000E+01 | 7.000E+01 | --- | DCNUCC(44) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 7.000E+01 | --- | DCNUCU(44,1) |
| R016 | Saturated zone (cm**3/g) | not used | 7.000E+01 | --- | DCNUCS(44) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.374E-03 | ALEACH(44) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(44) |
| | | | | | |
| R016 | Distribution coefficients for Sr-90 | | | | |
| R016 | Contaminated zone (cm**3/g) | 3.000E+01 | 3.000E+01 | --- | DCNUCC(63) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 3.000E+01 | --- | DCNUCU(63,1) |
| R016 | Saturated zone (cm**3/g) | not used | 3.000E+01 | --- | DCNUCS(63) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 5.516E-03 | ALEACH(63) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(63) |
| | | | | | |
| R016 | Distribution coefficients for daughter Ac-225 | | | | |
| R016 | Contaminated zone (cm**3/g) | 2.000E+01 | 2.000E+01 | --- | DCNUCC( 1) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 2.000E+01 | --- | DCNUCU( 1,1) |
| R016 | Saturated zone (cm**3/g) | not used | 2.000E+01 | --- | DCNUCS( 1) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 8.245E-03 | ALEACH( 1) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK( 1) |

Site-Specific Parameter Summary (continued)

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R016 | Distribution coefficients for daughter Ac-227 | | | | |
| R016 | Contaminated zone (cm**3/g) | 2.000E+01 | 2.000E+01 | --- | DCNUCC( 2) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 2.000E+01 | --- | DCNUCU( 2,1) |
| R016 | Saturated zone (cm**3/g) | not used | 2.000E+01 | --- | DCNUCS( 2) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 8.245E-03 | ALEACH( 2) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK( 2) |
| | | | | | |
| R016 | Distribution coefficients for daughter Bi-210 | | | | |
| R016 | Contaminated zone (cm**3/g) | 0.000E+00 | 0.000E+00 | --- | DCNUCC( 6) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 0.000E+00 | --- | DCNUCU( 6,1) |
| R016 | Saturated zone (cm**3/g) | not used | 0.000E+00 | --- | DCNUCS( 6) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 7.790E-01 | ALEACH( 6) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK( 6) |
| | | | | | |
| R016 | Distribution coefficients for daughter Bi-213 | | | | |
| R016 | Contaminated zone (cm**3/g) | 0.000E+00 | 0.000E+00 | --- | DCNUCC( 8) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 0.000E+00 | --- | DCNUCU( 8,1) |
| R016 | Saturated zone (cm**3/g) | not used | 0.000E+00 | --- | DCNUCS( 8) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 7.790E-01 | ALEACH( 8) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK( 8) |
| | | | | | |
| R016 | Distribution coefficients for daughter Bi-214 | | | | |
| R016 | Contaminated zone (cm**3/g) | 0.000E+00 | 0.000E+00 | --- | DCNUCC( 9) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 0.000E+00 | --- | DCNUCU( 9,1) |
| R016 | Saturated zone (cm**3/g) | not used | 0.000E+00 | --- | DCNUCS( 9) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 7.790E-01 | ALEACH( 9) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK( 9) |
| | | | | | |
| R016 | Distribution coefficients for daughter Fr-223 | | | | |
| R016 | Contaminated zone (cm**3/g) | 2.000E+02 | 2.000E+02 | --- | DCNUCC(17) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 2.000E+02 | --- | DCNUCU(17,1) |
| R016 | Saturated zone (cm**3/g) | not used | 2.000E+02 | --- | DCNUCS(17) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 8.324E-04 | ALEACH(17) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(17) |
| | | | | | |
| R016 | Distribution coefficients for daughter Gd-152 | | | | |
| R016 | Contaminated zone (cm**3/g) | -1.000E+00 | -1.000E+00 | 8.249E+02 | DCNUCC(19) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | -1.000E+00 | --- | DCNUCU(19,1) |
| R016 | Saturated zone (cm**3/g) | not used | -1.000E+00 | --- | DCNUCS(19) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.020E-04 | ALEACH(19) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(19) |
| | | | | | |
| R016 | Distribution coefficients for daughter Nd-144 | | | | |
| R016 | Contaminated zone (cm**3/g) | 1.580E+02 | 1.580E+02 | --- | DCNUCC(21) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 1.580E+02 | --- | DCNUCU(21,1) |
| R016 | Saturated zone (cm**3/g) | not used | 1.580E+02 | --- | DCNUCS(21) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 1.053E-03 | ALEACH(21) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(21) |

Site-Specific Parameter Summary (continued)

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R016 | Distribution coefficients for daughter Np-237 | | | | |
| R016 | Contaminated zone (cm**3/g) | -1.000E+00 | -1.000E+00 | 2.574E+02 | DCNUCC(22) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | -1.000E+00 | --- | DCNUCU(22,1) |
| R016 | Saturated zone (cm**3/g) | not used | -1.000E+00 | --- | DCNUCS(22) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 6.469E-04 | ALEACH(22) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(22) |
| | | | | | |
| R016 | Distribution coefficients for daughter Pa-231 | | | | |
| R016 | Contaminated zone (cm**3/g) | 5.000E+01 | 5.000E+01 | --- | DCNUCC(23) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 5.000E+01 | --- | DCNUCU(23,1) |
| R016 | Saturated zone (cm**3/g) | not used | 5.000E+01 | --- | DCNUCS(23) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 3.319E-03 | ALEACH(23) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(23) |
| | | | | | |
| R016 | Distribution coefficients for daughter Pa-233 | | | | |
| R016 | Contaminated zone (cm**3/g) | 5.000E+01 | 5.000E+01 | --- | DCNUCC(26) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 5.000E+01 | --- | DCNUCU(26,1) |
| R016 | Saturated zone (cm**3/g) | not used | 5.000E+01 | --- | DCNUCS(26) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 3.319E-03 | ALEACH(26) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(26) |
| | | | | | |
| R016 | Distribution coefficients for daughter Pb-209 | | | | |
| R016 | Contaminated zone (cm**3/g) | 1.000E+02 | 1.000E+02 | --- | DCNUCC(27) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 1.000E+02 | --- | DCNUCU(27,1) |
| R016 | Saturated zone (cm**3/g) | not used | 1.000E+02 | --- | DCNUCS(27) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 1.663E-03 | ALEACH(27) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(27) |
| | | | | | |
| R016 | Distribution coefficients for daughter Pb-210 | | | | |
| R016 | Contaminated zone (cm**3/g) | 1.000E+02 | 1.000E+02 | --- | DCNUCC(28) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 1.000E+02 | --- | DCNUCU(28,1) |
| R016 | Saturated zone (cm**3/g) | not used | 1.000E+02 | --- | DCNUCS(28) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 1.663E-03 | ALEACH(28) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(28) |
| | | | | | |
| R016 | Distribution coefficients for daughter Pb-211 | | | | |
| R016 | Contaminated zone (cm**3/g) | 1.000E+02 | 1.000E+02 | --- | DCNUCC(31) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 1.000E+02 | --- | DCNUCU(31,1) |
| R016 | Saturated zone (cm**3/g) | not used | 1.000E+02 | --- | DCNUCS(31) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 1.663E-03 | ALEACH(31) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(31) |
| | | | | | |
| R016 | Distribution coefficients for daughter Pb-214 | | | | |
| R016 | Contaminated zone (cm**3/g) | 1.000E+02 | 1.000E+02 | --- | DCNUCC(32) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 1.000E+02 | --- | DCNUCU(32,1) |
| R016 | Saturated zone (cm**3/g) | not used | 1.000E+02 | --- | DCNUCS(32) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 1.663E-03 | ALEACH(32) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(32) |

Site-Specific Parameter Summary (continued)

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R016 | Distribution coefficients for daughter Po-210 | | | | |
| R016 | Contaminated zone (cm**3/g) | 1.000E+01 | 1.000E+01 | --- | DCNUCC(35) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 1.000E+01 | --- | DCNUCU(35,1) |
| R016 | Saturated zone (cm**3/g) | not used | 1.000E+01 | --- | DCNUCS(35) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 1.632E-02 | ALEACH(35) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(35) |
| | | | | | |
| R016 | Distribution coefficients for daughter Ra-223 | | | | |
| R016 | Contaminated zone (cm**3/g) | 7.000E+01 | 7.000E+01 | --- | DCNUCC(42) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 7.000E+01 | --- | DCNUCU(42,1) |
| R016 | Saturated zone (cm**3/g) | not used | 7.000E+01 | --- | DCNUCS(42) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.374E-03 | ALEACH(42) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(42) |
| | | | | | |
| R016 | Distribution coefficients for daughter Ra-225 | | | | |
| R016 | Contaminated zone (cm**3/g) | 7.000E+01 | 7.000E+01 | --- | DCNUCC(43) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 7.000E+01 | --- | DCNUCU(43,1) |
| R016 | Saturated zone (cm**3/g) | not used | 7.000E+01 | --- | DCNUCS(43) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.374E-03 | ALEACH(43) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(43) |
| | | | | | |
| R016 | Distribution coefficients for daughter Rn-222 | | | | |
| R016 | Contaminated zone (cm**3/g) | 0.000E+00 | 0.000E+00 | --- | DCNUCC(53) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 0.000E+00 | --- | DCNUCU(53,1) |
| R016 | Saturated zone (cm**3/g) | not used | 0.000E+00 | --- | DCNUCS(53) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 7.790E-01 | ALEACH(53) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(53) |
| | | | | | |
| R016 | Distribution coefficients for daughter Sm-148 | | | | |
| R016 | Contaminated zone (cm**3/g) | -1.000E+00 | -1.000E+00 | 8.249E+02 | DCNUCC(62) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | -1.000E+00 | --- | DCNUCU(62,1) |
| R016 | Saturated zone (cm**3/g) | not used | -1.000E+00 | --- | DCNUCS(62) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.020E-04 | ALEACH(62) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(62) |
| | | | | | |
| R016 | Distribution coefficients for daughter Th-227 | | | | |
| R016 | Contaminated zone (cm**3/g) | 6.000E+04 | 6.000E+04 | --- | DCNUCC(64) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 6.000E+04 | --- | DCNUCU(64,1) |
| R016 | Saturated zone (cm**3/g) | not used | 6.000E+04 | --- | DCNUCS(64) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.778E-06 | ALEACH(64) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(64) |
| | | | | | |
| R016 | Distribution coefficients for daughter Th-229 | | | | |
| R016 | Contaminated zone (cm**3/g) | 6.000E+04 | 6.000E+04 | --- | DCNUCC(65) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 6.000E+04 | --- | DCNUCU(65,1) |
| R016 | Saturated zone (cm**3/g) | not used | 6.000E+04 | --- | DCNUCS(65) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.778E-06 | ALEACH(65) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(65) |

Site-Specific Parameter Summary (continued)

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R016 | Distribution coefficients for daughter Th-231 | | | | |
| R016 | Contaminated zone (cm**3/g) | 6.000E+04 | 6.000E+04 | --- | DCNUCC(66) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 6.000E+04 | --- | DCNUCU(66,1) |
| R016 | Saturated zone (cm**3/g) | not used | 6.000E+04 | --- | DCNUCS(66) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.778E-06 | ALEACH(66) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(66) |
| | | | | | |
| R016 | Distribution coefficients for daughter U-233 | | | | |
| R016 | Contaminated zone (cm**3/g) | 5.000E+01 | 5.000E+01 | --- | DCNUCC(69) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 5.000E+01 | --- | DCNUCU(69,1) |
| R016 | Saturated zone (cm**3/g) | not used | 5.000E+01 | --- | DCNUCS(69) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 3.319E-03 | ALEACH(69) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(69) |
| | | | | | |
| R016 | Distribution coefficients for daughter U-235 | | | | |
| R016 | Contaminated zone (cm**3/g) | 5.000E+01 | 5.000E+01 | --- | DCNUCC(70) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 5.000E+01 | --- | DCNUCU(70,1) |
| R016 | Saturated zone (cm**3/g) | not used | 5.000E+01 | --- | DCNUCS(70) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 3.319E-03 | ALEACH(70) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(70) |
| | | | | | |
| R016 | Distribution coefficients for daughter U-235m | | | | |
| R016 | Contaminated zone (cm**3/g) | 5.000E+01 | 5.000E+01 | --- | DCNUCC(73) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 5.000E+01 | --- | DCNUCU(73,1) |
| R016 | Saturated zone (cm**3/g) | not used | 5.000E+01 | --- | DCNUCS(73) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 3.319E-03 | ALEACH(73) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(73) |
| | | | | | |
| R016 | Distribution coefficients for daughter Y-90 | | | | |
| R016 | Contaminated zone (cm**3/g) | 7.200E+02 | 7.200E+02 | --- | DCNUCC(76) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 7.200E+02 | --- | DCNUCU(76,1) |
| R016 | Saturated zone (cm**3/g) | not used | 7.200E+02 | --- | DCNUCS(76) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.314E-04 | ALEACH(76) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(76) |
| | | | | | |
| R017 | Inhalation rate (m**3/yr) | 8.400E+03 | 8.400E+03 | --- | INHALR |
| R017 | Mass loading for inhalation (g/m**3) | 1.000E-04 | 1.000E-04 | --- | MLINH |
| R017 | Exposure duration | 3.000E+01 | 3.000E+01 | --- | ED |
| R017 | Shielding factor, inhalation | 4.000E-01 | 4.000E-01 | --- | SHF3 |
| R017 | Shielding factor, external gamma | 7.000E-01 | 7.000E-01 | --- | SHF1 |
| R017 | Fraction of time spent indoors | 6.840E-01 | 5.000E-01 | --- | FIND |
| R017 | Fraction of time spent outdoors (on site) | 7.300E-02 | 2.500E-01 | --- | FOTD |
| R017 | Shape factor flag, external gamma | 1.000E+00 | 1.000E+00 | >0 shows circular AREA. | FS |

Site-Specific Parameter Summary (continued)

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R017 | Radii of shape factor array (used if FS = -1): | | | | |
| R017 | Outer annular radius (m), ring 1: | not used | 5.000E+01 | --- | RAD_SHAPE( 1) |
| R017 | Outer annular radius (m), ring 2: | not used | 7.071E+01 | --- | RAD_SHAPE( 2) |
| R017 | Outer annular radius (m), ring 3: | not used | 0.000E+00 | --- | RAD_SHAPE( 3) |
| R017 | Outer annular radius (m), ring 4: | not used | 0.000E+00 | --- | RAD_SHAPE( 4) |
| R017 | Outer annular radius (m), ring 5: | not used | 0.000E+00 | --- | RAD_SHAPE( 5) |
| R017 | Outer annular radius (m), ring 6: | not used | 0.000E+00 | --- | RAD_SHAPE( 6) |
| R017 | Outer annular radius (m), ring 7: | not used | 0.000E+00 | --- | RAD_SHAPE( 7) |
| R017 | Outer annular radius (m), ring 8: | not used | 0.000E+00 | --- | RAD_SHAPE( 8) |
| R017 | Outer annular radius (m), ring 9: | not used | 0.000E+00 | --- | RAD_SHAPE( 9) |
| R017 | Outer annular radius (m), ring 10: | not used | 0.000E+00 | --- | RAD_SHAPE(10) |
| R017 | Outer annular radius (m), ring 11: | not used | 0.000E+00 | --- | RAD_SHAPE(11) |
| R017 | Outer annular radius (m), ring 12: | not used | 0.000E+00 | --- | RAD_SHAPE(12) |
| R017 | Fractions of annular areas within AREA: | | | | |
| R017 | Ring 1 | not used | 1.000E+00 | --- | FRACA( 1) |
| R017 | Ring 2 | not used | 2.732E-01 | --- | FRACA( 2) |
| R017 | Ring 3 | not used | 0.000E+00 | --- | FRACA( 3) |
| R017 | Ring 4 | not used | 0.000E+00 | --- | FRACA( 4) |
| R017 | Ring 5 | not used | 0.000E+00 | --- | FRACA( 5) |
| R017 | Ring 6 | not used | 0.000E+00 | --- | FRACA( 6) |
| R017 | Ring 7 | not used | 0.000E+00 | --- | FRACA( 7) |
| R017 | Ring 8 | not used | 0.000E+00 | --- | FRACA( 8) |
| R017 | Ring 9 | not used | 0.000E+00 | --- | FRACA( 9) |
| R017 | Ring 10 | not used | 0.000E+00 | --- | FRACA(10) |
| R017 | Ring 11 | not used | 0.000E+00 | --- | FRACA(11) |
| R017 | Ring 12 | not used | 0.000E+00 | --- | FRACA(12) |
| R018 | Fruits, vegetables and grain consumption (kg/yr) | not used | 1.600E+02 | --- | DIET(1) |
| R018 | Leafy vegetable consumption (kg/yr) | not used | 1.400E+01 | --- | DIET(2) |
| R018 | Milk consumption (L/yr) | not used | 9.200E+01 | --- | DIET(3) |
| R018 | Meat and poultry consumption (kg/yr) | not used | 6.300E+01 | --- | DIET(4) |
| R018 | Fish consumption (kg/yr) | not used | 5.400E+00 | --- | DIET(5) |
| R018 | Other seafood consumption (kg/yr) | not used | 9.000E-01 | --- | DIET(6) |
| R018 | Soil ingestion rate (g/yr) | 3.650E+01 | 3.650E+01 | --- | SOIL |
| R018 | Drinking water intake (L/yr) | not used | 5.100E+02 | --- | DWI |
| R018 | Contamination fraction of drinking water | not used | 1.000E+00 | --- | FDW |
| R018 | Contamination fraction of household water | not used | 1.000E+00 | --- | FHHW |
| R018 | Contamination fraction of livestock water | not used | 1.000E+00 | --- | FLW |
| R018 | Contamination fraction of irrigation water | not used | 1.000E+00 | --- | FIRW |
| R018 | Contamination fraction of aquatic food | not used | 5.000E-01 | --- | FR9 |
| R018 | Contamination fraction of plant food | not used | -1 | --- | FPLANT |
| R018 | Contamination fraction of meat | not used | -1 | --- | FMEAT |
| R018 | Contamination fraction of milk | not used | -1 | --- | FMILK |
| R019 | Livestock fodder intake for meat (kg/day) | not used | 6.800E+01 | --- | LFI5 |
| R019 | Livestock fodder intake for milk (kg/day) | not used | 5.500E+01 | --- | LFI6 |
| R019 | Livestock water intake for meat (L/day) | not used | 5.000E+01 | --- | LWI5 |
| R019 | Livestock water intake for milk (L/day) | not used | 1.600E+02 | --- | LWI6 |
| R019 | Livestock soil intake (kg/day) | not used | 5.000E-01 | --- | LSI |

Site-Specific Parameter Summary (continued)

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R019 | Mass loading for foliar deposition (g/m**3) | not used | 1.000E-04 | --- | MLFD |
| R019 | Depth of soil mixing layer (m) | 1.500E-01 | 1.500E-01 | --- | DM |
| R019 | Depth of roots (m) | not used | 9.000E-01 | --- | DROOT |
| R019 | Drinking water fraction from ground water | not used | 1.000E+00 | --- | FGWDW |
| R019 | Household water fraction from ground water | not used | 1.000E+00 | --- | FGWHH |
| R019 | Livestock water fraction from ground water | not used | 1.000E+00 | --- | FGWLW |
| R019 | Irrigation fraction from ground water | not used | 1.000E+00 | --- | FGWIR |
| | | | | | |
| R19B | Wet weight crop yield for Non-Leafy (kg/m**2) | not used | 7.000E-01 | --- | YV(1) |
| R19B | Wet weight crop yield for Leafy (kg/m**2) | not used | 1.500E+00 | --- | YV(2) |
| R19B | Wet weight crop yield for Fodder (kg/m**2) | not used | 1.100E+00 | --- | YV(3) |
| R19B | Growing Season for Non-Leafy (years) | not used | 1.700E-01 | --- | TE(1) |
| R19B | Growing Season for Leafy (years) | not used | 2.500E-01 | --- | TE(2) |
| R19B | Growing Season for Fodder (years) | not used | 8.000E-02 | --- | TE(3) |
| R19B | Translocation Factor for Non-Leafy | not used | 1.000E-01 | --- | TIV(1) |
| R19B | Translocation Factor for Leafy | not used | 1.000E+00 | --- | TIV(2) |
| R19B | Translocation Factor for Fodder | not used | 1.000E+00 | --- | TIV(3) |
| R19B | Dry Foliar Interception Fraction for Non-Leafy | not used | 2.500E-01 | --- | RDRY(1) |
| R19B | Dry Foliar Interception Fraction for Leafy | not used | 2.500E-01 | --- | RDRY(2) |
| R19B | Dry Foliar Interception Fraction for Fodder | not used | 2.500E-01 | --- | RDRY(3) |
| R19B | Wet Foliar Interception Fraction for Non-Leafy | not used | 2.500E-01 | --- | RWET(1) |
| R19B | Wet Foliar Interception Fraction for Leafy | not used | 2.500E-01 | --- | RWET(2) |
| R19B | Wet Foliar Interception Fraction for Fodder | not used | 2.500E-01 | --- | RWET(3) |
| R19B | Weathering Removal Constant for Vegetation | not used | 2.000E+01 | --- | WLAM |
| | | | | | |
| C14 | C-12 concentration in water (g/cm**3) | not used | 2.000E-05 | --- | C12WTR |
| C14 | C-12 concentration in contaminated soil (g/g) | not used | 3.000E-02 | --- | C12CZ |
| C14 | Fraction of vegetation carbon from soil | not used | 2.000E-02 | --- | CSOIL |
| C14 | Fraction of vegetation carbon from air | not used | 9.800E-01 | --- | CAIR |
| C14 | C-14 evasion layer thickness in soil (m) | not used | 3.000E-01 | --- | DMC |
| C14 | C-14 evasion flux rate from soil (1/sec) | not used | 7.000E-07 | --- | EVSN |
| C14 | C-12 evasion flux rate from soil (1/sec) | not used | 1.000E-10 | --- | REVSN |
| C14 | Fraction of grain in beef cattle feed | not used | 8.000E-01 | --- | AVFG4 |
| C14 | Fraction of grain in milk cow feed | not used | 2.000E-01 | --- | AVFG5 |
| | | | | | |
| STOR | Storage times of contaminated foodstuffs (days): | | | | |
| STOR | Fruits, non-leafy vegetables, and grain | 1.400E+01 | 1.400E+01 | --- | STOR_T(1) |
| STOR | Leafy vegetables | 1.000E+00 | 1.000E+00 | --- | STOR_T(2) |
| STOR | Milk | 1.000E+00 | 1.000E+00 | --- | STOR_T(3) |
| STOR | Meat and poultry | 2.000E+01 | 2.000E+01 | --- | STOR_T(4) |
| STOR | Fish | 7.000E+00 | 7.000E+00 | --- | STOR_T(5) |
| STOR | Crustacea and mollusks | 7.000E+00 | 7.000E+00 | --- | STOR_T(6) |
| STOR | Well water | 1.000E+00 | 1.000E+00 | --- | STOR_T(7) |
| STOR | Surface water | 1.000E+00 | 1.000E+00 | --- | STOR_T(8) |
| STOR | Livestock fodder | 4.500E+01 | 4.500E+01 | --- | STOR_T(9) |
| | | | | | |
| R021 | Thickness of building foundation (m) | not used | 1.500E-01 | --- | FLOOR1 |
| R021 | Bulk density of building foundation (g/cm**3) | not used | 2.400E+00 | --- | DENSFL |
| R021 | Total porosity of the cover material | not used | 4.000E-01 | --- | TPCV |
| R021 | Total porosity of the building foundation | not used | 1.000E-01 | --- | TPFL |

Site-Specific Parameter Summary (continued)

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R021 | Volumetric water content of the cover material | not used | 5.000E-02 | --- | PH2OCV |
| R021 | Volumetric water content of the foundation | not used | 3.000E-02 | --- | PH2OFL |
| R021 | Diffusion coefficient for radon gas (m/sec): | | | | |
| R021 | in cover material | not used | 2.000E-06 | --- | DIFCV |
| R021 | in foundation material | not used | 3.000E-07 | --- | DIFFL |
| R021 | in contaminated zone soil | not used | 2.000E-06 | --- | DIFCZ |
| R021 | Radon vertical dimension of mixing (m) | not used | 2.000E+00 | --- | HMIX |
| R021 | Average building air exchange rate (1/hr) | not used | 5.000E-01 | --- | REXG |
| R021 | Height of the building (room) (m) | not used | 2.500E+00 | --- | HRM |
| R021 | Building interior area factor | not used | 0.000E+00 | --- | FAI |
| R021 | Building depth below ground surface (m) | not used | -1.000E+00 | --- | DMFL |
| R021 | Emanating power of Rn-222 gas | not used | 2.500E-01 | --- | EMANA(1) |
| R021 | Emanating power of Rn-220 gas | not used | 1.500E-01 | --- | EMANA(2) |
| | | | | | |
| TITL | Number of graphical time points | 32 | --- | --- | NPTS |
| TITL | Maximum number of integration points for dose | 17 | --- | --- | LYMAX |
| TITL | Maximum number of integration points for risk | 257 | --- | --- | KYMAX |

Summary of Pathway Selections

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

| Contaminated Zone Dimensions | |
|---|---|
| Area: | 12140.00 square meters |
| Thickness: | 2.00 meters |
| Cover Depth: | 0.00 meters |

| Initial Soil Concentrations, pCi/g | |
|---|---|
| Am-241 | 1.360E+00 |
| Co-60 | 3.610E-02 |
| Cs-137 | 1.130E-01 |
| Eu-152 | 1.300E-01 |
| Eu-154 | 2.300E-01 |
| H-3 | 2.280E+00 |
| Pu-239 | 2.590E+00 |
| Ra-226 | 1.000E+00 |
| Sr-90 | 3.310E-01 |

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 1.200E+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 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|
| TDOSE(t): | 7.268E+00 | 7.244E+00 | 7.006E+00 | 6.410E+00 | 5.601E+00 | 4.626E+00 | 4.483E+00 | 2.592E+00 | 4.650E-01 |
| M(t): | 6.057E-01 | 6.037E-01 | 5.838E-01 | 5.341E-01 | 4.667E-01 | 3.855E-01 | 3.736E-01 | 2.160E-01 | 3.875E-02 |

Maximum TDOSE(t): 7.268E+00 mrem/yr at t = 0.000E+00 years

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)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Am-241 | 2.757E-02 | 0.0038 | 2.470E-02 | 0.0034 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.293E-02 | 0.0045 |
| Co-60 | 2.708E-01 | 0.0373 | 2.076E-07 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.898E-05 | 0.0000 |
| Cs-137 | 1.846E-01 | 0.0254 | 8.666E-07 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.519E-04 | 0.0000 |
| Eu-152 | 4.423E-01 | 0.0609 | 2.341E-06 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.254E-05 | 0.0000 |
| Eu-154 | 8.363E-01 | 0.1151 | 4.727E-06 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.895E-05 | 0.0000 |
| H-3 | 0.000E+00 | 0.0000 | 1.177E-02 | 0.0016 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.294E-06 | 0.0000 |
| Pu-239 | 3.796E-04 | 0.0001 | 5.830E-02 | 0.0080 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.625E-02 | 0.0105 |
| Ra-226 | 5.244E+00 | 0.7214 | 1.941E-03 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.883E-02 | 0.0067 |
| Sr-90 | 6.768E-03 | 0.0009 | 1.006E-05 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.321E-03 | 0.0002 |
| Total | 7.012E+00 | 0.9647 | 9.672E-02 | 0.0133 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.596E-01 | 0.0220 |

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

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | 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 | 0.0000 | 8.519E-02 | 0.0117 |
| 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 | 2.708E-01 | 0.0373 |
| 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 | 1.847E-01 | 0.0254 |
| Eu-152 | 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 | 4.423E-01 | 0.0609 |
| Eu-154 | 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 | 8.363E-01 | 0.1151 |
| H-3 | 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 | 1.177E-02 | 0.0016 |
| Pu-239 | 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 | 1.349E-01 | 0.0186 |
| Ra-226 | 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 | 5.294E+00 | 0.7284 |
| 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 | 8.100E-03 | 0.0011 |
| 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 | 7.268E+00 | 1.0000 |

*Sum of all water independent and dependent pathways.

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)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Am-241 | 2.730E-02 | 0.0038 | 2.446E-02 | 0.0034 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.261E-02 | 0.0045 |
| Co-60 | 2.374E-01 | 0.0328 | 1.820E-07 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.664E-05 | 0.0000 |
| Cs-137 | 1.804E-01 | 0.0249 | 8.469E-07 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.484E-04 | 0.0000 |
| Eu-152 | 4.201E-01 | 0.0580 | 2.223E-06 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.141E-05 | 0.0000 |
| Eu-154 | 7.713E-01 | 0.1065 | 4.360E-06 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.437E-05 | 0.0000 |
| H-3 | 0.000E+00 | 0.0000 | 2.337E-03 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.052E-06 | 0.0000 |
| Pu-239 | 3.796E-04 | 0.0001 | 5.829E-02 | 0.0080 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.624E-02 | 0.0105 |
| Ra-226 | 5.347E+00 | 0.7381 | 1.990E-03 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.590E-02 | 0.0077 |
| Sr-90 | 6.712E-03 | 0.0009 | 9.765E-06 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.285E-03 | 0.0002 |
| Total | 6.991E+00 | 0.9650 | 8.709E-02 | 0.0120 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.663E-01 | 0.0230 |

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

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | 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 | 0.0000 | 8.436E-02 | 0.0116 |
| 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 | 2.374E-01 | 0.0328 |
| 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 | 1.805E-01 | 0.0249 |
| Eu-152 | 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 | 4.202E-01 | 0.0580 |
| Eu-154 | 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 | 7.714E-01 | 0.1065 |
| H-3 | 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 | 2.338E-03 | 0.0003 |
| Pu-239 | 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 | 1.349E-01 | 0.0186 |
| Ra-226 | 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 | 5.405E+00 | 0.7461 |
| 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 | 8.007E-03 | 0.0011 |
| 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 | 7.244E+00 | 1.0000 |

*Sum of all water independent and dependent pathways.

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)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Am-241 | 2.676E-02 | 0.0038 | 2.398E-02 | 0.0034 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.197E-02 | 0.0046 |
| Co-60 | 1.824E-01 | 0.0260 | 1.399E-07 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.279E-05 | 0.0000 |
| Cs-137 | 1.723E-01 | 0.0246 | 8.088E-07 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.418E-04 | 0.0000 |
| Eu-152 | 3.791E-01 | 0.0541 | 2.006E-06 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.932E-05 | 0.0000 |
| Eu-154 | 6.561E-01 | 0.0936 | 3.709E-06 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.625E-05 | 0.0000 |
| H-3 | 0.000E+00 | 0.0000 | 9.201E-05 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.140E-08 | 0.0000 |
| Pu-239 | 3.795E-04 | 0.0001 | 5.828E-02 | 0.0083 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.623E-02 | 0.0109 |
| Ra-226 | 5.317E+00 | 0.7589 | 2.092E-03 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.138E-02 | 0.0102 |
| Sr-90 | 6.326E-03 | 0.0009 | 9.203E-06 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.211E-03 | 0.0002 |
| Total | 6.741E+00 | 0.9621 | 8.446E-02 | 0.0121 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.810E-01 | 0.0258 |

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 Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | 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 | 0.0000 | 8.271E-02 | 0.0118 |
| 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 | 1.825E-01 | 0.0260 |
| 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 | 1.724E-01 | 0.0246 |
| Eu-152 | 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 | 3.791E-01 | 0.0541 |
| Eu-154 | 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 | 6.562E-01 | 0.0937 |
| H-3 | 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 | 9.205E-05 | 0.0000 |
| Pu-239 | 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 | 1.349E-01 | 0.0193 |
| Ra-226 | 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 | 5.391E+00 | 0.7694 |
| 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 | 7.547E-03 | 0.0011 |
| 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 | 7.006E+00 | 1.0000 |

*Sum of all water independent and dependent pathways.

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)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Am-241 | 2.498E-02 | 0.0039 | 2.238E-02 | 0.0035 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.984E-02 | 0.0047 |
| Co-60 | 7.259E-02 | 0.0113 | 5.566E-08 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.089E-06 | 0.0000 |
| Cs-137 | 1.466E-01 | 0.0229 | 6.884E-07 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.207E-04 | 0.0000 |
| Eu-152 | 2.645E-01 | 0.0413 | 1.400E-06 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.348E-05 | 0.0000 |
| Eu-154 | 3.725E-01 | 0.0581 | 2.106E-06 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.626E-05 | 0.0000 |
| H-3 | 0.000E+00 | 0.0000 | 1.086E-09 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.886E-13 | 0.0000 |
| Pu-239 | 3.792E-04 | 0.0001 | 5.823E-02 | 0.0091 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.617E-02 | 0.0119 |
| Ra-226 | 5.215E+00 | 0.8136 | 2.394E-03 | 0.0004 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.181E-01 | 0.0184 |
| Sr-90 | 5.143E-03 | 0.0008 | 7.482E-06 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.847E-04 | 0.0002 |
| Total | 6.101E+00 | 0.9519 | 8.302E-02 | 0.0130 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.252E-01 | 0.0351 |

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 Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | 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 | 0.0000 | 7.720E-02 | 0.0120 |
| 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 | 7.259E-02 | 0.0113 |
| 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 | 1.468E-01 | 0.0229 |
| Eu-152 | 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 | 2.645E-01 | 0.0413 |
| Eu-154 | 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 | 3.725E-01 | 0.0581 |
| H-3 | 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 | 1.086E-09 | 0.0000 |
| Pu-239 | 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 | 1.348E-01 | 0.0210 |
| Ra-226 | 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 | 5.335E+00 | 0.8323 |
| 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 | 6.135E-03 | 0.0010 |
| 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 | 6.410E+00 | 1.0000 |

*Sum of all water independent and dependent pathways.

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 Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Am-241 | 2.052E-02 | 0.0037 | 1.838E-02 | 0.0033 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.450E-02 | 0.0044 |
| Co-60 | 5.215E-03 | 0.0009 | 3.999E-09 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.656E-07 | 0.0000 |
| Cs-137 | 9.255E-02 | 0.0165 | 4.345E-07 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.615E-05 | 0.0000 |
| Eu-152 | 9.462E-02 | 0.0169 | 5.007E-07 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.822E-06 | 0.0000 |
| Eu-154 | 7.392E-02 | 0.0132 | 4.178E-07 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.211E-06 | 0.0000 |
| H-3 | 0.000E+00 | 0.0000 | 7.283E-24 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.277E-27 | 0.0000 |
| Pu-239 | 3.784E-04 | 0.0001 | 5.810E-02 | 0.0104 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.600E-02 | 0.0136 |
| Ra-226 | 4.931E+00 | 0.8804 | 2.889E-03 | 0.0005 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.993E-01 | 0.0356 |
| Sr-90 | 2.846E-03 | 0.0005 | 4.140E-06 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.448E-04 | 0.0001 |
| Total | 5.221E+00 | 0.9322 | 7.938E-02 | 0.0142 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.005E-01 | 0.0536 |

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 Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | 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 | 0.0000 | 6.341E-02 | 0.0113 |
| 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 | 5.216E-03 | 0.0009 |
| 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 | 9.263E-02 | 0.0165 |
| Eu-152 | 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 | 9.462E-02 | 0.0169 |
| Eu-154 | 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 | 7.392E-02 | 0.0132 |
| H-3 | 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 | 7.286E-24 | 0.0000 |
| Pu-239 | 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 | 1.345E-01 | 0.0240 |
| Ra-226 | 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 | 5.133E+00 | 0.9165 |
| 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 | 3.394E-03 | 0.0006 |
| 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 | 5.601E+00 | 1.0000 |

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 8.890E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Am-241 | 1.150E-02 | 0.0025 | 1.029E-02 | 0.0022 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.372E-02 | 0.0030 |
| Co-60 | 2.236E-06 | 0.0000 | 1.714E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.567E-10 | 0.0000 |
| Cs-137 | 2.386E-02 | 0.0052 | 1.120E-07 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.963E-05 | 0.0000 |
| Eu-152 | 4.581E-03 | 0.0010 | 2.425E-08 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.335E-07 | 0.0000 |
| Eu-154 | 6.312E-04 | 0.0001 | 3.568E-09 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.450E-08 | 0.0000 |
| H-3 | 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 |
| Pu-239 | 3.759E-04 | 0.0001 | 5.772E-02 | 0.0125 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.550E-02 | 0.0163 |
| Ra-226 | 4.181E+00 | 0.9037 | 2.983E-03 | 0.0006 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.437E-01 | 0.0527 |
| Sr-90 | 4.980E-04 | 0.0001 | 7.244E-07 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.534E-05 | 0.0000 |
| Total | 4.222E+00 | 0.9127 | 7.099E-02 | 0.0153 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.331E-01 | 0.0720 |

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 8.890E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | 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 | 0.0000 | 3.551E-02 | 0.0077 |
| 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 | 2.236E-06 | 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 | 2.388E-02 | 0.0052 |
| Eu-152 | 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 | 4.582E-03 | 0.0010 |
| Eu-154 | 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 | 6.313E-04 | 0.0001 |
| H-3 | 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 |
| Pu-239 | 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 | 1.336E-01 | 0.0289 |
| Ra-226 | 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 | 4.427E+00 | 0.9570 |
| 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 | 5.940E-04 | 0.0001 |
| 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 | 4.626E+00 | 1.0000 |

*Sum of all water independent and dependent pathways.

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 Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Am-241 | 1.031E-02 | 0.0023 | 9.224E-03 | 0.0021 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.230E-02 | 0.0027 |
| Co-60 | 5.184E-07 | 0.0000 | 3.975E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.634E-11 | 0.0000 |
| Cs-137 | 1.848E-02 | 0.0041 | 8.677E-08 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.521E-05 | 0.0000 |
| Eu-152 | 2.589E-03 | 0.0006 | 1.370E-08 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.320E-07 | 0.0000 |
| Eu-154 | 2.573E-04 | 0.0001 | 1.454E-09 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.814E-08 | 0.0000 |
| H-3 | 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 |
| Pu-239 | 3.755E-04 | 0.0001 | 5.765E-02 | 0.0129 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.540E-02 | 0.0168 |
| Ra-226 | 4.053E+00 | 0.9040 | 2.921E-03 | 0.0007 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.405E-01 | 0.0536 |
| Sr-90 | 3.585E-04 | 0.0001 | 5.216E-07 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.865E-05 | 0.0000 |
| Total | 4.085E+00 | 0.9112 | 6.979E-02 | 0.0156 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.283E-01 | 0.0732 |

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 Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | 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 | 0.0000 | 3.183E-02 | 0.0071 |
| 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 | 5.185E-07 | 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 | 1.850E-02 | 0.0041 |
| Eu-152 | 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 | 2.589E-03 | 0.0006 |
| Eu-154 | 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 | 2.573E-04 | 0.0001 |
| H-3 | 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 |
| Pu-239 | 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 | 1.334E-01 | 0.0298 |
| Ra-226 | 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 | 4.296E+00 | 0.9583 |
| 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 | 4.277E-04 | 0.0001 |
| 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 | 4.483E+00 | 1.0000 |

*Sum of all water independent and dependent pathways.

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 Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Am-241 | 1.457E-03 | 0.0006 | 1.287E-03 | 0.0005 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.716E-03 | 0.0007 |
| Co-60 | 1.900E-18 | 0.0000 | 1.457E-24 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.332E-22 | 0.0000 |
| Cs-137 | 1.853E-04 | 0.0001 | 8.699E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.525E-07 | 0.0000 |
| Eu-152 | 8.874E-08 | 0.0000 | 4.697E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.523E-12 | 0.0000 |
| Eu-154 | 2.435E-11 | 0.0000 | 1.376E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.716E-15 | 0.0000 |
| H-3 | 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 |
| Pu-239 | 3.673E-04 | 0.0001 | 5.637E-02 | 0.0217 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.373E-02 | 0.0284 |
| Ra-226 | 2.312E+00 | 0.8919 | 1.709E-03 | 0.0007 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.432E-01 | 0.0553 |
| Sr-90 | 9.643E-07 | 0.0000 | 1.403E-09 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.846E-07 | 0.0000 |
| Total | 2.314E+00 | 0.8927 | 5.937E-02 | 0.0229 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.187E-01 | 0.0844 |

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

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | 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 | 0.0000 | 4.460E-03 | 0.0017 |
| 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 | 1.900E-18 | 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 | 1.855E-04 | 0.0001 |
| Eu-152 | 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 | 8.875E-08 | 0.0000 |
| Eu-154 | 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 | 2.435E-11 | 0.0000 |
| H-3 | 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 |
| Pu-239 | 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 | 1.305E-01 | 0.0503 |
| Ra-226 | 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 | 2.457E+00 | 0.9479 |
| 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 | 1.150E-06 | 0.0000 |
| 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 | 2.592E+00 | 1.0000 |

*Sum of all water independent and dependent pathways.

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)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Am-241 | 1.574E-05 | 0.0000 | 1.539E-06 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.062E-06 | 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 | 1.870E-11 | 0.0000 | 8.777E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.538E-14 | 0.0000 |
| Eu-152 | 2.091E-23 | 0.0000 | 1.389E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.020E-17 | 0.0000 |
| Eu-154 | 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 |
| H-3 | 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 |
| Pu-239 | 3.397E-04 | 0.0007 | 5.212E-02 | 0.1121 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.817E-02 | 0.1466 |
| Ra-226 | 3.240E-01 | 0.6969 | 2.396E-04 | 0.0005 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.008E-02 | 0.0432 |
| Sr-90 | 9.727E-16 | 0.0000 | 1.415E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.862E-16 | 0.0000 |
| Total | 3.244E-01 | 0.6976 | 5.236E-02 | 0.1126 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.825E-02 | 0.1898 |

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

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | 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 | 0.0000 | 1.934E-05 | 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 | 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 | 1.871E-11 | 0.0000 |
| Eu-152 | 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 | 3.409E-17 | 0.0000 |
| Eu-154 | 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 |
| H-3 | 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 |
| Pu-239 | 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 | 1.206E-01 | 0.2594 |
| Ra-226 | 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 | 3.444E-01 | 0.7406 |
| 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 | 1.160E-15 | 0.0000 |
| 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 | 4.650E-01 | 1.0000 |

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

| Parent (i) | Product (j) | Thread Fraction | DSR(j,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Am-241 | Am-241 | 1.000E+00 | 6.264E-02 | 6.203E-02 | 6.082E-02 | 5.677E-02 | 4.662E-02 | 2.610E-02 | 2.340E-02 | 3.263E-03 | 3.308E-06 |
| Am-241 | Np-237 | 1.000E+00 | 9.493E-09 | 2.835E-08 | 6.547E-08 | 1.894E-07 | 4.968E-07 | 1.096E-06 | 1.171E-06 | 1.597E-06 | 1.084E-06 |
| Am-241 | Pa-233 | 1.000E+00 | 6.976E-08 | 2.390E-07 | 5.761E-07 | 1.702E-06 | 4.493E-06 | 9.934E-06 | 1.061E-05 | 1.449E-05 | 9.830E-06 |
| Am-241 | U-233 | 1.000E+00 | 1.483E-15 | 1.217E-14 | 6.879E-14 | 6.204E-13 | 4.842E-12 | 3.227E-11 | 3.891E-11 | 1.589E-10 | 2.310E-10 |
| Am-241 | Th-229 | 1.000E+00 | 9.855E-19 | 1.780E-17 | 2.285E-16 | 6.271E-15 | 1.461E-13 | 3.049E-12 | 4.182E-12 | 6.212E-11 | 5.002E-10 |
| Am-241 | Ra-225 | 1.000E+00 | 9.167E-20 | 1.876E-18 | 2.564E-17 | 7.278E-16 | 1.715E-14 | 3.592E-13 | 4.927E-13 | 7.328E-12 | 5.902E-11 |
| Am-241 | Ac-225+D | 1.000E+00 | 2.652E-19 | 5.955E-18 | 8.505E-17 | 2.472E-15 | 5.867E-14 | 1.232E-12 | 1.690E-12 | 2.516E-11 | 2.027E-10 |
| Am-241 | Bi-213+D | 1.000E+00 | 1.246E-18 | 2.798E-17 | 3.997E-16 | 1.162E-14 | 2.758E-13 | 5.791E-12 | 7.945E-12 | 1.182E-10 | 9.526E-10 |
| Am-241 | Pb-209 | 1.000E+00 | 1.009E-21 | 2.271E-20 | 3.246E-19 | 9.436E-18 | 2.240E-16 | 4.705E-15 | 6.455E-15 | 9.607E-14 | 7.740E-13 |
| Am-241 | ∑DSR(j) | | 6.264E-02 | 6.203E-02 | 6.082E-02 | 5.677E-02 | 4.662E-02 | 2.611E-02 | 2.341E-02 | 3.279E-03 | 1.422E-05 |
| Co-60 | Co-60 | 1.000E+00 | 7.502E+00 | 6.577E+00 | 5.054E+00 | 2.011E+00 | 1.445E-01 | 6.193E-05 | 1.436E-05 | 5.263E-17 | 0.000E+00 |
| Cs-137+D | Cs-137+D | 1.000E+00 | 1.635E+00 | 1.598E+00 | 1.526E+00 | 1.299E+00 | 8.197E-01 | 2.113E-01 | 1.637E-01 | 1.641E-03 | 1.656E-10 |
| Eu-152 | Eu-152 | 7.210E-01 | 2.453E+00 | 2.330E+00 | 2.103E+00 | 1.467E+00 | 5.248E-01 | 2.541E-02 | 1.436E-02 | 4.922E-07 | 1.160E-22 |
| Eu-152 | Eu-152 | 2.790E-01 | 9.493E-01 | 9.017E-01 | 8.136E-01 | 5.677E-01 | 2.031E-01 | 9.833E-03 | 5.557E-03 | 1.905E-07 | 4.489E-23 |
| Eu-152 | Gd-152 | 2.790E-01 | 8.078E-18 | 2.369E-17 | 5.259E-17 | 1.332E-16 | 2.521E-16 | 3.120E-16 | 3.127E-16 | 3.021E-16 | 2.622E-16 |
| Eu-152 | Sm-148 | 2.790E-01 | 2.780E-34 | 1.918E-33 | 9.810E-33 | 7.835E-32 | 4.942E-31 | 2.271E-30 | 2.622E-30 | 8.726E-30 | 2.645E-29 |
| Eu-152 | Nd-144 | 2.790E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.401E-45 | 2.382E-44 | 3.083E-44 | 3.307E-43 | 2.903E-42 |
| Eu-152 | ∑DSR(j) | | 9.493E-01 | 9.017E-01 | 8.136E-01 | 5.677E-01 | 2.031E-01 | 9.833E-03 | 5.557E-03 | 1.905E-07 | 2.622E-16 |
| Eu-154 | Eu-154 | 1.000E+00 | 3.636E+00 | 3.354E+00 | 2.853E+00 | 1.620E+00 | 3.214E-01 | 2.745E-03 | 1.119E-03 | 1.059E-10 | 2.760E-35 |
| H-3 | H-3 | 1.000E+00 | 5.163E-03 | 1.026E-03 | 4.037E-05 | 4.765E-10 | 3.196E-24 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Pu-239 | Pu-239 | 9.856E-01 | 5.135E-02 | 5.134E-02 | 5.133E-02 | 5.129E-02 | 5.117E-02 | 5.084E-02 | 5.077E-02 | 4.965E-02 | 4.590E-02 |
| Pu-239 | U-235m | 9.856E-01 | 5.743E-10 | 5.865E-10 | 5.864E-10 | 5.859E-10 | 5.846E-10 | 5.808E-10 | 5.800E-10 | 5.672E-10 | 5.244E-10 |
| Pu-239 | U-235 | 9.856E-01 | 1.822E-10 | 5.458E-10 | 1.269E-09 | 3.763E-09 | 1.057E-08 | 2.808E-08 | 3.100E-08 | 6.804E-08 | 9.759E-08 |
| Pu-239 | Th-231 | 9.856E-01 | 8.642E-12 | 2.603E-11 | 6.063E-11 | 1.799E-10 | 5.052E-10 | 1.343E-09 | 1.482E-09 | 3.254E-09 | 4.667E-09 |
| Pu-239 | Pa-231 | 9.856E-01 | 6.264E-16 | 4.408E-15 | 2.327E-14 | 2.053E-13 | 1.656E-12 | 1.248E-11 | 1.539E-11 | 8.976E-11 | 2.737E-10 |
| Pu-239 | Ac-227 | 9.856E-01 | 1.861E-18 | 2.790E-17 | 3.197E-16 | 7.855E-15 | 1.553E-13 | 2.291E-12 | 2.980E-12 | 2.388E-11 | 8.128E-11 |
| Pu-239 | Th-227 | 9.856E-01 | 6.065E-18 | 1.045E-16 | 1.288E-15 | 3.296E-14 | 6.608E-13 | 9.792E-12 | 1.274E-11 | 1.022E-10 | 3.481E-10 |
| Pu-239 | Ra-223+D | 9.856E-01 | 8.157E-18 | 1.549E-16 | 2.002E-15 | 5.257E-14 | 1.063E-12 | 1.579E-11 | 2.055E-11 | 1.650E-10 | 5.620E-10 |
| Pu-239 | Pb-211+D | 9.856E-01 | 5.530E-18 | 1.050E-16 | 1.358E-15 | 3.565E-14 | 7.208E-13 | 1.071E-11 | 1.394E-11 | 1.119E-10 | 3.812E-10 |
| Pu-239 | ∑DSR(j) | | 5.135E-02 | 5.134E-02 | 5.133E-02 | 5.129E-02 | 5.117E-02 | 5.084E-02 | 5.077E-02 | 4.965E-02 | 4.590E-02 |

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

| Parent (i) | Product (j) | Thread Fraction | DSR(j,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pu-239 | Pu-239 | 1.379E-02 | 7.185E-04 | 7.184E-04 | 7.182E-04 | 7.176E-04 | 7.160E-04 | 7.113E-04 | 7.104E-04 | 6.947E-04 | 6.423E-04 |
| Pu-239 | U-235m | 1.379E-02 | 8.036E-12 | 8.206E-12 | 8.205E-12 | 8.198E-12 | 8.180E-12 | 8.126E-12 | 8.116E-12 | 7.936E-12 | 7.337E-12 |
| Pu-239 | U-235 | 1.379E-02 | 2.549E-12 | 7.637E-12 | 1.776E-11 | 5.265E-11 | 1.478E-10 | 3.929E-10 | 4.337E-10 | 9.520E-10 | 1.366E-09 |
| Pu-239 | Th-231 | 1.379E-02 | 1.209E-13 | 3.642E-13 | 8.483E-13 | 2.517E-12 | 7.069E-12 | 1.879E-11 | 2.074E-11 | 4.553E-11 | 6.530E-11 |
| Pu-239 | Pa-231 | 1.379E-02 | 8.764E-18 | 6.168E-17 | 3.256E-16 | 2.872E-15 | 2.317E-14 | 1.746E-13 | 2.154E-13 | 1.256E-12 | 3.829E-12 |
| Pu-239 | Ac-227 | 1.379E-02 | 2.605E-20 | 3.903E-19 | 4.473E-18 | 1.099E-16 | 2.173E-15 | 3.205E-14 | 4.169E-14 | 3.341E-13 | 1.137E-12 |
| Pu-239 | Fr-223 | 1.379E-02 | 3.439E-20 | 5.155E-19 | 5.908E-18 | 1.452E-16 | 2.871E-15 | 4.234E-14 | 5.507E-14 | 4.413E-13 | 1.502E-12 |
| Pu-239 | Ra-223+D | 1.379E-02 | 1.515E-19 | 2.485E-18 | 2.979E-17 | 7.506E-16 | 1.497E-14 | 2.214E-13 | 2.880E-13 | 2.309E-12 | 7.863E-12 |
| Pu-239 | Pb-211+D | 1.379E-02 | 1.027E-19 | 1.685E-18 | 2.021E-17 | 5.091E-16 | 1.015E-14 | 1.501E-13 | 1.953E-13 | 1.566E-12 | 5.333E-12 |
| Pu-239 | ∑DSR(j) | | 7.185E-04 | 7.184E-04 | 7.182E-04 | 7.176E-04 | 7.160E-04 | 7.113E-04 | 7.104E-04 | 6.947E-04 | 6.423E-04 |
| Pu-239 | Pu-239 | 8.275E-07 | 4.311E-08 | 4.311E-08 | 4.310E-08 | 4.306E-08 | 4.297E-08 | 4.268E-08 | 4.263E-08 | 4.168E-08 | 3.854E-08 |
| Pu-239 | U-235m | 8.275E-07 | 4.822E-16 | 4.924E-16 | 4.923E-16 | 4.919E-16 | 4.908E-16 | 4.876E-16 | 4.870E-16 | 4.762E-16 | 4.403E-16 |
| Pu-239 | U-235 | 8.275E-07 | 1.530E-16 | 4.583E-16 | 1.066E-15 | 3.159E-15 | 8.870E-15 | 2.357E-14 | 2.602E-14 | 5.713E-14 | 8.194E-14 |
| Pu-239 | Th-231 | 8.275E-07 | 7.255E-18 | 2.185E-17 | 5.090E-17 | 1.510E-16 | 4.241E-16 | 1.127E-15 | 1.244E-15 | 2.732E-15 | 3.918E-15 |
| Pu-239 | Pa-231 | 8.275E-07 | 5.259E-22 | 3.701E-21 | 1.954E-20 | 1.723E-19 | 1.390E-18 | 1.048E-17 | 1.292E-17 | 7.536E-17 | 2.298E-16 |
| Pu-239 | Ac-227 | 8.275E-07 | 1.563E-24 | 2.342E-23 | 2.684E-22 | 6.595E-21 | 1.304E-19 | 1.923E-18 | 2.502E-18 | 2.005E-17 | 6.824E-17 |
| Pu-239 | Fr-223+D | 8.275E-07 | 1.800E-23 | 2.699E-22 | 3.093E-21 | 7.599E-20 | 1.503E-18 | 2.216E-17 | 2.883E-17 | 2.310E-16 | 7.863E-16 |
| Pu-239 | Pb-211+D | 8.275E-07 | 7.325E-24 | 1.098E-22 | 1.259E-21 | 3.093E-20 | 6.116E-19 | 9.021E-18 | 1.173E-17 | 9.402E-17 | 3.201E-16 |
| Pu-239 | ∑DSR(j) | | 4.311E-08 | 4.311E-08 | 4.310E-08 | 4.306E-08 | 4.297E-08 | 4.268E-08 | 4.263E-08 | 4.168E-08 | 3.854E-08 |
| Pu-239 | Pu-239 | 5.917E-04 | 3.083E-05 | 3.082E-05 | 3.082E-05 | 3.079E-05 | 3.072E-05 | 3.052E-05 | 3.048E-05 | 2.981E-05 | 2.756E-05 |
| Pu-239 | U-235 | 5.917E-04 | 1.094E-13 | 3.277E-13 | 7.621E-13 | 2.259E-12 | 6.343E-12 | 1.686E-11 | 1.861E-11 | 4.085E-11 | 5.859E-11 |
| Pu-239 | Th-231 | 5.917E-04 | 5.189E-15 | 1.563E-14 | 3.640E-14 | 1.080E-13 | 3.033E-13 | 8.061E-13 | 8.899E-13 | 1.953E-12 | 2.802E-12 |
| Pu-239 | Pa-231 | 5.917E-04 | 3.761E-19 | 2.647E-18 | 1.397E-17 | 1.232E-16 | 9.940E-16 | 7.493E-15 | 9.241E-15 | 5.389E-14 | 1.643E-13 |
| Pu-239 | Ac-227 | 5.917E-04 | 1.118E-21 | 1.675E-20 | 1.920E-19 | 4.716E-18 | 9.325E-17 | 1.375E-15 | 1.789E-15 | 1.433E-14 | 4.880E-14 |
| Pu-239 | Th-227 | 5.917E-04 | 3.642E-21 | 6.277E-20 | 7.734E-19 | 1.979E-17 | 3.967E-16 | 5.879E-15 | 7.648E-15 | 6.136E-14 | 2.090E-13 |
| Pu-239 | Ra-223+D | 5.917E-04 | 4.899E-21 | 9.300E-20 | 1.202E-18 | 3.156E-17 | 6.380E-16 | 9.480E-15 | 1.234E-14 | 9.905E-14 | 3.374E-13 |
| Pu-239 | Pb-211+D | 5.917E-04 | 3.321E-21 | 6.307E-20 | 8.151E-19 | 2.140E-17 | 4.327E-16 | 6.430E-15 | 8.367E-15 | 6.718E-14 | 2.288E-13 |
| Pu-239 | ∑DSR(j) | | 3.083E-05 | 3.082E-05 | 3.082E-05 | 3.079E-05 | 3.072E-05 | 3.052E-05 | 3.048E-05 | 2.981E-05 | 2.756E-05 |
| Pu-239 | Pu-239 | 8.280E-06 | 4.313E-07 | 4.313E-07 | 4.312E-07 | 4.308E-07 | 4.299E-07 | 4.271E-07 | 4.265E-07 | 4.171E-07 | 3.856E-07 |
| Pu-239 | U-235 | 8.280E-06 | 1.531E-15 | 4.585E-15 | 1.066E-14 | 3.161E-14 | 8.875E-14 | 2.359E-13 | 2.604E-13 | 5.716E-13 | 8.198E-13 |
| Pu-239 | Th-231 | 8.280E-06 | 7.260E-17 | 2.187E-16 | 5.093E-16 | 1.511E-15 | 4.244E-15 | 1.128E-14 | 1.245E-14 | 2.733E-14 | 3.921E-14 |
| Pu-239 | Pa-231 | 8.280E-06 | 5.263E-21 | 3.703E-20 | 1.955E-19 | 1.724E-18 | 1.391E-17 | 1.048E-16 | 1.293E-16 | 7.540E-16 | 2.299E-15 |
| Pu-239 | Ac-227 | 8.280E-06 | 1.564E-23 | 2.344E-22 | 2.686E-21 | 6.598E-20 | 1.305E-18 | 1.924E-17 | 2.503E-17 | 2.006E-16 | 6.828E-16 |
| Pu-239 | Fr-223 | 8.280E-06 | 2.065E-23 | 3.095E-22 | 3.547E-21 | 8.715E-20 | 1.723E-18 | 2.542E-17 | 3.306E-17 | 2.649E-16 | 9.018E-16 |
| Pu-239 | Ra-223+D | 8.280E-06 | 9.098E-23 | 1.492E-21 | 1.789E-20 | 4.506E-19 | 8.986E-18 | 1.329E-16 | 1.729E-16 | 1.386E-15 | 4.721E-15 |
| Pu-239 | Pb-211+D | 8.280E-06 | 6.169E-23 | 1.012E-21 | 1.213E-20 | 3.056E-19 | 6.095E-18 | 9.014E-17 | 1.173E-16 | 9.404E-16 | 3.202E-15 |
| Pu-239 | ∑DSR(j) | | 4.313E-07 | 4.313E-07 | 4.312E-07 | 4.308E-07 | 4.299E-07 | 4.271E-07 | 4.265E-07 | 4.171E-07 | 3.856E-07 |

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

| Parent (i) | Product (j) | Thread Fraction | DSR(j,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pu-239 | Pu-239 | 4.968E-10 | 2.588E-11 | 2.588E-11 | 2.587E-11 | 2.585E-11 | 2.579E-11 | 2.562E-11 | 2.559E-11 | 2.503E-11 | 2.314E-11 |
| Pu-239 | U-235 | 4.968E-10 | 9.185E-20 | 2.751E-19 | 6.398E-19 | 1.897E-18 | 5.325E-18 | 1.415E-17 | 1.562E-17 | 3.430E-17 | 4.919E-17 |
| Pu-239 | Th-231 | 4.968E-10 | 4.356E-21 | 1.312E-20 | 3.056E-20 | 9.067E-20 | 2.546E-19 | 6.768E-19 | 7.471E-19 | 1.640E-18 | 2.352E-18 |
| Pu-239 | Pa-231 | 4.968E-10 | 3.158E-25 | 2.222E-24 | 1.173E-23 | 1.035E-22 | 8.345E-22 | 6.291E-21 | 7.758E-21 | 4.524E-20 | 1.380E-19 |
| Pu-239 | Ac-227 | 4.968E-10 | 9.385E-28 | 1.406E-26 | 1.612E-25 | 3.959E-24 | 7.829E-23 | 1.155E-21 | 1.502E-21 | 1.203E-20 | 4.097E-20 |
| Pu-239 | Fr-223+D | 4.968E-10 | 1.081E-26 | 1.620E-25 | 1.857E-24 | 4.562E-23 | 9.021E-22 | 1.330E-20 | 1.731E-20 | 1.387E-19 | 4.721E-19 |
| Pu-239 | Pb-211+D | 4.968E-10 | 4.399E-27 | 6.594E-26 | 7.558E-25 | 1.857E-23 | 3.672E-22 | 5.416E-21 | 7.044E-21 | 5.644E-20 | 1.922E-19 |
| Pu-239 | ∑DSR(j) | | 2.588E-11 | 2.588E-11 | 2.587E-11 | 2.585E-11 | 2.579E-11 | 2.562E-11 | 2.559E-11 | 2.503E-11 | 2.314E-11 |
| Ra-226 | Ra-226 | 9.998E-01 | 6.484E-02 | 6.466E-02 | 6.430E-02 | 6.304E-02 | 5.960E-02 | 5.052E-02 | 4.897E-02 | 2.793E-02 | 3.916E-03 |
| Ra-226 | Rn-222+D | 9.998E-01 | 1.065E-03 | 1.086E-03 | 1.080E-03 | 1.059E-03 | 1.001E-03 | 8.487E-04 | 8.227E-04 | 4.693E-04 | 6.578E-05 |
| Ra-226 | Pb-214 | 9.998E-01 | 6.371E-01 | 6.497E-01 | 6.461E-01 | 6.335E-01 | 5.989E-01 | 5.077E-01 | 4.921E-01 | 2.807E-01 | 3.935E-02 |
| Ra-226 | Bi-214+D | 9.998E-01 | 4.588E+00 | 4.678E+00 | 4.652E+00 | 4.562E+00 | 4.313E+00 | 3.656E+00 | 3.543E+00 | 2.021E+00 | 2.833E-01 |
| Ra-226 | Pb-210 | 9.998E-01 | 1.577E-03 | 4.750E-03 | 1.077E-02 | 2.870E-02 | 6.022E-02 | 7.926E-02 | 7.842E-02 | 4.702E-02 | 6.591E-03 |
| Ra-226 | Bi-210 | 9.998E-01 | 4.302E-05 | 1.331E-04 | 3.040E-04 | 8.134E-04 | 1.709E-03 | 2.250E-03 | 2.226E-03 | 1.334E-03 | 1.871E-04 |
| Ra-226 | Po-210 | 9.998E-01 | 1.005E-03 | 5.114E-03 | 1.500E-02 | 4.516E-02 | 9.822E-02 | 1.306E-01 | 1.293E-01 | 7.756E-02 | 1.087E-02 |
| Ra-226 | ∑DSR(j) | | 5.293E+00 | 5.404E+00 | 5.390E+00 | 5.334E+00 | 5.132E+00 | 4.427E+00 | 4.295E+00 | 2.456E+00 | 3.443E-01 |
| Ra-226 | Ra-226 | 1.320E-06 | 8.559E-08 | 8.535E-08 | 8.487E-08 | 8.322E-08 | 7.868E-08 | 6.669E-08 | 6.464E-08 | 3.687E-08 | 5.169E-09 |
| Ra-226 | Rn-222+D | 1.320E-06 | 1.406E-09 | 1.434E-09 | 1.426E-09 | 1.398E-09 | 1.322E-09 | 1.120E-09 | 1.086E-09 | 6.194E-10 | 8.683E-11 |
| Ra-226 | Pb-214 | 1.320E-06 | 8.410E-07 | 8.576E-07 | 8.528E-07 | 8.362E-07 | 7.906E-07 | 6.701E-07 | 6.495E-07 | 3.705E-07 | 5.194E-08 |
| Ra-226 | Bi-214+D | 1.320E-06 | 6.056E-06 | 6.176E-06 | 6.141E-06 | 6.022E-06 | 5.693E-06 | 4.825E-06 | 4.677E-06 | 2.668E-06 | 3.740E-07 |
| Ra-226 | Pb-210 | 1.320E-06 | 2.081E-09 | 6.270E-09 | 1.421E-08 | 3.789E-08 | 7.949E-08 | 1.046E-07 | 1.035E-07 | 6.206E-08 | 8.701E-09 |
| Ra-226 | Bi-210+D | 1.320E-06 | 1.793E-10 | 5.545E-10 | 1.267E-09 | 3.389E-09 | 7.120E-09 | 9.374E-09 | 9.274E-09 | 5.560E-09 | 7.795E-10 |
| Ra-226 | ∑DSR(j) | | 6.986E-06 | 7.127E-06 | 7.096E-06 | 6.984E-06 | 6.650E-06 | 5.677E-06 | 5.505E-06 | 3.144E-06 | 4.407E-07 |
| Ra-226 | Ra-226 | 1.900E-08 | 1.232E-09 | 1.228E-09 | 1.222E-09 | 1.198E-09 | 1.132E-09 | 9.599E-10 | 9.304E-10 | 5.307E-10 | 7.440E-11 |
| Ra-226 | Rn-222+D | 1.900E-08 | 2.024E-11 | 2.064E-11 | 2.052E-11 | 2.012E-11 | 1.902E-11 | 1.613E-11 | 1.563E-11 | 8.916E-12 | 1.250E-12 |
| Ra-226 | Pb-214 | 1.900E-08 | 1.211E-08 | 1.234E-08 | 1.228E-08 | 1.204E-08 | 1.138E-08 | 9.645E-09 | 9.350E-09 | 5.333E-09 | 7.476E-10 |
| Ra-226 | Bi-214+D | 1.900E-08 | 8.717E-08 | 8.889E-08 | 8.839E-08 | 8.667E-08 | 8.194E-08 | 6.946E-08 | 6.732E-08 | 3.840E-08 | 5.383E-09 |
| Ra-226 | Pb-210+D | 1.900E-08 | 1.223E-10 | 3.684E-10 | 8.351E-10 | 2.226E-09 | 4.671E-09 | 6.148E-09 | 6.082E-09 | 3.647E-09 | 5.112E-10 |
| Ra-226 | ∑DSR(j) | | 1.006E-07 | 1.029E-07 | 1.027E-07 | 1.022E-07 | 9.914E-08 | 8.622E-08 | 8.370E-08 | 4.792E-08 | 6.718E-09 |
| Ra-226 | Ra-226 | 1.998E-04 | 1.296E-05 | 1.292E-05 | 1.285E-05 | 1.260E-05 | 1.191E-05 | 1.010E-05 | 9.786E-06 | 5.582E-06 | 7.825E-07 |
| Ra-226 | Rn-222+D1 | 1.998E-04 | 2.184E-07 | 2.228E-07 | 2.215E-07 | 2.172E-07 | 2.053E-07 | 1.741E-07 | 1.687E-07 | 9.624E-08 | 1.349E-08 |
| Ra-226 | Bi-214+D | 1.998E-04 | 9.168E-04 | 9.349E-04 | 9.297E-04 | 9.116E-04 | 8.619E-04 | 7.305E-04 | 7.081E-04 | 4.039E-04 | 5.662E-05 |
| Ra-226 | Pb-210 | 1.998E-04 | 3.151E-07 | 9.492E-07 | 2.152E-06 | 5.736E-06 | 1.203E-05 | 1.584E-05 | 1.567E-05 | 9.396E-06 | 1.317E-06 |
| Ra-226 | Bi-210 | 1.998E-04 | 8.598E-09 | 2.660E-08 | 6.075E-08 | 1.625E-07 | 3.415E-07 | 4.496E-07 | 4.448E-07 | 2.667E-07 | 3.739E-08 |
| Ra-226 | Po-210 | 1.998E-04 | 2.009E-07 | 1.022E-06 | 2.998E-06 | 9.024E-06 | 1.963E-05 | 2.610E-05 | 2.583E-05 | 1.550E-05 | 2.173E-06 |
| Ra-226 | ∑DSR(j) | | 9.305E-04 | 9.501E-04 | 9.480E-04 | 9.394E-04 | 9.060E-04 | 7.832E-04 | 7.600E-04 | 4.348E-04 | 6.094E-05 |
| Ra-226 | Ra-226 | 2.637E-10 | 1.710E-11 | 1.706E-11 | 1.696E-11 | 1.663E-11 | 1.572E-11 | 1.333E-11 | 1.292E-11 | 7.369E-12 | 1.033E-12 |
| Ra-226 | Rn-222+D1 | 2.637E-10 | 2.883E-13 | 2.940E-13 | 2.924E-13 | 2.867E-13 | 2.711E-13 | 2.298E-13 | 2.227E-13 | 1.270E-13 | 1.781E-14 |
| Ra-226 | Bi-214+D | 2.637E-10 | 1.210E-09 | 1.234E-09 | 1.227E-09 | 1.203E-09 | 1.138E-09 | 9.643E-10 | 9.347E-10 | 5.332E-10 | 7.474E-11 |
| Ra-226 | Pb-210 | 2.637E-10 | 4.160E-13 | 1.253E-12 | 2.840E-12 | 7.571E-12 | 1.589E-11 | 2.091E-11 | 2.069E-11 | 1.240E-11 | 1.739E-12 |
| Ra-226 | Bi-210+D | 2.637E-10 | 3.583E-14 | 1.108E-13 | 2.531E-13 | 6.773E-13 | 1.423E-12 | 1.873E-12 | 1.853E-12 | 1.111E-12 | 1.558E-13 |
| Ra-226 | ∑DSR(j) | | 1.228E-09 | 1.253E-09 | 1.248E-09 | 1.229E-09 | 1.171E-09 | 1.001E-09 | 9.704E-10 | 5.542E-10 | 7.768E-11 |

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

| Parent (i) | Product (j) | Thread Fraction | DSR(j,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ra-226 | Ra-226 | 3.796E-12 | 2.462E-13 | 2.455E-13 | 2.441E-13 | 2.394E-13 | 2.263E-13 | 1.918E-13 | 1.859E-13 | 1.061E-13 | 1.487E-14 |
| Ra-226 | Rn-222+D1 | 3.796E-12 | 4.150E-15 | 4.232E-15 | 4.209E-15 | 4.127E-15 | 3.902E-15 | 3.307E-15 | 3.206E-15 | 1.829E-15 | 2.563E-16 |
| Ra-226 | Bi-214+D | 3.796E-12 | 1.742E-11 | 1.776E-11 | 1.766E-11 | 1.732E-11 | 1.638E-11 | 1.388E-11 | 1.345E-11 | 7.675E-12 | 1.076E-12 |
| Ra-226 | Pb-210+D | 3.796E-12 | 2.444E-14 | 7.363E-14 | 1.669E-13 | 4.449E-13 | 9.335E-13 | 1.229E-12 | 1.216E-12 | 7.288E-13 | 1.022E-13 |
| Ra-226 | ∑DSR(j) | | 1.769E-11 | 1.809E-11 | 1.808E-11 | 1.801E-11 | 1.754E-11 | 1.530E-11 | 1.486E-11 | 8.511E-12 | 1.193E-12 |
| Ra-226 | Ra-226 | 2.000E-07 | 1.297E-08 | 1.293E-08 | 1.286E-08 | 1.261E-08 | 1.192E-08 | 1.011E-08 | 9.796E-09 | 5.588E-09 | 7.833E-10 |
| Ra-226 | Rn-222+D2 | 2.000E-07 | 6.922E-10 | 7.059E-10 | 7.019E-10 | 6.883E-10 | 6.507E-10 | 5.515E-10 | 5.346E-10 | 3.050E-10 | 4.275E-11 |
| Ra-226 | Pb-210 | 2.000E-07 | 3.155E-10 | 9.502E-10 | 2.154E-09 | 5.742E-09 | 1.205E-08 | 1.586E-08 | 1.569E-08 | 9.405E-09 | 1.319E-09 |
| Ra-226 | Bi-210 | 2.000E-07 | 8.608E-12 | 2.663E-11 | 6.081E-11 | 1.627E-10 | 3.418E-10 | 4.500E-10 | 4.453E-10 | 2.670E-10 | 3.743E-11 |
| Ra-226 | Po-210 | 2.000E-07 | 2.012E-10 | 1.023E-09 | 3.002E-09 | 9.033E-09 | 1.965E-08 | 2.613E-08 | 2.586E-08 | 1.552E-08 | 2.175E-09 |
| Ra-226 | ∑DSR(j) | | 1.419E-08 | 1.564E-08 | 1.878E-08 | 2.824E-08 | 4.461E-08 | 5.309E-08 | 5.232E-08 | 3.108E-08 | 4.357E-09 |
| Ra-226 | Ra-226 | 2.640E-13 | 1.712E-14 | 1.707E-14 | 1.698E-14 | 1.665E-14 | 1.574E-14 | 1.334E-14 | 1.293E-14 | 7.376E-15 | 1.034E-15 |
| Ra-226 | Rn-222+D2 | 2.640E-13 | 9.137E-16 | 9.317E-16 | 9.265E-16 | 9.085E-16 | 8.589E-16 | 7.280E-16 | 7.057E-16 | 4.025E-16 | 5.643E-17 |
| Ra-226 | Pb-210 | 2.640E-13 | 4.165E-16 | 1.254E-15 | 2.843E-15 | 7.579E-15 | 1.590E-14 | 2.093E-14 | 2.071E-14 | 1.242E-14 | 1.741E-15 |
| Ra-226 | Bi-210+D | 2.640E-13 | 3.587E-17 | 1.109E-16 | 2.534E-16 | 6.780E-16 | 1.424E-15 | 1.875E-15 | 1.855E-15 | 1.112E-15 | 1.559E-16 |
| Ra-226 | ∑DSR(j) | | 1.849E-14 | 1.937E-14 | 2.100E-14 | 2.581E-14 | 3.392E-14 | 3.687E-14 | 3.620E-14 | 2.131E-14 | 2.987E-15 |
| Ra-226 | Ra-226 | 3.800E-15 | 2.464E-16 | 2.457E-16 | 2.444E-16 | 2.396E-16 | 2.265E-16 | 1.920E-16 | 1.861E-16 | 1.062E-16 | 1.488E-17 |
| Ra-226 | Rn-222+D2 | 3.800E-15 | 1.315E-17 | 1.341E-17 | 1.334E-17 | 1.308E-17 | 1.236E-17 | 1.048E-17 | 1.016E-17 | 5.794E-18 | 8.122E-19 |
| Ra-226 | Pb-210+D | 3.800E-15 | 2.447E-17 | 7.370E-17 | 1.671E-16 | 4.453E-16 | 9.344E-16 | 1.230E-15 | 1.217E-15 | 7.295E-16 | 1.023E-16 |
| Ra-226 | ∑DSR(j) | | 2.841E-16 | 3.329E-16 | 4.248E-16 | 6.980E-16 | 1.173E-15 | 1.432E-15 | 1.413E-15 | 8.415E-16 | 1.180E-16 |
| Sr-90 | Sr-90 | 1.000E+00 | 3.992E-03 | 3.875E-03 | 3.653E-03 | 2.969E-03 | 1.643E-03 | 2.875E-04 | 2.070E-04 | 5.567E-07 | 5.616E-16 |
| Sr-90 | Y-90 | 1.000E+00 | 2.048E-02 | 2.032E-02 | 1.915E-02 | 1.557E-02 | 8.612E-03 | 1.507E-03 | 1.085E-03 | 2.918E-06 | 2.944E-15 |
| Sr-90 | ∑DSR(j) | | 2.447E-02 | 2.419E-02 | 2.280E-02 | 1.853E-02 | 1.026E-02 | 1.795E-03 | 1.292E-03 | 3.475E-06 | 3.506E-15 |

The DSR includes contributions from associated (half-life ≤ 10 minut) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 1.200E+01 mrem/yr

| Nuclide (i) | t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|
| Am-241 | 1.916E+02 | 1.935E+02 | 1.973E+02 | 2.114E+02 | 2.574E+02 | 4.596E+02 | 5.127E+02 | 3.659E+03 | 8.437E+05 |
| Co-60 | 1.600E+00 | 1.825E+00 | 2.374E+00 | 5.967E+00 | 8.306E+01 | 1.938E+05 | 8.355E+05 | *1.113E+15 | *1.113E+15 |
| Cs-137 | 7.340E+00 | 7.511E+00 | 7.864E+00 | 9.239E+00 | 1.464E+01 | 5.678E+01 | 7.330E+01 | 7.312E+03 | 7.247E+10 |
| Eu-152 | 3.527E+00 | 3.713E+00 | 4.115E+00 | 5.897E+00 | 1.649E+01 | 3.405E+02 | 6.024E+02 | 1.758E+07 | *1.727E+14 |
| Eu-154 | 3.300E+00 | 3.578E+00 | 4.206E+00 | 7.409E+00 | 3.734E+01 | 4.372E+03 | 1.073E+04 | 1.134E+11 | *2.685E+14 |
| H-3 | 2.324E+03 | 1.170E+04 | 2.972E+05 | 2.518E+10 | *9.621E+15 | *9.621E+15 | *9.621E+15 | *9.621E+15 | *9.621E+15 |
| Pu-239 | 2.303E+02 | 2.304E+02 | 2.304E+02 | 2.306E+02 | 2.311E+02 | 2.326E+02 | 2.329E+02 | 2.382E+02 | 2.577E+02 |
| Ra-226 | 2.267E+00 | 2.220E+00 | 2.226E+00 | 2.249E+00 | 2.338E+00 | 2.710E+00 | 2.793E+00 | 4.885E+00 | 3.485E+01 |
| Sr-90 | 4.904E+02 | 4.961E+02 | 5.263E+02 | 6.474E+02 | 1.170E+03 | 6.687E+03 | 9.287E+03 | 3.453E+06 | *1.366E+14 |

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

| Nuclide (i) | Initial (pCi/g) | tmin (years) | DSR(i,tmin) | G(i,tmin) (pCi/g) | DSR(i,tmax) | G(i,tmax) (pCi/g) |
|---|---|---|---|---|---|---|
| Am-241 | 1.360E+00 | 0.000E+00 | 6.264E-02 | 1.916E+02 | 6.264E-02 | 1.916E+02 |
| Co-60 | 3.610E-02 | 0.000E+00 | 7.502E+00 | 1.600E+00 | 7.502E+00 | 1.600E+00 |
| Cs-137 | 1.130E-01 | 0.000E+00 | 1.635E+00 | 7.340E+00 | 1.635E+00 | 7.340E+00 |
| Eu-152 | 1.300E-01 | 0.000E+00 | 3.403E+00 | 3.527E+00 | 3.403E+00 | 3.527E+00 |
| Eu-154 | 2.300E-01 | 0.000E+00 | 3.636E+00 | 3.300E+00 | 3.636E+00 | 3.300E+00 |
| H-3 | 2.280E+00 | 0.000E+00 | 5.163E-03 | 2.324E+03 | 5.163E-03 | 2.324E+03 |
| Pu-239 | 2.590E+00 | 0.000E+00 | 5.210E-02 | 2.303E+02 | 5.210E-02 | 2.303E+02 |
| Ra-226 | 1.000E+00 | 0.1214 ± 0.0002 | 5.411E+00 | 2.218E+00 | 5.294E+00 | 2.267E+00 |
| Sr-90 | 3.310E-01 | 0.000E+00 | 2.447E-02 | 4.904E+02 | 2.447E-02 | 4.904E+02 |

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

| Nuclide (j) | Parent (i) | THF(i) | DOSE(j,t), mrem/yr t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Am-241 | Am-241 | 1.000E+00 | 8.519E-02 | 8.436E-02 | 8.271E-02 | 7.720E-02 | 6.340E-02 | 3.549E-02 | 3.182E-02 | 4.438E-03 | 4.499E-06 |
| Np-237 | Am-241 | 1.000E+00 | 1.291E-08 | 3.855E-08 | 8.904E-08 | 2.576E-07 | 6.756E-07 | 1.490E-06 | 1.592E-06 | 2.172E-06 | 1.474E-06 |
| Pa-233 | Am-241 | 1.000E+00 | 9.487E-08 | 3.251E-07 | 7.835E-07 | 2.314E-06 | 6.111E-06 | 1.351E-05 | 1.443E-05 | 1.971E-05 | 1.337E-05 |
| U-233 | Am-241 | 1.000E+00 | 2.016E-15 | 1.655E-14 | 9.355E-14 | 8.438E-13 | 6.586E-12 | 4.389E-11 | 5.292E-11 | 2.161E-10 | 3.142E-10 |
| Th-229 | Am-241 | 1.000E+00 | 1.340E-18 | 2.421E-17 | 3.108E-16 | 8.529E-15 | 1.987E-13 | 4.147E-12 | 5.687E-12 | 8.448E-11 | 6.802E-10 |
| Ra-225 | Am-241 | 1.000E+00 | 1.247E-19 | 2.552E-18 | 3.486E-17 | 9.898E-16 | 2.332E-14 | 4.885E-13 | 6.701E-13 | 9.966E-12 | 8.026E-11 |
| Ac-225 | Am-241 | 1.000E+00 | 3.606E-19 | 8.099E-18 | 1.157E-16 | 3.361E-15 | 7.980E-14 | 1.676E-12 | 2.299E-12 | 3.422E-11 | 2.756E-10 |
| Bi-213 | Am-241 | 1.000E+00 | 1.694E-18 | 3.805E-17 | 5.436E-16 | 1.580E-14 | 3.750E-13 | 7.876E-12 | 1.080E-11 | 1.608E-10 | 1.295E-09 |
| Pb-209 | Am-241 | 1.000E+00 | 1.373E-21 | 3.088E-20 | 4.414E-19 | 1.283E-17 | 3.047E-16 | 6.399E-15 | 8.779E-15 | 1.307E-13 | 1.053E-12 |
| Co-60 | Co-60 | 1.000E+00 | 2.708E-01 | 2.374E-01 | 1.825E-01 | 7.259E-02 | 5.216E-03 | 2.236E-06 | 5.185E-07 | 1.900E-18 | 0.000E+00 |
| Cs-137 | Cs-137 | 1.000E+00 | 1.847E-01 | 1.805E-01 | 1.724E-01 | 1.468E-01 | 9.263E-02 | 2.388E-02 | 1.850E-02 | 1.855E-04 | 1.871E-11 |
| Eu-152 | Eu-152 | 7.210E-01 | 3.189E-01 | 3.029E-01 | 2.733E-01 | 1.907E-01 | 6.822E-02 | 3.303E-03 | 1.867E-03 | 6.399E-08 | 1.508E-23 |
| Eu-152 | Eu-152 | 2.790E-01 | 1.234E-01 | 1.172E-01 | 1.058E-01 | 7.381E-02 | 2.640E-02 | 1.278E-03 | 7.225E-04 | 2.476E-08 | 5.835E-24 |
| Eu-152 | ∑DOSE(j) | | 4.423E-01 | 4.202E-01 | 3.791E-01 | 2.645E-01 | 9.462E-02 | 4.582E-03 | 2.589E-03 | 8.875E-08 | 2.091E-23 |
| Gd-152 | Eu-152 | 2.790E-01 | 1.050E-18 | 3.080E-18 | 6.837E-18 | 1.731E-17 | 3.277E-17 | 4.056E-17 | 4.065E-17 | 3.927E-17 | 3.409E-17 |
| Sm-148 | Eu-152 | 2.790E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.742E-31 | 3.408E-31 | 1.134E-30 | 3.438E-30 |
| Nd-144 | Eu-152 | 2.790E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Eu-154 | Eu-154 | 1.000E+00 | 8.363E-01 | 7.714E-01 | 6.562E-01 | 3.725E-01 | 7.392E-02 | 6.313E-04 | 2.573E-04 | 2.435E-11 | 0.000E+00 |
| H-3 | H-3 | 1.000E+00 | 1.177E-02 | 2.338E-03 | 9.205E-05 | 1.086E-09 | 7.286E-24 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Pu-239 | Pu-239 | 9.856E-01 | 1.330E-01 | 1.330E-01 | 1.329E-01 | 1.328E-01 | 1.325E-01 | 1.317E-01 | 1.315E-01 | 1.286E-01 | 1.189E-01 |
| Pu-239 | Pu-239 | 1.379E-02 | 1.861E-03 | 1.861E-03 | 1.860E-03 | 1.859E-03 | 1.855E-03 | 1.842E-03 | 1.840E-03 | 1.799E-03 | 1.664E-03 |
| Pu-239 | ∑DOSE(j) | | 1.348E-01 | 1.348E-01 | 1.348E-01 | 1.347E-01 | 1.344E-01 | 1.335E-01 | 1.333E-01 | 1.304E-01 | 1.206E-01 |
| U-235m | Pu-239 | 9.856E-01 | 1.488E-09 | 1.519E-09 | 1.519E-09 | 1.518E-09 | 1.514E-09 | 1.504E-09 | 1.502E-09 | 1.469E-09 | 1.358E-09 |
| U-235m | Pu-239 | 1.379E-02 | 2.081E-11 | 2.125E-11 | 2.125E-11 | 2.123E-11 | 2.119E-11 | 2.105E-11 | 2.102E-11 | 2.055E-11 | 1.900E-11 |
| U-235m | Pu-239 | 8.275E-07 | 1.249E-15 | 1.275E-15 | 1.275E-15 | 1.274E-15 | 1.271E-15 | 1.263E-15 | 1.261E-15 | 1.233E-15 | 1.140E-15 |
| U-235m | ∑DOSE(j) | | 1.508E-09 | 1.540E-09 | 1.540E-09 | 1.539E-09 | 1.535E-09 | 1.525E-09 | 1.523E-09 | 1.490E-09 | 1.377E-09 |
| U-235 | Pu-239 | 9.856E-01 | 4.719E-10 | 1.414E-09 | 3.288E-09 | 9.746E-09 | 2.736E-08 | 7.272E-08 | 8.028E-08 | 1.762E-07 | 2.528E-07 |
| U-235 | Pu-239 | 1.379E-02 | 6.603E-12 | 1.978E-11 | 4.600E-11 | 1.364E-10 | 3.829E-10 | 1.018E-09 | 1.123E-09 | 2.466E-09 | 3.537E-09 |
| U-235 | Pu-239 | 8.275E-07 | 3.962E-16 | 1.187E-15 | 2.760E-15 | 8.182E-15 | 2.297E-14 | 6.105E-14 | 6.740E-14 | 1.480E-13 | 2.122E-13 |
| U-235 | Pu-239 | 5.917E-04 | 2.833E-13 | 8.487E-13 | 1.974E-12 | 5.851E-12 | 1.643E-11 | 4.366E-11 | 4.820E-11 | 1.058E-10 | 1.517E-10 |

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

| Nuclide (j) | Parent (i) | THF(i) | DOSE(j,t), mrem/yr t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U-235 | Pu-239 | 8.280E-06 | 3.965E-15 | 1.188E-14 | 2.762E-14 | 8.187E-14 | 2.299E-13 | 6.109E-13 | 6.744E-13 | 1.480E-12 | 2.123E-12 |
| U-235 | Pu-239 | 4.968E-10 | 2.379E-19 | 7.126E-19 | 1.657E-18 | 4.912E-18 | 1.379E-17 | 3.665E-17 | 4.046E-17 | 8.883E-17 | 1.274E-16 |
| U-235 | ∑DOSE(j) | | 4.788E-10 | 1.434E-09 | 3.336E-09 | 9.888E-09 | 2.776E-08 | 7.378E-08 | 8.145E-08 | 1.788E-07 | 2.565E-07 |
| Th-231 | Pu-239 | 9.856E-01 | 2.238E-11 | 6.742E-11 | 1.570E-10 | 4.659E-10 | 1.308E-09 | 3.477E-09 | 3.839E-09 | 8.427E-09 | 1.209E-08 |
| Th-231 | Pu-239 | 1.379E-02 | 3.132E-13 | 9.433E-13 | 2.197E-12 | 6.519E-12 | 1.831E-11 | 4.866E-11 | 5.372E-11 | 1.179E-10 | 1.691E-10 |
| Th-231 | Pu-239 | 8.275E-07 | 1.879E-17 | 5.660E-17 | 1.318E-16 | 3.911E-16 | 1.099E-15 | 2.920E-15 | 3.223E-15 | 7.075E-15 | 1.015E-14 |
| Th-231 | Pu-239 | 5.917E-04 | 1.344E-14 | 4.048E-14 | 9.428E-14 | 2.797E-13 | 7.855E-13 | 2.088E-12 | 2.305E-12 | 5.059E-12 | 7.257E-12 |
| Th-231 | Pu-239 | 8.280E-06 | 1.880E-16 | 5.663E-16 | 1.319E-15 | 3.914E-15 | 1.099E-14 | 2.921E-14 | 3.225E-14 | 7.079E-14 | 1.015E-13 |
| Th-231 | Pu-239 | 4.968E-10 | 1.128E-20 | 3.398E-20 | 7.915E-20 | 2.348E-19 | 6.595E-19 | 1.753E-18 | 1.935E-18 | 4.248E-18 | 6.093E-18 |
| Th-231 | ∑DOSE(j) | | 2.271E-11 | 6.840E-11 | 1.593E-10 | 4.727E-10 | 1.328E-09 | 3.528E-09 | 3.895E-09 | 8.550E-09 | 1.226E-08 |
| Pa-231 | Pu-239 | 9.856E-01 | 1.622E-15 | 1.142E-14 | 6.027E-14 | 5.316E-13 | 4.288E-12 | 3.233E-11 | 3.987E-11 | 2.325E-10 | 7.088E-10 |
| Pa-231 | Pu-239 | 1.379E-02 | 2.270E-17 | 1.597E-16 | 8.433E-16 | 7.438E-15 | 6.000E-14 | 4.523E-13 | 5.578E-13 | 3.253E-12 | 9.918E-12 |
| Pa-231 | Pu-239 | 8.275E-07 | 1.362E-21 | 9.586E-21 | 5.060E-20 | 4.463E-19 | 3.600E-18 | 2.714E-17 | 3.347E-17 | 1.952E-16 | 5.951E-16 |
| Pa-231 | Pu-239 | 5.917E-04 | 9.742E-19 | 6.855E-18 | 3.618E-17 | 3.192E-16 | 2.574E-15 | 1.941E-14 | 2.393E-14 | 1.396E-13 | 4.256E-13 |
| Pa-231 | Pu-239 | 8.280E-06 | 1.363E-20 | 9.592E-20 | 5.063E-19 | 4.466E-18 | 3.602E-17 | 2.715E-16 | 3.349E-16 | 1.953E-15 | 5.955E-15 |
| Pa-231 | Pu-239 | 4.968E-10 | 8.179E-25 | 5.755E-24 | 3.038E-23 | 2.680E-22 | 2.161E-21 | 1.629E-20 | 2.009E-20 | 1.172E-19 | 3.573E-19 |
| Pa-231 | ∑DOSE(j) | | 1.646E-15 | 1.158E-14 | 6.115E-14 | 5.394E-13 | 4.351E-12 | 3.280E-11 | 4.045E-11 | 2.359E-10 | 7.192E-10 |
| Ac-227 | Pu-239 | 9.856E-01 | 4.821E-18 | 7.225E-17 | 8.281E-16 | 2.034E-14 | 4.023E-13 | 5.933E-12 | 7.717E-12 | 6.184E-11 | 2.105E-10 |
| Ac-227 | Pu-239 | 1.379E-02 | 6.746E-20 | 1.011E-18 | 1.159E-17 | 2.846E-16 | 5.629E-15 | 8.302E-14 | 1.080E-13 | 8.652E-13 | 2.946E-12 |
| Ac-227 | Pu-239 | 8.275E-07 | 4.048E-24 | 6.066E-23 | 6.952E-22 | 1.708E-20 | 3.378E-19 | 4.981E-18 | 6.479E-18 | 5.192E-17 | 1.767E-16 |
| Ac-227 | Pu-239 | 5.917E-04 | 2.895E-21 | 4.338E-20 | 4.972E-19 | 1.221E-17 | 2.415E-16 | 3.562E-15 | 4.633E-15 | 3.712E-14 | 1.264E-13 |
| Ac-227 | Pu-239 | 8.280E-06 | 4.051E-23 | 6.070E-22 | 6.956E-21 | 1.709E-19 | 3.379E-18 | 4.984E-17 | 6.483E-17 | 5.195E-16 | 1.768E-15 |
| Ac-227 | Pu-239 | 4.968E-10 | 2.431E-27 | 3.642E-26 | 4.174E-25 | 1.025E-23 | 2.028E-22 | 2.991E-21 | 3.890E-21 | 3.117E-20 | 1.061E-19 |
| Ac-227 | ∑DOSE(j) | | 4.891E-18 | 7.331E-17 | 8.401E-16 | 2.064E-14 | 4.082E-13 | 6.020E-12 | 7.830E-12 | 6.274E-11 | 2.136E-10 |
| Th-227 | Pu-239 | 9.856E-01 | 1.571E-17 | 2.707E-16 | 3.336E-15 | 8.538E-14 | 1.712E-12 | 2.536E-11 | 3.300E-11 | 2.647E-10 | 9.015E-10 |
| Th-227 | Pu-239 | 5.917E-04 | 9.434E-21 | 1.626E-19 | 2.003E-18 | 5.126E-17 | 1.028E-15 | 1.523E-14 | 1.981E-14 | 1.589E-13 | 5.412E-13 |
| Th-227 | ∑DOSE(j) | | 1.572E-17 | 2.709E-16 | 3.338E-15 | 8.543E-14 | 1.713E-12 | 2.538E-11 | 3.301E-11 | 2.649E-10 | 9.020E-10 |
| Ra-223 | Pu-239 | 9.856E-01 | 2.113E-17 | 4.012E-16 | 5.185E-15 | 1.361E-13 | 2.753E-12 | 4.090E-11 | 5.322E-11 | 4.273E-10 | 1.455E-09 |
| Ra-223 | Pu-239 | 1.379E-02 | 3.924E-19 | 6.435E-18 | 7.716E-17 | 1.944E-15 | 3.877E-14 | 5.734E-13 | 7.459E-13 | 5.981E-12 | 2.037E-11 |
| Ra-223 | Pu-239 | 5.917E-04 | 1.269E-20 | 2.409E-19 | 3.113E-18 | 8.174E-17 | 1.653E-15 | 2.455E-14 | 3.195E-14 | 2.565E-13 | 8.738E-13 |
| Ra-223 | Pu-239 | 8.280E-06 | 2.356E-22 | 3.864E-21 | 4.633E-20 | 1.167E-18 | 2.327E-17 | 3.442E-16 | 4.478E-16 | 3.591E-15 | 1.223E-14 |
| Ra-223 | ∑DOSE(j) | | 2.153E-17 | 4.078E-16 | 5.265E-15 | 1.382E-13 | 2.793E-12 | 4.150E-11 | 5.400E-11 | 4.335E-10 | 1.477E-09 |
| Pb-211 | Pu-239 | 9.856E-01 | 1.432E-17 | 2.720E-16 | 3.516E-15 | 9.234E-14 | 1.867E-12 | 2.774E-11 | 3.610E-11 | 2.898E-10 | 9.872E-10 |
| Pb-211 | Pu-239 | 1.379E-02 | 2.660E-19 | 4.364E-18 | 5.233E-17 | 1.318E-15 | 2.629E-14 | 3.889E-13 | 5.059E-13 | 4.057E-12 | 1.381E-11 |
| Pb-211 | Pu-239 | 8.275E-07 | 1.897E-23 | 2.844E-22 | 3.260E-21 | 8.011E-20 | 1.584E-18 | 2.336E-17 | 3.039E-17 | 2.435E-16 | 8.290E-16 |
| Pb-211 | Pu-239 | 5.917E-04 | 8.602E-21 | 1.633E-19 | 2.111E-18 | 5.544E-17 | 1.121E-15 | 1.665E-14 | 2.167E-14 | 1.740E-13 | 5.927E-13 |
| Pb-211 | Pu-239 | 8.280E-06 | 1.598E-22 | 2.620E-21 | 3.142E-20 | 7.916E-19 | 1.579E-17 | 2.335E-16 | 3.037E-16 | 2.436E-15 | 8.293E-15 |
| Pb-211 | Pu-239 | 4.968E-10 | 1.139E-26 | 1.708E-25 | 1.957E-24 | 4.809E-23 | 9.510E-22 | 1.403E-20 | 1.824E-20 | 1.462E-19 | 4.977E-19 |
| Pb-211 | ∑DOSE(j) | | 1.460E-17 | 2.766E-16 | 3.571E-15 | 9.371E-14 | 1.894E-12 | 2.815E-11 | 3.663E-11 | 2.941E-10 | 1.002E-09 |
| Fr-223 | Pu-239 | 1.379E-02 | 8.908E-20 | 1.335E-18 | 1.530E-17 | 3.760E-16 | 7.435E-15 | 1.097E-13 | 1.426E-13 | 1.143E-12 | 3.891E-12 |
| Fr-223 | Pu-239 | 8.275E-07 | 4.663E-23 | 6.989E-22 | 8.010E-21 | 1.968E-19 | 3.892E-18 | 5.740E-17 | 7.466E-17 | 5.982E-16 | 2.037E-15 |
| Fr-223 | Pu-239 | 8.280E-06 | 5.350E-23 | 8.017E-22 | 9.188E-21 | 2.257E-19 | 4.464E-18 | 6.583E-17 | 8.563E-17 | 6.861E-16 | 2.336E-15 |
| Fr-223 | ∑DOSE(j) | | 8.918E-20 | 1.337E-18 | 1.532E-17 | 3.764E-16 | 7.443E-15 | 1.098E-13 | 1.428E-13 | 1.144E-12 | 3.895E-12 |

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

| Nuclide (j) | Parent (i) | THF(i) | DOSE(j,t), mrem/yr t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pu-239 | Pu-239 | 8.275E-07 | 1.117E-07 | 1.116E-07 | 1.116E-07 | 1.115E-07 | 1.113E-07 | 1.105E-07 | 1.104E-07 | 1.080E-07 | 9.982E-08 |
| Pu-239 | Pu-239 | 5.917E-04 | 7.984E-05 | 7.983E-05 | 7.981E-05 | 7.975E-05 | 7.957E-05 | 7.905E-05 | 7.895E-05 | 7.720E-05 | 7.138E-05 |
| Pu-239 | ∑DOSE(j) | | 7.995E-05 | 7.994E-05 | 7.993E-05 | 7.986E-05 | 7.968E-05 | 7.916E-05 | 7.906E-05 | 7.731E-05 | 7.148E-05 |
| Pu-239 | Pu-239 | 8.280E-06 | 1.117E-06 | 1.117E-06 | 1.117E-06 | 1.116E-06 | 1.113E-06 | 1.106E-06 | 1.105E-06 | 1.080E-06 | 9.987E-07 |
| Pu-239 | Pu-239 | 4.968E-10 | 6.703E-11 | 6.703E-11 | 6.701E-11 | 6.696E-11 | 6.681E-11 | 6.637E-11 | 6.629E-11 | 6.482E-11 | 5.993E-11 |
| Pu-239 | ∑DOSE(j) | | 1.117E-06 | 1.117E-06 | 1.117E-06 | 1.116E-06 | 1.113E-06 | 1.106E-06 | 1.105E-06 | 1.080E-06 | 9.988E-07 |
| Fr-223 | Pu-239 | 4.968E-10 | 2.800E-26 | 4.197E-25 | 4.809E-24 | 1.182E-22 | 2.336E-21 | 3.446E-20 | 4.482E-20 | 3.592E-19 | 1.223E-18 |
| Ra-226 | Ra-226 | 9.998E-01 | 6.484E-02 | 6.466E-02 | 6.430E-02 | 6.304E-02 | 5.960E-02 | 5.052E-02 | 4.897E-02 | 2.793E-02 | 3.916E-03 |
| Ra-226 | Ra-226 | 1.320E-06 | 8.559E-08 | 8.535E-08 | 8.487E-08 | 8.322E-08 | 7.868E-08 | 6.669E-08 | 6.464E-08 | 3.687E-08 | 5.169E-09 |
| Ra-226 | ∑DOSE(j) | | 6.484E-02 | 6.466E-02 | 6.430E-02 | 6.304E-02 | 5.960E-02 | 5.052E-02 | 4.897E-02 | 2.793E-02 | 3.916E-03 |
| Rn-222 | Ra-226 | 9.998E-01 | 1.065E-03 | 1.086E-03 | 1.080E-03 | 1.059E-03 | 1.001E-03 | 8.487E-04 | 8.227E-04 | 4.693E-04 | 6.578E-05 |
| Rn-222 | Ra-226 | 1.320E-06 | 1.406E-09 | 1.434E-09 | 1.426E-09 | 1.398E-09 | 1.322E-09 | 1.120E-09 | 1.086E-09 | 6.194E-10 | 8.683E-11 |
| Rn-222 | Ra-226 | 1.900E-08 | 2.024E-11 | 2.064E-11 | 2.052E-11 | 2.012E-11 | 1.902E-11 | 1.613E-11 | 1.563E-11 | 8.916E-12 | 1.250E-12 |
| Rn-222 | ∑DOSE(j) | | 1.065E-03 | 1.086E-03 | 1.080E-03 | 1.059E-03 | 1.001E-03 | 8.487E-04 | 8.227E-04 | 4.693E-04 | 6.578E-05 |
| Pb-214 | Ra-226 | 9.998E-01 | 6.371E-01 | 6.497E-01 | 6.461E-01 | 6.335E-01 | 5.989E-01 | 5.077E-01 | 4.921E-01 | 2.807E-01 | 3.935E-02 |
| Pb-214 | Ra-226 | 1.320E-06 | 8.410E-07 | 8.576E-07 | 8.528E-07 | 8.362E-07 | 7.906E-07 | 6.701E-07 | 6.495E-07 | 3.705E-07 | 5.194E-08 |
| Pb-214 | Ra-226 | 1.900E-08 | 1.211E-08 | 1.234E-08 | 1.228E-08 | 1.204E-08 | 1.138E-08 | 9.645E-09 | 9.350E-09 | 5.333E-09 | 7.476E-10 |
| Pb-214 | ∑DOSE(j) | | 6.371E-01 | 6.497E-01 | 6.461E-01 | 6.335E-01 | 5.989E-01 | 5.077E-01 | 4.921E-01 | 2.807E-01 | 3.935E-02 |
| Bi-214 | Ra-226 | 9.998E-01 | 4.588E+00 | 4.678E+00 | 4.652E+00 | 4.562E+00 | 4.313E+00 | 3.656E+00 | 3.543E+00 | 2.021E+00 | 2.833E-01 |
| Bi-214 | Ra-226 | 1.320E-06 | 6.056E-06 | 6.176E-06 | 6.141E-06 | 6.022E-06 | 5.693E-06 | 4.825E-06 | 4.677E-06 | 2.668E-06 | 3.740E-07 |
| Bi-214 | Ra-226 | 1.900E-08 | 8.717E-08 | 8.889E-08 | 8.839E-08 | 8.667E-08 | 8.194E-08 | 6.946E-08 | 6.732E-08 | 3.840E-08 | 5.383E-09 |
| Bi-214 | Ra-226 | 1.998E-04 | 9.168E-04 | 9.349E-04 | 9.297E-04 | 9.116E-04 | 8.619E-04 | 7.305E-04 | 7.081E-04 | 4.039E-04 | 5.662E-05 |
| Bi-214 | Ra-226 | 2.637E-10 | 1.210E-09 | 1.234E-09 | 1.227E-09 | 1.203E-09 | 1.138E-09 | 9.643E-10 | 9.347E-10 | 5.332E-10 | 7.474E-11 |
| Bi-214 | Ra-226 | 3.796E-12 | 1.742E-11 | 1.776E-11 | 1.766E-11 | 1.732E-11 | 1.638E-11 | 1.388E-11 | 1.345E-11 | 7.675E-12 | 1.076E-12 |
| Bi-214 | ∑DOSE(j) | | 4.589E+00 | 4.679E+00 | 4.653E+00 | 4.563E+00 | 4.314E+00 | 3.656E+00 | 3.544E+00 | 2.022E+00 | 2.834E-01 |
| Pb-210 | Ra-226 | 9.998E-01 | 1.577E-03 | 4.750E-03 | 1.077E-02 | 2.870E-02 | 6.022E-02 | 7.926E-02 | 7.842E-02 | 4.702E-02 | 6.591E-03 |
| Pb-210 | Ra-226 | 1.320E-06 | 2.081E-09 | 6.270E-09 | 1.421E-08 | 3.789E-08 | 7.949E-08 | 1.046E-07 | 1.035E-07 | 6.206E-08 | 8.701E-09 |
| Pb-210 | Ra-226 | 1.998E-04 | 3.151E-07 | 9.492E-07 | 2.152E-06 | 5.736E-06 | 1.203E-05 | 1.584E-05 | 1.567E-05 | 9.396E-06 | 1.317E-06 |
| Pb-210 | Ra-226 | 2.637E-10 | 4.160E-13 | 1.253E-12 | 2.840E-12 | 7.571E-12 | 1.589E-11 | 2.091E-11 | 2.069E-11 | 1.240E-11 | 1.739E-12 |
| Pb-210 | Ra-226 | 2.000E-07 | 3.155E-10 | 9.502E-10 | 2.154E-09 | 5.742E-09 | 1.205E-08 | 1.586E-08 | 1.569E-08 | 9.405E-09 | 1.319E-09 |
| Pb-210 | Ra-226 | 2.640E-13 | 4.165E-16 | 1.254E-15 | 2.843E-15 | 7.579E-15 | 1.590E-14 | 2.093E-14 | 2.071E-14 | 1.242E-14 | 1.741E-15 |
| Pb-210 | ∑DOSE(j) | | 1.577E-03 | 4.751E-03 | 1.077E-02 | 2.871E-02 | 6.023E-02 | 7.928E-02 | 7.844E-02 | 4.702E-02 | 6.593E-03 |
| Bi-210 | Ra-226 | 9.998E-01 | 4.302E-05 | 1.331E-04 | 3.040E-04 | 8.134E-04 | 1.709E-03 | 2.250E-03 | 2.226E-03 | 1.334E-03 | 1.871E-04 |
| Bi-210 | Ra-226 | 1.998E-04 | 8.598E-09 | 2.660E-08 | 6.075E-08 | 1.625E-07 | 3.415E-07 | 4.496E-07 | 4.448E-07 | 2.667E-07 | 3.739E-08 |
| Bi-210 | Ra-226 | 2.000E-07 | 8.608E-12 | 2.663E-11 | 6.081E-11 | 1.627E-10 | 3.418E-10 | 4.500E-10 | 4.453E-10 | 2.670E-10 | 3.743E-11 |
| Bi-210 | ∑DOSE(j) | | 4.303E-05 | 1.331E-04 | 3.040E-04 | 8.135E-04 | 1.709E-03 | 2.250E-03 | 2.226E-03 | 1.335E-03 | 1.871E-04 |
| Po-210 | Ra-226 | 9.998E-01 | 1.005E-03 | 5.114E-03 | 1.500E-02 | 4.516E-02 | 9.822E-02 | 1.306E-01 | 1.293E-01 | 7.756E-02 | 1.087E-02 |
| Po-210 | Ra-226 | 1.998E-04 | 2.009E-07 | 1.022E-06 | 2.998E-06 | 9.024E-06 | 1.963E-05 | 2.610E-05 | 2.583E-05 | 1.550E-05 | 2.173E-06 |
| Po-210 | Ra-226 | 2.000E-07 | 2.012E-10 | 1.023E-09 | 3.002E-09 | 9.033E-09 | 1.965E-08 | 2.613E-08 | 2.586E-08 | 1.552E-08 | 2.175E-09 |
| Po-210 | ∑DOSE(j) | | 1.005E-03 | 5.115E-03 | 1.501E-02 | 4.516E-02 | 9.824E-02 | 1.306E-01 | 1.293E-01 | 7.758E-02 | 1.088E-02 |

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

| Nuclide (j) | Parent (i) | THF(i) | DOSE(j,t), mrem/yr t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bi-210 | Ra-226 | 1.320E-06 | 1.793E-10 | 5.545E-10 | 1.267E-09 | 3.389E-09 | 7.120E-09 | 9.374E-09 | 9.274E-09 | 5.560E-09 | 7.795E-10 |
| Bi-210 | Ra-226 | 2.637E-10 | 3.583E-14 | 1.108E-13 | 2.531E-13 | 6.773E-13 | 1.423E-12 | 1.873E-12 | 1.853E-12 | 1.111E-12 | 1.558E-13 |
| Bi-210 | Ra-226 | 2.640E-13 | 3.587E-17 | 1.109E-16 | 2.534E-16 | 6.780E-16 | 1.424E-15 | 1.875E-15 | 1.855E-15 | 1.112E-15 | 1.559E-16 |
| Bi-210 | ∑DOSE(j) | | 1.793E-10 | 5.546E-10 | 1.267E-09 | 3.390E-09 | 7.121E-09 | 9.375E-09 | 9.276E-09 | 5.562E-09 | 7.797E-10 |
| Ra-226 | Ra-226 | 1.900E-08 | 1.232E-09 | 1.228E-09 | 1.222E-09 | 1.198E-09 | 1.132E-09 | 9.599E-10 | 9.304E-10 | 5.307E-10 | 7.440E-11 |
| Ra-226 | Ra-226 | 1.998E-04 | 1.296E-05 | 1.292E-05 | 1.285E-05 | 1.260E-05 | 1.191E-05 | 1.010E-05 | 9.786E-06 | 5.582E-06 | 7.825E-07 |
| Ra-226 | ∑DOSE(j) | | 1.296E-05 | 1.292E-05 | 1.285E-05 | 1.260E-05 | 1.191E-05 | 1.010E-05 | 9.787E-06 | 5.583E-06 | 7.826E-07 |
| Pb-210 | Ra-226 | 1.900E-08 | 1.223E-10 | 3.684E-10 | 8.351E-10 | 2.226E-09 | 4.671E-09 | 6.148E-09 | 6.082E-09 | 3.647E-09 | 5.112E-10 |
| Pb-210 | Ra-226 | 3.796E-12 | 2.444E-14 | 7.363E-14 | 1.669E-13 | 4.449E-13 | 9.335E-13 | 1.229E-12 | 1.216E-12 | 7.288E-13 | 1.022E-13 |
| Pb-210 | Ra-226 | 3.800E-15 | 2.447E-17 | 7.370E-17 | 1.671E-16 | 4.453E-16 | 9.344E-16 | 1.230E-15 | 1.217E-15 | 7.295E-16 | 1.023E-16 |
| Pb-210 | ∑DOSE(j) | | 1.223E-10 | 3.685E-10 | 8.352E-10 | 2.227E-09 | 4.672E-09 | 6.149E-09 | 6.084E-09 | 3.647E-09 | 5.113E-10 |
| Rn-222 | Ra-226 | 1.998E-04 | 2.184E-07 | 2.228E-07 | 2.215E-07 | 2.172E-07 | 2.053E-07 | 1.741E-07 | 1.687E-07 | 9.624E-08 | 1.349E-08 |
| Rn-222 | Ra-226 | 3.796E-12 | 4.150E-15 | 4.232E-15 | 4.209E-15 | 4.127E-15 | 3.902E-15 | 3.307E-15 | 3.206E-15 | 1.829E-15 | 2.563E-16 |
| Rn-222 | ∑DOSE(j) | | 2.184E-07 | 2.228E-07 | 2.215E-07 | 2.172E-07 | 2.053E-07 | 1.741E-07 | 1.687E-07 | 9.624E-08 | 1.349E-08 |
| Ra-226 | Ra-226 | 2.637E-10 | 1.710E-11 | 1.706E-11 | 1.696E-11 | 1.663E-11 | 1.572E-11 | 1.333E-11 | 1.292E-11 | 7.369E-12 | 1.033E-12 |
| Ra-226 | Ra-226 | 3.796E-12 | 2.462E-13 | 2.455E-13 | 2.441E-13 | 2.394E-13 | 2.263E-13 | 1.918E-13 | 1.859E-13 | 1.061E-13 | 1.487E-14 |
| Ra-226 | ∑DOSE(j) | | 1.735E-11 | 1.730E-11 | 1.720E-11 | 1.687E-11 | 1.595E-11 | 1.352E-11 | 1.310E-11 | 7.475E-12 | 1.048E-12 |
| Rn-222 | Ra-226 | 2.637E-10 | 2.883E-13 | 2.940E-13 | 2.924E-13 | 2.867E-13 | 2.711E-13 | 2.298E-13 | 2.227E-13 | 1.270E-13 | 1.781E-14 |
| Ra-226 | Ra-226 | 2.000E-07 | 1.297E-08 | 1.293E-08 | 1.286E-08 | 1.261E-08 | 1.192E-08 | 1.011E-08 | 9.796E-09 | 5.588E-09 | 7.833E-10 |
| Ra-226 | Ra-226 | 2.640E-13 | 1.712E-14 | 1.707E-14 | 1.698E-14 | 1.665E-14 | 1.574E-14 | 1.334E-14 | 1.293E-14 | 7.376E-15 | 1.034E-15 |
| Ra-226 | ∑DOSE(j) | | 1.297E-08 | 1.293E-08 | 1.286E-08 | 1.261E-08 | 1.192E-08 | 1.011E-08 | 9.796E-09 | 5.588E-09 | 7.833E-10 |
| Rn-222 | Ra-226 | 2.000E-07 | 6.922E-10 | 7.059E-10 | 7.019E-10 | 6.883E-10 | 6.507E-10 | 5.515E-10 | 5.346E-10 | 3.050E-10 | 4.275E-11 |
| Rn-222 | Ra-226 | 2.640E-13 | 9.137E-16 | 9.317E-16 | 9.265E-16 | 9.085E-16 | 8.589E-16 | 7.280E-16 | 7.057E-16 | 4.025E-16 | 5.643E-17 |
| Rn-222 | Ra-226 | 3.800E-15 | 1.315E-17 | 1.341E-17 | 1.334E-17 | 1.308E-17 | 1.236E-17 | 1.048E-17 | 1.016E-17 | 5.794E-18 | 8.122E-19 |
| Rn-222 | ∑DOSE(j) | | 6.922E-10 | 7.059E-10 | 7.019E-10 | 6.883E-10 | 6.507E-10 | 5.515E-10 | 5.346E-10 | 3.050E-10 | 4.275E-11 |
| Ra-226 | Ra-226 | 3.800E-15 | 2.464E-16 | 2.457E-16 | 2.444E-16 | 2.396E-16 | 2.265E-16 | 1.920E-16 | 1.861E-16 | 1.062E-16 | 1.488E-17 |
| Sr-90 | Sr-90 | 1.000E+00 | 1.321E-03 | 1.283E-03 | 1.209E-03 | 9.828E-04 | 5.438E-04 | 9.516E-05 | 6.852E-05 | 1.843E-07 | 1.859E-16 |
| Y-90 | Sr-90 | 1.000E+00 | 6.778E-03 | 6.724E-03 | 6.338E-03 | 5.152E-03 | 2.851E-03 | 4.989E-04 | 3.592E-04 | 9.660E-07 | 9.745E-16 |

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

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

| Nuclide (j) | Parent (i) | THF(i) | S(j,t), pCi/g t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Am-241 | Am-241 | 1.000E+00 | 1.360E+00 | 1.347E+00 | 1.320E+00 | 1.232E+00 | 1.012E+00 | 5.666E-01 | 5.079E-01 | 7.085E-02 | 7.182E-05 |
| Np-237 | Am-241 | 1.000E+00 | 0.000E+00 | 4.374E-07 | 1.298E-06 | 4.174E-06 | 1.130E-05 | 2.520E-05 | 2.694E-05 | 3.686E-05 | 2.501E-05 |
| Pa-233 | Am-241 | 1.000E+00 | 0.000E+00 | 3.909E-07 | 1.253E-06 | 4.130E-06 | 1.127E-05 | 2.518E-05 | 2.692E-05 | 3.685E-05 | 2.500E-05 |
| U-233 | Am-241 | 1.000E+00 | 0.000E+00 | 7.715E-13 | 7.916E-12 | 8.951E-11 | 7.463E-10 | 5.084E-09 | 6.137E-09 | 2.522E-08 | 3.674E-08 |
| Th-229 | Am-241 | 1.000E+00 | 0.000E+00 | 2.226E-17 | 7.252E-16 | 2.819E-14 | 7.261E-13 | 1.566E-11 | 2.152E-11 | 3.228E-10 | 2.607E-09 |
| Ra-225 | Am-241 | 1.000E+00 | 0.000E+00 | 1.849E-17 | 6.829E-16 | 2.770E-14 | 7.219E-13 | 1.563E-11 | 2.148E-11 | 3.226E-10 | 2.606E-09 |
| Ac-225 | Am-241 | 1.000E+00 | 0.000E+00 | 1.618E-17 | 6.551E-16 | 2.736E-14 | 7.189E-13 | 1.561E-11 | 2.145E-11 | 3.224E-10 | 2.605E-09 |
| Bi-213 | Am-241 | 1.000E+00 | 0.000E+00 | 1.617E-17 | 6.549E-16 | 2.736E-14 | 7.188E-13 | 1.560E-11 | 2.145E-11 | 3.224E-10 | 2.605E-09 |
| Pb-209 | Am-241 | 1.000E+00 | 0.000E+00 | 1.614E-17 | 6.546E-16 | 2.735E-14 | 7.188E-13 | 1.560E-11 | 2.145E-11 | 3.224E-10 | 2.605E-09 |
| Co-60 | Co-60 | 1.000E+00 | 3.610E-02 | 3.165E-02 | 2.432E-02 | 9.676E-03 | 6.952E-04 | 2.980E-07 | 6.911E-08 | 2.533E-19 | 0.000E+00 |
| Cs-137 | Cs-137 | 1.000E+00 | 1.130E-01 | 1.104E-01 | 1.055E-01 | 8.977E-02 | 5.666E-02 | 1.461E-02 | 1.131E-02 | 1.134E-04 | 1.144E-11 |
| Eu-152 | Eu-152 | 7.210E-01 | 9.373E-02 | 8.903E-02 | 8.033E-02 | 5.606E-02 | 2.005E-02 | 9.709E-04 | 5.487E-04 | 1.881E-08 | 4.432E-24 |
| Eu-152 | Eu-152 | 2.790E-01 | 3.627E-02 | 3.445E-02 | 3.109E-02 | 2.169E-02 | 7.759E-03 | 3.757E-04 | 2.123E-04 | 7.277E-09 | 1.715E-24 |
| Eu-152 | ∑S(j): | | 1.300E-01 | 1.235E-01 | 1.114E-01 | 7.775E-02 | 2.781E-02 | 1.347E-03 | 7.611E-04 | 2.608E-08 | 6.147E-24 |
| Gd-152 | Eu-152 | 2.790E-01 | 0.000E+00 | 2.269E-16 | 6.470E-16 | 1.818E-15 | 3.546E-15 | 4.418E-15 | 4.429E-15 | 4.279E-15 | 3.715E-15 |
| Sm-148 | Eu-152 | 2.790E-01 | 0.000E+00 | 1.133E-32 | 9.855E-32 | 9.766E-31 | 6.566E-30 | 3.076E-29 | 3.555E-29 | 1.188E-28 | 3.606E-28 |
| Nd-144 | Eu-152 | 2.790E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.401E-45 | 2.242E-44 | 3.391E-43 | 4.456E-43 | 4.685E-42 | 4.129E-41 |
| Eu-154 | Eu-154 | 1.000E+00 | 2.300E-01 | 2.121E-01 | 1.805E-01 | 1.025E-01 | 2.033E-02 | 1.736E-04 | 7.075E-05 | 6.696E-12 | 1.746E-36 |
| H-3 | H-3 | 1.000E+00 | 2.280E+00 | 4.530E-01 | 1.784E-02 | 2.110E-07 | 1.424E-21 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Pu-239 | Pu-239 | 9.856E-01 | 2.553E+00 | 2.552E+00 | 2.552E+00 | 2.550E+00 | 2.544E+00 | 2.527E+00 | 2.524E+00 | 2.468E+00 | 2.282E+00 |
| Pu-239 | Pu-239 | 1.379E-02 | 3.572E-02 | 3.571E-02 | 3.571E-02 | 3.568E-02 | 3.560E-02 | 3.536E-02 | 3.532E-02 | 3.454E-02 | 3.193E-02 |
| Pu-239 | ∑S(j): | | 2.588E+00 | 2.588E+00 | 2.588E+00 | 2.586E+00 | 2.580E+00 | 2.563E+00 | 2.560E+00 | 2.503E+00 | 2.314E+00 |
| U-235m | Pu-239 | 9.856E-01 | 0.000E+00 | 2.552E+00 | 2.552E+00 | 2.550E+00 | 2.544E+00 | 2.527E+00 | 2.524E+00 | 2.468E+00 | 2.282E+00 |
| U-235m | Pu-239 | 1.379E-02 | 0.000E+00 | 3.571E-02 | 3.571E-02 | 3.568E-02 | 3.560E-02 | 3.536E-02 | 3.532E-02 | 3.454E-02 | 3.193E-02 |
| U-235m | Pu-239 | 8.275E-07 | 0.000E+00 | 2.143E-06 | 2.143E-06 | 2.141E-06 | 2.136E-06 | 2.122E-06 | 2.119E-06 | 2.072E-06 | 1.916E-06 |
| U-235m | ∑S(j): | | 0.000E+00 | 2.588E+00 | 2.588E+00 | 2.586E+00 | 2.580E+00 | 2.563E+00 | 2.560E+00 | 2.503E+00 | 2.314E+00 |
| U-235 | Pu-239 | 9.856E-01 | 0.000E+00 | 2.509E-09 | 7.501E-09 | 2.471E-08 | 7.165E-08 | 1.925E-07 | 2.126E-07 | 4.683E-07 | 6.723E-07 |
| U-235 | Pu-239 | 1.379E-02 | 0.000E+00 | 3.510E-11 | 1.050E-10 | 3.457E-10 | 1.002E-09 | 2.693E-09 | 2.975E-09 | 6.552E-09 | 9.406E-09 |
| U-235 | Pu-239 | 8.275E-07 | 0.000E+00 | 2.106E-15 | 6.298E-15 | 2.074E-14 | 6.015E-14 | 1.616E-13 | 1.785E-13 | 3.931E-13 | 5.644E-13 |
| U-235 | Pu-239 | 5.917E-04 | 0.000E+00 | 1.506E-12 | 4.504E-12 | 1.483E-11 | 4.301E-11 | 1.156E-10 | 1.276E-10 | 2.811E-10 | 4.036E-10 |

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

| Nuclide (j) | Parent (i) | THF(i) | S(j,t), pCi/g t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U-235 | Pu-239 | 8.280E-06 | 0.000E+00 | 2.108E-14 | 6.302E-14 | 2.076E-13 | 6.019E-13 | 1.617E-12 | 1.786E-12 | 3.933E-12 | 5.647E-12 |
| U-235 | Pu-239 | 4.968E-10 | 0.000E+00 | 1.265E-18 | 3.781E-18 | 1.245E-17 | 3.611E-17 | 9.702E-17 | 1.072E-16 | 2.360E-16 | 3.389E-16 |
| U-235 | ∑S(j): | | 0.000E+00 | 2.546E-09 | 7.611E-09 | 2.507E-08 | 7.269E-08 | 1.953E-07 | 2.157E-07 | 4.751E-07 | 6.821E-07 |
| Th-231 | Pu-239 | 9.856E-01 | 0.000E+00 | 2.498E-09 | 7.491E-09 | 2.470E-08 | 7.164E-08 | 1.925E-07 | 2.126E-07 | 4.682E-07 | 6.723E-07 |
| Th-231 | Pu-239 | 1.379E-02 | 0.000E+00 | 3.496E-11 | 1.048E-10 | 3.456E-10 | 1.002E-09 | 2.693E-09 | 2.975E-09 | 6.552E-09 | 9.406E-09 |
| Th-231 | Pu-239 | 8.275E-07 | 0.000E+00 | 2.098E-15 | 6.289E-15 | 2.074E-14 | 6.015E-14 | 1.616E-13 | 1.785E-13 | 3.931E-13 | 5.644E-13 |
| Th-231 | Pu-239 | 5.917E-04 | 0.000E+00 | 1.500E-12 | 4.497E-12 | 1.483E-11 | 4.301E-11 | 1.156E-10 | 1.276E-10 | 2.811E-10 | 4.036E-10 |
| Th-231 | Pu-239 | 8.280E-06 | 0.000E+00 | 2.099E-14 | 6.293E-14 | 2.075E-13 | 6.018E-13 | 1.617E-12 | 1.786E-12 | 3.933E-12 | 5.647E-12 |
| Th-231 | Pu-239 | 4.968E-10 | 0.000E+00 | 1.259E-18 | 3.776E-18 | 1.245E-17 | 3.611E-17 | 9.702E-17 | 1.072E-16 | 2.360E-16 | 3.389E-16 |
| Th-231 | ∑S(j): | | 0.000E+00 | 2.535E-09 | 7.600E-09 | 2.506E-08 | 7.268E-08 | 1.953E-07 | 2.157E-07 | 4.751E-07 | 6.821E-07 |
| Pa-231 | Pu-239 | 9.856E-01 | 0.000E+00 | 2.630E-14 | 2.370E-13 | 2.597E-12 | 2.236E-11 | 1.723E-10 | 2.128E-10 | 1.249E-09 | 3.816E-09 |
| Pa-231 | Pu-239 | 1.379E-02 | 0.000E+00 | 3.681E-16 | 3.316E-15 | 3.634E-14 | 3.129E-13 | 2.411E-12 | 2.977E-12 | 1.748E-11 | 5.340E-11 |
| Pa-231 | Pu-239 | 8.275E-07 | 0.000E+00 | 2.208E-20 | 1.990E-19 | 2.181E-18 | 1.878E-17 | 1.447E-16 | 1.786E-16 | 1.049E-15 | 3.204E-15 |
| Pa-231 | Pu-239 | 5.917E-04 | 0.000E+00 | 1.579E-17 | 1.423E-16 | 1.559E-15 | 1.343E-14 | 1.035E-13 | 1.277E-13 | 7.498E-13 | 2.291E-12 |
| Pa-231 | Pu-239 | 8.280E-06 | 0.000E+00 | 2.210E-19 | 1.991E-18 | 2.182E-17 | 1.879E-16 | 1.448E-15 | 1.787E-15 | 1.049E-14 | 3.206E-14 |
| Pa-231 | Pu-239 | 4.968E-10 | 0.000E+00 | 1.326E-23 | 1.195E-22 | 1.309E-21 | 1.127E-20 | 8.686E-20 | 1.072E-19 | 6.295E-19 | 1.924E-18 |
| Pa-231 | ∑S(j): | | 0.000E+00 | 2.669E-14 | 2.405E-13 | 2.635E-12 | 2.269E-11 | 1.748E-10 | 2.159E-10 | 1.267E-09 | 3.872E-09 |
| Ac-227 | Pu-239 | 9.856E-01 | 0.000E+00 | 2.754E-16 | 7.326E-15 | 2.513E-13 | 5.483E-12 | 8.348E-11 | 1.088E-10 | 8.790E-10 | 3.000E-09 |
| Ac-227 | Pu-239 | 1.379E-02 | 0.000E+00 | 3.853E-18 | 1.025E-16 | 3.517E-15 | 7.672E-14 | 1.168E-12 | 1.522E-12 | 1.230E-11 | 4.197E-11 |
| Ac-227 | Pu-239 | 8.275E-07 | 0.000E+00 | 2.312E-22 | 6.151E-21 | 2.110E-19 | 4.603E-18 | 7.009E-17 | 9.133E-17 | 7.380E-16 | 2.518E-15 |
| Ac-227 | Pu-239 | 5.917E-04 | 0.000E+00 | 1.654E-19 | 4.399E-18 | 1.509E-16 | 3.292E-15 | 5.012E-14 | 6.530E-14 | 5.277E-13 | 1.801E-12 |
| Ac-227 | Pu-239 | 8.280E-06 | 0.000E+00 | 2.314E-21 | 6.155E-20 | 2.111E-18 | 4.606E-17 | 7.013E-16 | 9.138E-16 | 7.384E-15 | 2.520E-14 |
| Ac-227 | Pu-239 | 4.968E-10 | 0.000E+00 | 1.388E-25 | 3.693E-24 | 1.267E-22 | 2.764E-21 | 4.208E-20 | 5.483E-20 | 4.431E-19 | 1.512E-18 |
| Ac-227 | ∑S(j): | | 0.000E+00 | 2.794E-16 | 7.433E-15 | 2.550E-13 | 5.563E-12 | 8.470E-11 | 1.104E-10 | 8.919E-10 | 3.043E-09 |
| Th-227 | Pu-239 | 9.856E-01 | 0.000E+00 | 2.227E-16 | 6.816E-15 | 2.461E-13 | 5.447E-12 | 8.333E-11 | 1.086E-10 | 8.787E-10 | 2.999E-09 |
| Th-227 | Pu-239 | 5.917E-04 | 0.000E+00 | 1.337E-19 | 4.093E-18 | 1.477E-16 | 3.270E-15 | 5.003E-14 | 6.520E-14 | 5.275E-13 | 1.801E-12 |
| Th-227 | ∑S(j): | | 0.000E+00 | 2.228E-16 | 6.821E-15 | 2.462E-13 | 5.450E-12 | 8.338E-11 | 1.087E-10 | 8.792E-10 | 3.001E-09 |
| Ra-223 | Pu-239 | 9.856E-01 | 0.000E+00 | 1.934E-16 | 6.513E-15 | 2.428E-13 | 5.424E-12 | 8.322E-11 | 1.085E-10 | 8.784E-10 | 2.999E-09 |
| Ra-223 | Pu-239 | 1.379E-02 | 0.000E+00 | 3.375E-18 | 9.805E-17 | 3.471E-15 | 7.640E-14 | 1.167E-12 | 1.520E-12 | 1.230E-11 | 4.197E-11 |
| Ra-223 | Pu-239 | 5.917E-04 | 0.000E+00 | 1.162E-19 | 3.910E-18 | 1.458E-16 | 3.256E-15 | 4.996E-14 | 6.513E-14 | 5.274E-13 | 1.801E-12 |
| Ra-223 | Pu-239 | 8.280E-06 | 0.000E+00 | 2.027E-21 | 5.887E-20 | 2.084E-18 | 4.587E-17 | 7.004E-16 | 9.127E-16 | 7.382E-15 | 2.519E-14 |
| Ra-223 | ∑S(j): | | 0.000E+00 | 1.969E-16 | 6.615E-15 | 2.464E-13 | 5.504E-12 | 8.444E-11 | 1.101E-10 | 8.912E-10 | 3.043E-09 |
| Pb-211 | Pu-239 | 9.856E-01 | 0.000E+00 | 1.934E-16 | 6.512E-15 | 2.428E-13 | 5.424E-12 | 8.322E-11 | 1.085E-10 | 8.784E-10 | 2.999E-09 |
| Pb-211 | Pu-239 | 1.379E-02 | 0.000E+00 | 3.374E-18 | 9.804E-17 | 3.471E-15 | 7.640E-14 | 1.167E-12 | 1.520E-12 | 1.230E-11 | 4.197E-11 |
| Pb-211 | Pu-239 | 8.275E-07 | 0.000E+00 | 2.311E-22 | 6.150E-21 | 2.110E-19 | 4.603E-18 | 7.009E-17 | 9.133E-17 | 7.380E-16 | 2.518E-15 |
| Pb-211 | Pu-239 | 5.917E-04 | 0.000E+00 | 1.161E-19 | 3.910E-18 | 1.458E-16 | 3.256E-15 | 4.996E-14 | 6.513E-14 | 5.274E-13 | 1.801E-12 |
| Pb-211 | Pu-239 | 8.280E-06 | 0.000E+00 | 2.026E-21 | 5.886E-20 | 2.084E-18 | 4.587E-17 | 7.004E-16 | 9.127E-16 | 7.382E-15 | 2.519E-14 |
| Pb-211 | Pu-239 | 4.968E-10 | 0.000E+00 | 1.388E-25 | 3.693E-24 | 1.267E-22 | 2.764E-21 | 4.208E-20 | 5.483E-20 | 4.431E-19 | 1.512E-18 |
| Pb-211 | ∑S(j): | | 0.000E+00 | 1.969E-16 | 6.614E-15 | 2.464E-13 | 5.504E-12 | 8.444E-11 | 1.101E-10 | 8.912E-10 | 3.043E-09 |
| Fr-223 | Pu-239 | 1.379E-02 | 0.000E+00 | 3.852E-18 | 1.025E-16 | 3.517E-15 | 7.672E-14 | 1.168E-12 | 1.522E-12 | 1.230E-11 | 4.197E-11 |
| Fr-223 | Pu-239 | 8.275E-07 | 0.000E+00 | 2.311E-22 | 6.151E-21 | 2.110E-19 | 4.603E-18 | 7.009E-17 | 9.133E-17 | 7.380E-16 | 2.518E-15 |
| Fr-223 | Pu-239 | 8.280E-06 | 0.000E+00 | 2.313E-21 | 6.155E-20 | 2.111E-18 | 4.606E-17 | 7.013E-16 | 9.138E-16 | 7.384E-15 | 2.520E-14 |
| Fr-223 | ∑S(j): | | 0.000E+00 | 3.855E-18 | 1.026E-16 | 3.519E-15 | 7.677E-14 | 1.169E-12 | 1.523E-12 | 1.231E-11 | 4.200E-11 |

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

| Nuclide (j) | Parent (i) | THF(i) | S(j,t), pCi/g t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pu-239 | Pu-239 | 8.275E-07 | 2.143E-06 | 2.143E-06 | 2.143E-06 | 2.141E-06 | 2.136E-06 | 2.122E-06 | 2.119E-06 | 2.072E-06 | 1.916E-06 |
| Pu-239 | Pu-239 | 5.917E-04 | 1.533E-03 | 1.532E-03 | 1.532E-03 | 1.531E-03 | 1.527E-03 | 1.517E-03 | 1.515E-03 | 1.482E-03 | 1.370E-03 |
| Pu-239 | ∑S(j): | | 1.535E-03 | 1.535E-03 | 1.534E-03 | 1.533E-03 | 1.530E-03 | 1.519E-03 | 1.518E-03 | 1.484E-03 | 1.372E-03 |
| Pu-239 | Pu-239 | 8.280E-06 | 2.144E-05 | 2.144E-05 | 2.144E-05 | 2.142E-05 | 2.137E-05 | 2.123E-05 | 2.120E-05 | 2.073E-05 | 1.917E-05 |
| Pu-239 | Pu-239 | 4.968E-10 | 1.287E-09 | 1.287E-09 | 1.286E-09 | 1.285E-09 | 1.282E-09 | 1.274E-09 | 1.272E-09 | 1.244E-09 | 1.150E-09 |
| Pu-239 | ∑S(j): | | 2.145E-05 | 2.144E-05 | 2.144E-05 | 2.142E-05 | 2.137E-05 | 2.123E-05 | 2.121E-05 | 2.074E-05 | 1.917E-05 |
| Fr-223 | Pu-239 | 4.968E-10 | 0.000E+00 | 1.388E-25 | 3.693E-24 | 1.267E-22 | 2.764E-21 | 4.208E-20 | 5.483E-20 | 4.431E-19 | 1.512E-18 |
| Ra-226 | Ra-226 | 9.998E-01 | 9.998E-01 | 9.970E-01 | 9.914E-01 | 9.721E-01 | 9.191E-01 | 7.790E-01 | 7.551E-01 | 4.307E-01 | 6.038E-02 |
| Ra-226 | Ra-226 | 1.320E-06 | 1.320E-06 | 1.316E-06 | 1.309E-06 | 1.283E-06 | 1.213E-06 | 1.028E-06 | 9.967E-07 | 5.686E-07 | 7.970E-08 |
| Ra-226 | ∑S(j): | | 9.998E-01 | 9.970E-01 | 9.914E-01 | 9.721E-01 | 9.191E-01 | 7.790E-01 | 7.551E-01 | 4.307E-01 | 6.038E-02 |
| Rn-222 | Ra-226 | 9.998E-01 | 0.000E+00 | 9.854E-01 | 9.799E-01 | 9.609E-01 | 9.084E-01 | 7.700E-01 | 7.464E-01 | 4.257E-01 | 5.968E-02 |
| Rn-222 | Ra-226 | 1.320E-06 | 0.000E+00 | 1.301E-06 | 1.294E-06 | 1.268E-06 | 1.199E-06 | 1.016E-06 | 9.852E-07 | 5.620E-07 | 7.878E-08 |
| Rn-222 | Ra-226 | 1.900E-08 | 0.000E+00 | 1.872E-08 | 1.862E-08 | 1.826E-08 | 1.726E-08 | 1.463E-08 | 1.418E-08 | 8.089E-09 | 1.134E-09 |
| Rn-222 | ∑S(j): | | 0.000E+00 | 9.854E-01 | 9.799E-01 | 9.609E-01 | 9.084E-01 | 7.700E-01 | 7.464E-01 | 4.257E-01 | 5.968E-02 |
| Pb-214 | Ra-226 | 9.998E-01 | 0.000E+00 | 9.854E-01 | 9.799E-01 | 9.609E-01 | 9.084E-01 | 7.700E-01 | 7.464E-01 | 4.257E-01 | 5.968E-02 |
| Pb-214 | Ra-226 | 1.320E-06 | 0.000E+00 | 1.301E-06 | 1.294E-06 | 1.268E-06 | 1.199E-06 | 1.016E-06 | 9.852E-07 | 5.620E-07 | 7.878E-08 |
| Pb-214 | Ra-226 | 1.900E-08 | 0.000E+00 | 1.872E-08 | 1.862E-08 | 1.826E-08 | 1.726E-08 | 1.463E-08 | 1.418E-08 | 8.089E-09 | 1.134E-09 |
| Pb-214 | ∑S(j): | | 0.000E+00 | 9.854E-01 | 9.799E-01 | 9.609E-01 | 9.084E-01 | 7.700E-01 | 7.464E-01 | 4.257E-01 | 5.968E-02 |
| Bi-214 | Ra-226 | 9.998E-01 | 0.000E+00 | 9.854E-01 | 9.799E-01 | 9.608E-01 | 9.084E-01 | 7.699E-01 | 7.463E-01 | 4.257E-01 | 5.968E-02 |
| Bi-214 | Ra-226 | 1.320E-06 | 0.000E+00 | 1.301E-06 | 1.293E-06 | 1.268E-06 | 1.199E-06 | 1.016E-06 | 9.852E-07 | 5.620E-07 | 7.877E-08 |
| Bi-214 | Ra-226 | 1.900E-08 | 0.000E+00 | 1.872E-08 | 1.862E-08 | 1.826E-08 | 1.726E-08 | 1.463E-08 | 1.418E-08 | 8.089E-09 | 1.134E-09 |
| Bi-214 | Ra-226 | 1.998E-04 | 0.000E+00 | 1.969E-04 | 1.958E-04 | 1.920E-04 | 1.815E-04 | 1.539E-04 | 1.491E-04 | 8.508E-05 | 1.193E-05 |
| Bi-214 | Ra-226 | 2.637E-10 | 0.000E+00 | 2.599E-10 | 2.585E-10 | 2.535E-10 | 2.396E-10 | 2.031E-10 | 1.969E-10 | 1.123E-10 | 1.574E-11 |
| Bi-214 | Ra-226 | 3.796E-12 | 0.000E+00 | 3.742E-12 | 3.721E-12 | 3.648E-12 | 3.449E-12 | 2.923E-12 | 2.834E-12 | 1.616E-12 | 2.266E-13 |
| Bi-214 | ∑S(j): | | 0.000E+00 | 9.856E-01 | 9.801E-01 | 9.610E-01 | 9.086E-01 | 7.701E-01 | 7.465E-01 | 4.258E-01 | 5.969E-02 |
| Pb-210 | Ra-226 | 9.998E-01 | 0.000E+00 | 2.986E-02 | 8.734E-02 | 2.587E-01 | 5.603E-01 | 7.441E-01 | 7.364E-01 | 4.419E-01 | 6.195E-02 |
| Pb-210 | Ra-226 | 1.320E-06 | 0.000E+00 | 3.941E-08 | 1.153E-07 | 3.415E-07 | 7.396E-07 | 9.822E-07 | 9.721E-07 | 5.833E-07 | 8.177E-08 |
| Pb-210 | Ra-226 | 1.998E-04 | 0.000E+00 | 5.968E-06 | 1.746E-05 | 5.171E-05 | 1.120E-04 | 1.487E-04 | 1.472E-04 | 8.830E-05 | 1.238E-05 |
| Pb-210 | Ra-226 | 2.637E-10 | 0.000E+00 | 7.877E-12 | 2.304E-11 | 6.825E-11 | 1.478E-10 | 1.963E-10 | 1.943E-10 | 1.166E-10 | 1.634E-11 |
| Pb-210 | Ra-226 | 2.000E-07 | 0.000E+00 | 5.974E-09 | 1.747E-08 | 5.176E-08 | 1.121E-07 | 1.489E-07 | 1.473E-07 | 8.839E-08 | 1.239E-08 |
| Pb-210 | Ra-226 | 2.640E-13 | 0.000E+00 | 7.886E-15 | 2.307E-14 | 6.833E-14 | 1.480E-13 | 1.965E-13 | 1.945E-13 | 1.167E-13 | 1.636E-14 |
| Pb-210 | ∑S(j): | | 0.000E+00 | 2.987E-02 | 8.736E-02 | 2.588E-01 | 5.604E-01 | 7.442E-01 | 7.366E-01 | 4.419E-01 | 6.196E-02 |
| Bi-210 | Ra-226 | 9.998E-01 | 0.000E+00 | 2.883E-02 | 8.548E-02 | 2.544E-01 | 5.516E-01 | 7.328E-01 | 7.253E-01 | 4.352E-01 | 6.101E-02 |
| Bi-210 | Ra-226 | 1.998E-04 | 0.000E+00 | 5.762E-06 | 1.708E-05 | 5.084E-05 | 1.102E-04 | 1.464E-04 | 1.449E-04 | 8.696E-05 | 1.219E-05 |
| Bi-210 | Ra-226 | 2.000E-07 | 0.000E+00 | 5.769E-09 | 1.710E-08 | 5.089E-08 | 1.103E-07 | 1.466E-07 | 1.451E-07 | 8.705E-08 | 1.220E-08 |
| Bi-210 | ∑S(j): | | 0.000E+00 | 2.884E-02 | 8.550E-02 | 2.545E-01 | 5.517E-01 | 7.329E-01 | 7.254E-01 | 4.353E-01 | 6.102E-02 |
| Po-210 | Ra-226 | 9.998E-01 | 0.000E+00 | 1.531E-02 | 6.984E-02 | 2.406E-01 | 5.413E-01 | 7.265E-01 | 7.193E-01 | 4.320E-01 | 6.056E-02 |
| Po-210 | Ra-226 | 1.998E-04 | 0.000E+00 | 3.060E-06 | 1.396E-05 | 4.807E-05 | 1.082E-04 | 1.452E-04 | 1.437E-04 | 8.633E-05 | 1.210E-05 |
| Po-210 | Ra-226 | 2.000E-07 | 0.000E+00 | 3.063E-09 | 1.397E-08 | 4.812E-08 | 1.083E-07 | 1.453E-07 | 1.439E-07 | 8.642E-08 | 1.212E-08 |
| Po-210 | ∑S(j): | | 0.000E+00 | 1.531E-02 | 6.985E-02 | 2.406E-01 | 5.414E-01 | 7.267E-01 | 7.195E-01 | 4.321E-01 | 6.057E-02 |

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

| Nuclide (j) | Parent (i) | THF(i) | S(j,t), pCi/g t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bi-210 | Ra-226 | 1.320E-06 | 0.000E+00 | 3.806E-08 | 1.128E-07 | 3.358E-07 | 7.281E-07 | 9.673E-07 | 9.573E-07 | 5.744E-07 | 8.053E-08 |
| Bi-210 | Ra-226 | 2.637E-10 | 0.000E+00 | 7.606E-12 | 2.255E-11 | 6.711E-11 | 1.455E-10 | 1.933E-10 | 1.913E-10 | 1.148E-10 | 1.609E-11 |
| Bi-210 | Ra-226 | 2.640E-13 | 0.000E+00 | 7.615E-15 | 2.257E-14 | 6.718E-14 | 1.457E-13 | 1.935E-13 | 1.915E-13 | 1.149E-13 | 1.611E-14 |
| Bi-210 | ∑S(j): | | 0.000E+00 | 3.807E-08 | 1.129E-07 | 3.359E-07 | 7.282E-07 | 9.675E-07 | 9.575E-07 | 5.745E-07 | 8.055E-08 |
| Ra-226 | Ra-226 | 1.900E-08 | 1.900E-08 | 1.894E-08 | 1.884E-08 | 1.847E-08 | 1.746E-08 | 1.480E-08 | 1.435E-08 | 8.184E-09 | 1.147E-09 |
| Ra-226 | Ra-226 | 1.998E-04 | 1.998E-04 | 1.992E-04 | 1.981E-04 | 1.943E-04 | 1.837E-04 | 1.557E-04 | 1.509E-04 | 8.608E-05 | 1.207E-05 |
| Ra-226 | ∑S(j): | | 1.998E-04 | 1.993E-04 | 1.981E-04 | 1.943E-04 | 1.837E-04 | 1.557E-04 | 1.509E-04 | 8.609E-05 | 1.207E-05 |
| Pb-210 | Ra-226 | 1.900E-08 | 0.000E+00 | 5.673E-10 | 1.660E-09 | 4.916E-09 | 1.065E-08 | 1.414E-08 | 1.399E-08 | 8.395E-09 | 1.177E-09 |
| Pb-210 | Ra-226 | 3.796E-12 | 0.000E+00 | 1.134E-13 | 3.317E-13 | 9.825E-13 | 2.127E-12 | 2.825E-12 | 2.796E-12 | 1.678E-12 | 2.352E-13 |
| Pb-210 | Ra-226 | 3.800E-15 | 0.000E+00 | 1.135E-16 | 3.320E-16 | 9.835E-16 | 2.130E-15 | 2.828E-15 | 2.799E-15 | 1.679E-15 | 2.355E-16 |
| Pb-210 | ∑S(j): | | 0.000E+00 | 5.674E-10 | 1.660E-09 | 4.917E-09 | 1.065E-08 | 1.414E-08 | 1.399E-08 | 8.397E-09 | 1.177E-09 |
| Rn-222 | Ra-226 | 1.998E-04 | 0.000E+00 | 1.969E-04 | 1.958E-04 | 1.920E-04 | 1.815E-04 | 1.539E-04 | 1.492E-04 | 8.508E-05 | 1.193E-05 |
| Rn-222 | Ra-226 | 3.796E-12 | 0.000E+00 | 3.742E-12 | 3.721E-12 | 3.648E-12 | 3.449E-12 | 2.924E-12 | 2.834E-12 | 1.617E-12 | 2.266E-13 |
| Rn-222 | ∑S(j): | | 0.000E+00 | 1.969E-04 | 1.958E-04 | 1.920E-04 | 1.815E-04 | 1.539E-04 | 1.492E-04 | 8.508E-05 | 1.193E-05 |
| Ra-226 | Ra-226 | 2.637E-10 | 2.637E-10 | 2.630E-10 | 2.615E-10 | 2.564E-10 | 2.424E-10 | 2.055E-10 | 1.992E-10 | 1.136E-10 | 1.593E-11 |
| Ra-226 | Ra-226 | 3.796E-12 | 3.796E-12 | 3.786E-12 | 3.764E-12 | 3.691E-12 | 3.490E-12 | 2.958E-12 | 2.867E-12 | 1.635E-12 | 2.293E-13 |
| Ra-226 | ∑S(j): | | 2.675E-10 | 2.668E-10 | 2.653E-10 | 2.601E-10 | 2.459E-10 | 2.085E-10 | 2.021E-10 | 1.153E-10 | 1.616E-11 |
| Rn-222 | Ra-226 | 2.637E-10 | 0.000E+00 | 2.599E-10 | 2.585E-10 | 2.535E-10 | 2.396E-10 | 2.031E-10 | 1.969E-10 | 1.123E-10 | 1.574E-11 |
| Ra-226 | Ra-226 | 2.000E-07 | 2.000E-07 | 1.994E-07 | 1.983E-07 | 1.945E-07 | 1.838E-07 | 1.558E-07 | 1.511E-07 | 8.616E-08 | 1.208E-08 |
| Ra-226 | Ra-226 | 2.640E-13 | 2.640E-13 | 2.633E-13 | 2.618E-13 | 2.567E-13 | 2.427E-13 | 2.057E-13 | 1.994E-13 | 1.137E-13 | 1.594E-14 |
| Ra-226 | ∑S(j): | | 2.000E-07 | 1.994E-07 | 1.983E-07 | 1.945E-07 | 1.838E-07 | 1.558E-07 | 1.511E-07 | 8.616E-08 | 1.208E-08 |
| Rn-222 | Ra-226 | 2.000E-07 | 0.000E+00 | 1.971E-07 | 1.960E-07 | 1.922E-07 | 1.817E-07 | 1.540E-07 | 1.493E-07 | 8.516E-08 | 1.194E-08 |
| Rn-222 | Ra-226 | 2.640E-13 | 0.000E+00 | 2.602E-13 | 2.588E-13 | 2.537E-13 | 2.399E-13 | 2.033E-13 | 1.971E-13 | 1.124E-13 | 1.576E-14 |
| Rn-222 | Ra-226 | 3.800E-15 | 0.000E+00 | 3.745E-15 | 3.724E-15 | 3.652E-15 | 3.453E-15 | 2.927E-15 | 2.837E-15 | 1.618E-15 | 2.268E-16 |
| Rn-222 | ∑S(j): | | 0.000E+00 | 1.971E-07 | 1.960E-07 | 1.922E-07 | 1.817E-07 | 1.540E-07 | 1.493E-07 | 8.516E-08 | 1.194E-08 |
| Ra-226 | Ra-226 | 3.800E-15 | 3.800E-15 | 3.789E-15 | 3.768E-15 | 3.695E-15 | 3.493E-15 | 2.961E-15 | 2.870E-15 | 1.637E-15 | 2.295E-16 |
| Sr-90 | Sr-90 | 1.000E+00 | 3.310E-01 | 3.213E-01 | 3.029E-01 | 2.462E-01 | 1.362E-01 | 2.384E-02 | 1.717E-02 | 4.616E-05 | 4.657E-14 |
| Y-90 | Sr-90 | 1.000E+00 | 0.000E+00 | 3.214E-01 | 3.030E-01 | 2.463E-01 | 1.363E-01 | 2.385E-02 | 1.717E-02 | 4.618E-05 | 4.658E-14 |

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

RESCALC.EXE execution time = 153.77 seconds
Total water/soil iteration failures = 2.

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Cancer Risk Slope Factors Summary Table
Risk Library: DCFPAK3.02 Morbidity

| Menu | Parameter | Current Value | Base Case* | Parameter Name |
|---|---|---|---|---|
| Sf-1 | Ground external radiation slope factors, 1/yr per (pCi/g): | | | |
| Sf-1 | Ac-225+D | 1.47E-07 | 4.12E-08 | SLPF( 1,1) |
| Sf-1 | Ac-227 | 1.98E-10 | 1.98E-10 | SLPF( 2,1) |
| Sf-1 | Am-241 | 2.77E-08 | 2.77E-08 | SLPF( 5,1) |
| Sf-1 | Bi-210 | 2.77E-09 | 2.77E-09 | SLPF( 6,1) |
| Sf-1 | Bi-210+D | 8.87E-09 | 2.77E-09 | SLPF( 7,1) |
| Sf-1 | Bi-213+D | 7.59E-07 | 5.43E-07 | SLPF( 8,1) |
| Sf-1 | Bi-214+D | 7.35E-06 | 7.34E-06 | SLPF( 9,1) |
| Sf-1 | Co-60 | 1.24E-05 | 1.24E-05 | SLPF( 12,1) |
| Sf-1 | Cs-137+D | 2.54E-06 | 5.52E-10 | SLPF( 13,1) |
| Sf-1 | Eu-152 | 5.41E-06 | 5.41E-06 | SLPF( 14,1) |
| Sf-1 | Eu-154 | 5.85E-06 | 5.85E-06 | SLPF( 16,1) |
| Sf-1 | Fr-223 | 1.35E-07 | 1.35E-07 | SLPF( 17,1) |
| Sf-1 | Fr-223+D | 1.22E-06 | 1.35E-07 | SLPF( 18,1) |
| Sf-1 | Gd-152 | 0.00E+00 | 0.00E+00 | SLPF( 19,1) |
| Sf-1 | H-3 | 0.00E+00 | 0.00E+00 | SLPF( 20,1) |
| Sf-1 | Nd-144 | 0.00E+00 | 0.00E+00 | SLPF( 21,1) |
| Sf-1 | Np-237 | 5.17E-08 | 5.17E-08 | SLPF( 22,1) |
| Sf-1 | Pa-231 | 1.27E-07 | 1.27E-07 | SLPF( 23,1) |
| Sf-1 | Pa-233 | 8.03E-07 | 8.03E-07 | SLPF( 26,1) |
| Sf-1 | Pb-209 | 5.37E-10 | 5.37E-10 | SLPF( 27,1) |
| Sf-1 | Pb-210 | 1.48E-09 | 1.48E-09 | SLPF( 28,1) |
| Sf-1 | Pb-210+D | 4.91E-07 | 1.48E-09 | SLPF( 30,1) |
| Sf-1 | Pb-211+D | 4.97E-07 | 2.91E-07 | SLPF( 31,1) |
| Sf-1 | Pb-214 | 9.93E-07 | 9.93E-07 | SLPF( 32,1) |
| Sf-1 | Po-210 | 4.51E-11 | 4.51E-11 | SLPF( 35,1) |
| Sf-1 | Pu-239 | 2.09E-10 | 2.09E-10 | SLPF( 36,1) |
| Sf-1 | Ra-223+D | 6.91E-07 | 4.55E-07 | SLPF( 42,1) |
| Sf-1 | Ra-225 | 6.11E-09 | 6.11E-09 | SLPF( 43,1) |
| Sf-1 | Ra-226 | 2.50E-08 | 2.50E-08 | SLPF( 44,1) |
| Sf-1 | Rn-222+D | 1.69E-09 | 1.69E-09 | SLPF( 53,1) |
| Sf-1 | Rn-222+D1 | 1.72E-09 | 1.69E-09 | SLPF( 56,1) |
| Sf-1 | Rn-222+D2 | 5.49E-09 | 1.69E-09 | SLPF( 59,1) |
| Sf-1 | Sm-148 | 0.00E+00 | 0.00E+00 | SLPF( 62,1) |
| Sf-1 | Sr-90 | 4.83E-10 | 4.83E-10 | SLPF( 63,1) |
| Sf-1 | Th-227 | 4.45E-07 | 4.45E-07 | SLPF( 64,1) |
| Sf-1 | Th-229 | 2.24E-07 | 2.24E-07 | SLPF( 65,1) |
| Sf-1 | Th-231 | 2.49E-08 | 2.49E-08 | SLPF( 66,1) |
| Sf-1 | U-233 | 7.11E-10 | 7.11E-10 | SLPF( 69,1) |
| Sf-1 | U-235 | 5.51E-07 | 5.51E-07 | SLPF( 70,1) |
| Sf-1 | U-235m | 0.00E+00 | 0.00E+00 | SLPF( 73,1) |
| Sf-1 | Y-90 | 1.90E-08 | 1.90E-08 | SLPF( 76,1) |
| | | | | |
| Sf-2 | Inhalation, slope factors, 1/(pCi): | | | |
| Sf-2 | Ac-225+D | 2.86E-08 | 2.86E-08 | SLPF( 1,2) |
| Sf-2 | Ac-227 | 1.49E-07 | 1.49E-07 | SLPF( 2,2) |
| Sf-2 | Am-241 | 3.77E-08 | 3.77E-08 | SLPF( 5,2) |
| Sf-2 | Bi-210 | 4.55E-10 | 4.55E-10 | SLPF( 6,2) |
| Sf-2 | Bi-210+D | 4.55E-10 | 4.55E-10 | SLPF( 7,2) |
| Sf-2 | Bi-213+D | 7.40E-11 | 7.40E-11 | SLPF( 8,2) |

Cancer Risk Slope Factors Summary Table (continued)
Risk Library: DCFPAK3.02 Morbidity

| Menu | Parameter | Current Value | Base Case* | Parameter Name |
|---|---|---|---|---|
| Sf-2 | Bi-214+D | 3.10E-11 | 3.10E-11 | SLPF( 9,2) |
| Sf-2 | Co-60 | 1.01E-10 | 1.01E-10 | SLPF( 12,2) |
| Sf-2 | Cs-137+D | 1.13E-10 | 1.13E-10 | SLPF( 13,2) |
| Sf-2 | Eu-152 | 1.91E-10 | 1.91E-10 | SLPF( 14,2) |
| Sf-2 | Eu-154 | 2.06E-10 | 2.06E-10 | SLPF( 16,2) |
| Sf-2 | Fr-223 | 4.07E-11 | 4.07E-11 | SLPF( 17,2) |
| Sf-2 | Fr-223+D | 4.07E-11 | 4.07E-11 | SLPF( 18,2) |
| Sf-2 | Gd-152 | 9.10E-09 | 9.10E-09 | SLPF( 19,2) |
| Sf-2 | H-3 | 8.47E-13 | 8.47E-13 | SLPF( 20,2) |
| Sf-2 | Nd-144 | 1.04E-08 | 1.04E-08 | SLPF( 21,2) |
| Sf-2 | Np-237 | 2.87E-08 | 2.87E-08 | SLPF( 22,2) |
| Sf-2 | Pa-231 | 7.62E-08 | 7.62E-08 | SLPF( 23,2) |
| Sf-2 | Pa-233 | 1.53E-11 | 1.53E-11 | SLPF( 26,2) |
| Sf-2 | Pb-209 | 2.08E-13 | 2.08E-13 | SLPF( 27,2) |
| Sf-2 | Pb-210 | 1.59E-08 | 1.59E-08 | SLPF( 28,2) |
| Sf-2 | Pb-210+D | 1.59E-08 | 1.59E-08 | SLPF( 30,2) |
| Sf-2 | Pb-211+D | 4.03E-11 | 4.03E-11 | SLPF( 31,2) |
| Sf-2 | Pb-214 | 4.00E-11 | 4.00E-11 | SLPF( 32,2) |
| Sf-2 | Po-210 | 1.45E-08 | 1.45E-08 | SLPF( 35,2) |
| Sf-2 | Pu-239 | 5.55E-08 | 5.55E-08 | SLPF( 36,2) |
| Sf-2 | Ra-223+D | 2.92E-08 | 2.92E-08 | SLPF( 42,2) |
| Sf-2 | Ra-225 | 2.62E-08 | 2.62E-08 | SLPF( 43,2) |
| Sf-2 | Ra-226 | 2.81E-08 | 2.81E-08 | SLPF( 44,2) |
| Sf-2 | Rn-222+D | 0.00E+00 | 0.00E+00 | SLPF( 53,2) |
| Sf-2 | Rn-222+D1 | 0.00E+00 | 0.00E+00 | SLPF( 56,2) |
| Sf-2 | Rn-222+D2 | 0.00E+00 | 0.00E+00 | SLPF( 59,2) |
| Sf-2 | Sm-148 | 1.08E-08 | 1.08E-08 | SLPF( 62,2) |
| Sf-2 | Sr-90 | 4.25E-10 | 4.25E-10 | SLPF( 63,2) |
| Sf-2 | Th-227 | 3.50E-08 | 3.50E-08 | SLPF( 64,2) |
| Sf-2 | Th-229 | 1.75E-07 | 1.75E-07 | SLPF( 65,2) |
| Sf-2 | Th-231 | 1.50E-12 | 1.50E-12 | SLPF( 66,2) |
| Sf-2 | U-233 | 2.83E-08 | 2.83E-08 | SLPF( 69,2) |
| Sf-2 | U-235 | 2.50E-08 | 2.50E-08 | SLPF( 70,2) |
| Sf-2 | U-235m | 1.87E-18 | 1.87E-18 | SLPF( 73,2) |
| Sf-2 | Y-90 | 8.40E-12 | 8.40E-12 | SLPF( 76,2) |
| | | | | |
| Sf-3 | Food ingestion, slope factors, 1/(pCi): | | | |
| Sf-3 | Ac-225+D | 2.72E-10 | 2.72E-10 | SLPF( 1,3) |
| Sf-3 | Ac-227 | 2.45E-10 | 2.45E-10 | SLPF( 2,3) |
| Sf-3 | Am-241 | 1.34E-10 | 1.34E-10 | SLPF( 5,3) |
| Sf-3 | Bi-210 | 1.30E-11 | 1.30E-11 | SLPF( 6,3) |
| Sf-3 | Bi-210+D | 1.30E-11 | 1.30E-11 | SLPF( 7,3) |
| Sf-3 | Bi-213+D | 7.18E-13 | 7.18E-13 | SLPF( 8,3) |
| Sf-3 | Bi-214+D | 2.65E-13 | 2.65E-13 | SLPF( 9,3) |
| Sf-3 | Co-60 | 2.23E-11 | 2.23E-11 | SLPF( 12,3) |
| Sf-3 | Cs-137+D | 3.74E-11 | 3.74E-11 | SLPF( 13,3) |
| Sf-3 | Eu-152 | 8.32E-12 | 8.32E-12 | SLPF( 14,3) |
| Sf-3 | Eu-154 | 1.42E-11 | 1.42E-11 | SLPF( 16,3) |
| Sf-3 | Fr-223 | 1.01E-11 | 1.01E-11 | SLPF( 17,3) |
| Sf-3 | Fr-223+D | 1.01E-11 | 1.01E-11 | SLPF( 18,3) |

Cancer Risk Slope Factors Summary Table (continued)
Risk Library: DCFPAK3.02 Morbidity

| Menu | Parameter | Current Value | Base Case* | Parameter Name |
|---|---|---|---|---|
| Sf-3 | Gd-152 | 3.85E-11 | 3.85E-11 | SLPF( 19,3) |
| Sf-3 | H-3 | 1.44E-13 | 1.44E-13 | SLPF( 20,3) |
| Sf-3 | Nd-144 | 3.92E-11 | 3.92E-11 | SLPF( 21,3) |
| Sf-3 | Np-237 | 8.29E-11 | 8.29E-11 | SLPF( 22,3) |
| Sf-3 | Pa-231 | 2.26E-10 | 2.26E-10 | SLPF( 23,3) |
| Sf-3 | Pa-233 | 8.95E-12 | 8.95E-12 | SLPF( 26,3) |
| Sf-3 | Pb-209 | 3.49E-13 | 3.49E-13 | SLPF( 27,3) |
| Sf-3 | Pb-210 | 1.18E-09 | 1.18E-09 | SLPF( 28,3) |
| Sf-3 | Pb-210+D | 1.18E-09 | 1.18E-09 | SLPF( 30,3) |
| Sf-3 | Pb-211+D | 5.81E-13 | 5.81E-13 | SLPF( 31,3) |
| Sf-3 | Pb-214 | 4.85E-13 | 4.85E-13 | SLPF( 32,3) |
| Sf-3 | Po-210 | 2.25E-09 | 2.25E-09 | SLPF( 35,3) |
| Sf-3 | Pu-239 | 1.74E-10 | 1.74E-10 | SLPF( 36,3) |
| Sf-3 | Ra-223+D | 3.39E-10 | 3.39E-10 | SLPF( 42,3) |
| Sf-3 | Ra-225 | 1.54E-10 | 1.54E-10 | SLPF( 43,3) |
| Sf-3 | Ra-226 | 5.14E-10 | 5.14E-10 | SLPF( 44,3) |
| Sf-3 | Rn-222+D | 0.00E+00 | 0.00E+00 | SLPF( 53,3) |
| Sf-3 | Rn-222+D1 | 0.00E+00 | 0.00E+00 | SLPF( 56,3) |
| Sf-3 | Rn-222+D2 | 0.00E+00 | 0.00E+00 | SLPF( 59,3) |
| Sf-3 | Sm-148 | 4.11E-11 | 4.11E-11 | SLPF( 62,3) |
| Sf-3 | Sr-90 | 6.88E-11 | 6.88E-11 | SLPF( 63,3) |
| Sf-3 | Th-227 | 7.03E-11 | 7.03E-11 | SLPF( 64,3) |
| Sf-3 | Th-229 | 2.90E-10 | 2.90E-10 | SLPF( 65,3) |
| Sf-3 | Th-231 | 3.22E-12 | 3.22E-12 | SLPF( 66,3) |
| Sf-3 | U-233 | 9.69E-11 | 9.69E-11 | SLPF( 69,3) |
| Sf-3 | U-235 | 9.43E-11 | 9.43E-11 | SLPF( 70,3) |
| Sf-3 | U-235m | 1.06E-17 | 1.06E-17 | SLPF( 73,3) |
| Sf-3 | Y-90 | 2.65E-11 | 2.65E-11 | SLPF( 76,3) |
| | | | | |
| Sf-3 | Water ingestion, slope factors, 1/(pCi): | | | |
| Sf-3 | Ac-225+D | 1.89E-10 | 1.89E-10 | SLPF( 1,4) |
| Sf-3 | Ac-227 | 2.01E-10 | 2.01E-10 | SLPF( 2,4) |
| Sf-3 | Am-241 | 1.04E-10 | 1.04E-10 | SLPF( 5,4) |
| Sf-3 | Bi-210 | 8.92E-12 | 8.92E-12 | SLPF( 6,4) |
| Sf-3 | Bi-210+D | 8.92E-12 | 8.92E-12 | SLPF( 7,4) |
| Sf-3 | Bi-213+D | 5.07E-13 | 5.07E-13 | SLPF( 8,4) |
| Sf-3 | Bi-214+D | 1.92E-13 | 1.92E-13 | SLPF( 9,4) |
| Sf-3 | Co-60 | 1.58E-11 | 1.58E-11 | SLPF( 12,4) |
| Sf-3 | Cs-137+D | 3.05E-11 | 3.05E-11 | SLPF( 13,4) |
| Sf-3 | Eu-152 | 5.84E-12 | 5.84E-12 | SLPF( 14,4) |
| Sf-3 | Eu-154 | 9.84E-12 | 9.84E-12 | SLPF( 16,4) |
| Sf-3 | Fr-223 | 7.36E-12 | 7.36E-12 | SLPF( 17,4) |
| Sf-3 | Fr-223+D | 7.36E-12 | 7.36E-12 | SLPF( 18,4) |
| Sf-3 | Gd-152 | 2.97E-11 | 2.97E-11 | SLPF( 19,4) |
| Sf-3 | H-3 | 1.12E-13 | 1.12E-13 | SLPF( 20,4) |
| Sf-3 | Nd-144 | 3.07E-11 | 3.07E-11 | SLPF( 21,4) |
| Sf-3 | Np-237 | 6.22E-11 | 6.22E-11 | SLPF( 22,4) |
| Sf-3 | Pa-231 | 1.72E-10 | 1.72E-10 | SLPF( 23,4) |
| Sf-3 | Pa-233 | 6.14E-12 | 6.14E-12 | SLPF( 26,4) |
| Sf-3 | Pb-209 | 2.41E-13 | 2.41E-13 | SLPF( 27,4) |

Cancer Risk Slope Factors Summary Table (continued)
Risk Library: DCFPAK3.02 Morbidity

| Menu | Parameter | Current Value | Base Case* | Parameter Name |
|---|---|---|---|---|
| Sf-3 | Pb-210 | 8.84E-10 | 8.84E-10 | SLPF( 28,4) |
| Sf-3 | Pb-210+D | 8.84E-10 | 8.84E-10 | SLPF( 30,4) |
| Sf-3 | Pb-211+D | 4.11E-13 | 4.11E-13 | SLPF( 31,4) |
| Sf-3 | Pb-214 | 3.44E-13 | 3.44E-13 | SLPF( 32,4) |
| Sf-3 | Po-210 | 1.78E-09 | 1.78E-09 | SLPF( 35,4) |
| Sf-3 | Pu-239 | 1.35E-10 | 1.35E-10 | SLPF( 36,4) |
| Sf-3 | Ra-223+D | 2.38E-10 | 2.38E-10 | SLPF( 42,4) |
| Sf-3 | Ra-225 | 1.14E-10 | 1.14E-10 | SLPF( 43,4) |
| Sf-3 | Ra-226 | 3.85E-10 | 3.85E-10 | SLPF( 44,4) |
| Sf-3 | Rn-222+D | 0.00E+00 | 0.00E+00 | SLPF( 53,4) |
| Sf-3 | Rn-222+D1 | 0.00E+00 | 0.00E+00 | SLPF( 56,4) |
| Sf-3 | Rn-222+D2 | 0.00E+00 | 0.00E+00 | SLPF( 59,4) |
| Sf-3 | Sm-148 | 3.20E-11 | 3.20E-11 | SLPF( 62,4) |
| Sf-3 | Sr-90 | 5.59E-11 | 5.59E-11 | SLPF( 63,4) |
| Sf-3 | Th-227 | 4.81E-11 | 4.81E-11 | SLPF( 64,4) |
| Sf-3 | Th-229 | 2.23E-10 | 2.23E-10 | SLPF( 65,4) |
| Sf-3 | Th-231 | 2.19E-12 | 2.19E-12 | SLPF( 66,4) |
| Sf-3 | U-233 | 7.18E-11 | 7.18E-11 | SLPF( 69,4) |
| Sf-3 | U-235 | 6.95E-11 | 6.95E-11 | SLPF( 70,4) |
| Sf-3 | U-235m | 7.62E-18 | 7.62E-18 | SLPF( 73,4) |
| Sf-3 | Y-90 | 1.80E-11 | 1.80E-11 | SLPF( 76,4) |
| | | | | |
| Sf-3 | Soil ingestion, slope factors, 1/(pCi): | | | |
| Sf-3 | Ac-225+D | 2.72E-10 | 2.72E-10 | SLPF( 1,5) |
| Sf-3 | Ac-227 | 2.45E-10 | 2.45E-10 | SLPF( 2,5) |
| Sf-3 | Am-241 | 1.34E-10 | 1.34E-10 | SLPF( 5,5) |
| Sf-3 | Bi-210 | 1.30E-11 | 1.30E-11 | SLPF( 6,5) |
| Sf-3 | Bi-210+D | 1.30E-11 | 1.30E-11 | SLPF( 7,5) |
| Sf-3 | Bi-213+D | 7.18E-13 | 7.18E-13 | SLPF( 8,5) |
| Sf-3 | Bi-214+D | 2.65E-13 | 2.65E-13 | SLPF( 9,5) |
| Sf-3 | Co-60 | 2.23E-11 | 2.23E-11 | SLPF( 12,5) |
| Sf-3 | Cs-137+D | 3.74E-11 | 3.74E-11 | SLPF( 13,5) |
| Sf-3 | Eu-152 | 8.32E-12 | 8.32E-12 | SLPF( 14,5) |
| Sf-3 | Eu-154 | 1.42E-11 | 1.42E-11 | SLPF( 16,5) |
| Sf-3 | Fr-223 | 1.01E-11 | 1.01E-11 | SLPF( 17,5) |
| Sf-3 | Fr-223+D | 1.01E-11 | 1.01E-11 | SLPF( 18,5) |
| Sf-3 | Gd-152 | 3.85E-11 | 3.85E-11 | SLPF( 19,5) |
| Sf-3 | H-3 | 1.44E-13 | 1.44E-13 | SLPF( 20,5) |
| Sf-3 | Nd-144 | 3.92E-11 | 3.92E-11 | SLPF( 21,5) |
| Sf-3 | Np-237 | 8.29E-11 | 8.29E-11 | SLPF( 22,5) |
| Sf-3 | Pa-231 | 2.26E-10 | 2.26E-10 | SLPF( 23,5) |
| Sf-3 | Pa-233 | 8.95E-12 | 8.95E-12 | SLPF( 26,5) |
| Sf-3 | Pb-209 | 3.49E-13 | 3.49E-13 | SLPF( 27,5) |
| Sf-3 | Pb-210 | 1.18E-09 | 1.18E-09 | SLPF( 28,5) |
| Sf-3 | Pb-210+D | 1.18E-09 | 1.18E-09 | SLPF( 30,5) |
| Sf-3 | Pb-211+D | 5.81E-13 | 5.81E-13 | SLPF( 31,5) |
| Sf-3 | Pb-214 | 4.85E-13 | 4.85E-13 | SLPF( 32,5) |
| Sf-3 | Po-210 | 2.25E-09 | 2.25E-09 | SLPF( 35,5) |
| Sf-3 | Pu-239 | 1.74E-10 | 1.74E-10 | SLPF( 36,5) |
| Sf-3 | Ra-223+D | 3.39E-10 | 3.39E-10 | SLPF( 42,5) |

Cancer Risk Slope Factors Summary Table (continued)
Risk Library: DCFPAK3.02 Morbidity

| Menu | Parameter | Current Value | Base Case* | Parameter Name |
|---|---|---|---|---|
| Sf-3 | Ra-225 | 1.54E-10 | 1.54E-10 | SLPF( 43,5) |
| Sf-3 | Ra-226 | 5.14E-10 | 5.14E-10 | SLPF( 44,5) |
| Sf-3 | Rn-222+D | 0.00E+00 | 0.00E+00 | SLPF( 53,5) |
| Sf-3 | Rn-222+D1 | 0.00E+00 | 0.00E+00 | SLPF( 56,5) |
| Sf-3 | Rn-222+D2 | 0.00E+00 | 0.00E+00 | SLPF( 59,5) |
| Sf-3 | Sm-148 | 4.11E-11 | 4.11E-11 | SLPF( 62,5) |
| Sf-3 | Sr-90 | 6.88E-11 | 6.88E-11 | SLPF( 63,5) |
| Sf-3 | Th-227 | 7.03E-11 | 7.03E-11 | SLPF( 64,5) |
| Sf-3 | Th-229 | 2.90E-10 | 2.90E-10 | SLPF( 65,5) |
| Sf-3 | Th-231 | 3.22E-12 | 3.22E-12 | SLPF( 66,5) |
| Sf-3 | U-233 | 9.69E-11 | 9.69E-11 | SLPF( 69,5) |
| Sf-3 | U-235 | 9.43E-11 | 9.43E-11 | SLPF( 70,5) |
| Sf-3 | U-235m | 1.06E-17 | 1.06E-17 | SLPF( 73,5) |
| Sf-3 | Y-90 | 2.65E-11 | 2.65E-11 | SLPF( 76,5) |
| | | | | |
| Sf-Rn | Radon Inhalation slope factors, 1/(pCi): | | | |
| Sf-Rn | Rn-222 | 1.80E-12 | 1.80E-12 | SLPFRN(1,1) |
| Sf-Rn | Po-218 | 3.70E-12 | 3.70E-12 | SLPFRN(1,2) |
| Sf-Rn | Pb-214 | 6.20E-12 | 6.20E-12 | SLPFRN(1,3) |
| Sf-Rn | Bi-214 | 1.50E-11 | 1.50E-11 | SLPFRN(1,4) |
| | | | | |
| Sf-Rn | Radon K factors, (mrem/WLM): | | | |
| Sf-Rn | Rn-222 Indoor | 3.88E+02 | 3.88E+02 | KFACTR(1,1) |
| Sf-Rn | Rn-222 Outdoor | 3.88E+02 | 3.88E+02 | KFACTR(1,2) |

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

Risk Slope and Environmental Transport Factors for the Ground Pathway

| Nuclide (i) | Slope(i)* | ETFG(i,t) At Time in Years (dimensionless) t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|
| Ac-225 | 4.120E-08 | 5.291E-01 | 5.291E-01 | 5.291E-01 | 5.291E-01 | 5.291E-01 | 5.291E-01 | 5.291E-01 | 5.291E-01 | 5.291E-01 |
| Ac-227 | 1.990E-10 | 5.340E-01 | 5.340E-01 | 5.340E-01 | 5.340E-01 | 5.340E-01 | 5.340E-01 | 5.340E-01 | 5.340E-01 | 5.340E-01 |
| Am-241 | 2.770E-08 | 5.480E-01 | 5.480E-01 | 5.480E-01 | 5.480E-01 | 5.480E-01 | 5.480E-01 | 5.480E-01 | 5.480E-01 | 5.480E-01 |
| At-217 | 9.360E-10 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 |
| At-218 | 2.740E-11 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 |
| At-219 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Ba-137m | 2.690E-06 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 |
| Bi-210 | 2.770E-09 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 |
| Bi-211 | 1.900E-07 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 |
| Bi-213 | 5.430E-07 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 |
| Bi-214 | 7.340E-06 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 |
| Bi-215 | 1.080E-06 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 |
| Co-60 | 1.240E-05 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 | 5.202E-01 |
| Cs-137 | 5.520E-10 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 |
| Eu-152 | 5.410E-06 | 5.177E-01 | 5.177E-01 | 5.177E-01 | 5.177E-01 | 5.177E-01 | 5.177E-01 | 5.177E-01 | 5.177E-01 | 5.176E-01 |
| Eu-154 | 5.850E-06 | 5.195E-01 | 5.195E-01 | 5.195E-01 | 5.195E-01 | 5.195E-01 | 5.195E-01 | 5.195E-01 | 5.195E-01 | 5.195E-01 |
| Fr-221 | 1.050E-07 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 |
| Fr-223 | 1.350E-07 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 |
| Gd-152 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| H-3 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Hg-206 | 4.830E-07 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 |
| Nd-144 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Np-237 | 5.170E-08 | 5.482E-01 | 5.482E-01 | 5.482E-01 | 5.482E-01 | 5.482E-01 | 5.482E-01 | 5.482E-01 | 5.482E-01 | 5.482E-01 |
| Pa-231 | 1.270E-07 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 |
| Pa-233 | 8.030E-07 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 |
| Pb-209 | 5.370E-10 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 |
| Pb-210 | 1.480E-09 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 |
| Pb-211 | 2.910E-07 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 |
| Pb-214 | 9.940E-07 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 |
| Po-210 | 4.510E-11 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 |
| Po-211 | 3.760E-08 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 |
| Po-213 | 1.730E-10 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 |
| Po-214 | 3.850E-10 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 |
| Po-215 | 7.480E-10 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 |
| Po-218 | 6.840E-15 | 5.333E-01 | 5.333E-01 | 5.333E-01 | 5.333E-01 | 5.333E-01 | 5.333E-01 | 5.333E-01 | 5.333E-01 | 5.333E-01 |
| Pu-239 | 2.090E-10 | 5.301E-01 | 5.301E-01 | 5.301E-01 | 5.301E-01 | 5.301E-01 | 5.301E-01 | 5.301E-01 | 5.301E-01 | 5.301E-01 |
| Ra-223 | 4.550E-07 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 |
| Ra-225 | 6.110E-09 | 5.482E-01 | 5.482E-01 | 5.482E-01 | 5.482E-01 | 5.482E-01 | 5.482E-01 | 5.482E-01 | 5.482E-01 | 5.482E-01 |
| Ra-226 | 2.500E-08 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 |
| Rn-218 | 3.390E-09 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 |
| Rn-219 | 2.350E-07 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 |
| Rn-222 | 1.690E-09 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 |
| Sm-148 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Sr-90 | 4.830E-10 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 |
| Th-227 | 4.450E-07 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 |
| Th-229 | 2.240E-07 | 5.291E-01 | 5.291E-01 | 5.291E-01 | 5.291E-01 | 5.291E-01 | 5.291E-01 | 5.291E-01 | 5.291E-01 | 5.291E-01 |
| Th-231 | 2.490E-08 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 |
| Tl-206 | 6.110E-09 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 |
| Tl-207 | 1.590E-08 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 |
| Tl-209 | 1.030E-05 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 |

Risk Slope and Environmental Transport Factors for the Ground Pathway

| Nuclide (i) | Slope(i)* | ETFG(i,t) At Time in Years (dimensionless) t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|
| Tl-210 | 1.340E-05 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 |
| U-233 | 7.110E-10 | 5.274E-01 | 5.274E-01 | 5.274E-01 | 5.274E-01 | 5.274E-01 | 5.274E-01 | 5.274E-01 | 5.274E-01 | 5.274E-01 |
| U-235 | 5.510E-07 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 |
| U-235m | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Y-90 | 1.900E-08 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 | 5.192E-01 |

* - Units are 1/yr per (pCi/g) at infinite depth and area. Multiplication by ETFG(i,t) converts to site conditions.

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 0.000E+00 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-225 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Ac-227 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Am-241 | 6.838E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.758E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.758E+01 |
| Bi-210 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Bi-213 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Bi-214 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Co-60 | 1.815E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.975E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.975E-01 |
| Cs-137 | 5.681E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.122E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.122E+00 |
| Eu-152 | 6.536E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.592E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.592E+00 |
| Eu-154 | 1.156E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.355E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.355E+00 |
| Fr-223 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Gd-152 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| H-3 | 2.219E+04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.300E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.300E+01 |
| Nd-144 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Np-237 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Pa-231 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Pa-233 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Pb-209 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Pb-210 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Pb-211 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Pb-214 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Po-210 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Pu-239 | 1.302E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.156E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.156E+01 |
| Ra-223 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Ra-225 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Ra-226 | 5.028E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.763E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.763E+01 |
| Rn-222 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Sm-148 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Sr-90 | 1.664E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.146E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.146E+00 |
| Th-227 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Th-229 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Th-231 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| U-233 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| U-235 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| U-235m | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Y-90 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 0.000E+00 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 4.239E-19 | 0.0000 | 7.848E-21 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.102E-20 | 0.0000 |
| Ac-227 | 4.727E-21 | 0.0000 | 3.343E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.015E-19 | 0.0000 |
| Am-241 | 5.362E-07 | 0.0037 | 6.703E-08 | 0.0005 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.304E-07 | 0.0009 |
| Bi-210 | 1.416E-08 | 0.0001 | 2.238E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.519E-09 | 0.0000 |
| Bi-213 | 2.154E-18 | 0.0000 | 2.033E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.084E-22 | 0.0000 |
| Bi-214 | 1.083E-04 | 0.7483 | 4.420E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.079E-10 | 0.0000 |
| Co-60 | 1.735E-06 | 0.0120 | 1.360E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.658E-10 | 0.0000 |
| Cs-137 | 3.219E-06 | 0.0222 | 1.385E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.528E-09 | 0.0000 |
| Eu-152 | 5.567E-06 | 0.0385 | 1.912E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.572E-10 | 0.0000 |
| Eu-154 | 7.880E-06 | 0.0544 | 2.687E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.015E-09 | 0.0000 |
| Fr-223 | 4.355E-20 | 0.0000 | 1.256E-24 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.713E-22 | 0.0000 |
| Gd-152 | 0.000E+00 | 0.0000 | 3.041E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.066E-23 | 0.0000 |
| H-3 | 0.000E+00 | 0.0000 | 1.163E-08 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.610E-12 | 0.0000 |
| Nd-144 | 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 |
| Np-237 | 5.060E-12 | 0.0000 | 2.574E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.088E-13 | 0.0000 |
| Pa-231 | 1.539E-17 | 0.0000 | 8.841E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.439E-18 | 0.0000 |
| Pa-233 | 7.477E-11 | 0.0000 | 1.362E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.386E-14 | 0.0000 |
| Pb-209 | 1.544E-21 | 0.0000 | 5.712E-26 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.262E-23 | 0.0000 |
| Pb-210 | 8.121E-09 | 0.0001 | 7.935E-09 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.231E-07 | 0.0022 |
| Pb-211 | 1.132E-17 | 0.0000 | 8.887E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.033E-22 | 0.0000 |
| Pb-214 | 1.480E-05 | 0.1022 | 5.697E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.797E-10 | 0.0000 |
| Po-210 | 2.202E-10 | 0.0000 | 6.855E-09 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.853E-07 | 0.0040 |
| Pu-239 | 8.595E-09 | 0.0001 | 2.164E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.736E-07 | 0.0026 |
| Ra-223 | 1.592E-17 | 0.0000 | 6.432E-20 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.099E-19 | 0.0000 |
| Ra-225 | 1.841E-20 | 0.0000 | 7.229E-21 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.331E-20 | 0.0000 |
| Ra-226 | 3.786E-07 | 0.0026 | 4.072E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.088E-07 | 0.0028 |
| Rn-222 | 2.484E-08 | 0.0002 | 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 |
| Sm-148 | 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 | 1.673E-09 | 0.0000 | 1.408E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.251E-08 | 0.0001 |
| Th-227 | 1.018E-17 | 0.0000 | 7.649E-20 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.442E-20 | 0.0000 |
| Th-229 | 6.565E-19 | 0.0000 | 4.863E-20 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.444E-20 | 0.0000 |
| Th-231 | 1.523E-14 | 0.0000 | 8.374E-20 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.850E-17 | 0.0000 |
| U-233 | 2.885E-18 | 0.0000 | 1.095E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.061E-17 | 0.0000 |
| U-235 | 3.216E-13 | 0.0000 | 1.395E-15 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.891E-15 | 0.0000 |
| U-235m | 0.000E+00 | 0.0000 | 7.262E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.269E-14 | 0.0000 |
| Y-90 | 6.469E-08 | 0.0004 | 2.769E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.793E-09 | 0.0000 |
| Total | 1.426E-04 | 0.9848 | 3.511E-07 | 0.0024 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.847E-06 | 0.0128 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 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 | 4.727E-19 | 0.0000 |
| Ac-227 | 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 | 6.406E-19 | 0.0000 |
| 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 | 7.336E-07 | 0.0051 |
| Bi-210 | 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 | 1.790E-08 | 0.0001 |
| Bi-213 | 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 | 2.154E-18 | 0.0000 |
| Bi-214 | 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 | 1.083E-04 | 0.7483 |
| 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 | 1.735E-06 | 0.0120 |
| 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 | 3.221E-06 | 0.0222 |
| Eu-152 | 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 | 5.568E-06 | 0.0385 |
| Eu-154 | 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 | 7.882E-06 | 0.0544 |
| Fr-223 | 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 | 4.372E-20 | 0.0000 |
| Gd-152 | 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 | 1.011E-22 | 0.0000 |
| H-3 | 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 | 1.164E-08 | 0.0001 |
| Nd-144 | 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 |
| Np-237 | 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 | 5.726E-12 | 0.0000 |
| Pa-231 | 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 | 1.772E-17 | 0.0000 |
| Pa-233 | 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 | 7.481E-11 | 0.0000 |
| Pb-209 | 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 | 1.597E-21 | 0.0000 |
| Pb-210 | 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 | 3.392E-07 | 0.0023 |
| Pb-211 | 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 | 1.132E-17 | 0.0000 |
| Pb-214 | 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 | 1.480E-05 | 0.1023 |
| Po-210 | 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 | 5.924E-07 | 0.0041 |
| Pu-239 | 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 | 5.986E-07 | 0.0041 |
| Ra-223 | 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 | 1.640E-17 | 0.0000 |
| Ra-225 | 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 | 4.895E-20 | 0.0000 |
| Ra-226 | 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 | 8.281E-07 | 0.0057 |
| Rn-222 | 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 | 2.484E-08 | 0.0002 |
| Sm-148 | 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 | 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 | 1.433E-08 | 0.0001 |
| Th-227 | 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 | 1.034E-17 | 0.0000 |
| Th-229 | 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 | 7.495E-19 | 0.0000 |
| Th-231 | 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 | 1.533E-14 | 0.0000 |
| U-233 | 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 | 3.444E-17 | 0.0000 |
| U-235 | 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 | 3.259E-13 | 0.0000 |
| U-235m | 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 | 2.270E-14 | 0.0000 |
| Y-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 | 6.949E-08 | 0.0005 |
| 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 | 1.448E-04 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 0.000E+00 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Am-241 | 5.363E-07 | 0.0037 | 6.703E-08 | 0.0005 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.304E-07 | 0.0009 |
| Co-60 | 1.735E-06 | 0.0120 | 1.360E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.658E-10 | 0.0000 |
| Cs-137 | 3.219E-06 | 0.0222 | 1.385E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.528E-09 | 0.0000 |
| Eu-152 | 5.567E-06 | 0.0385 | 1.912E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.572E-10 | 0.0000 |
| Eu-154 | 7.880E-06 | 0.0544 | 2.687E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.015E-09 | 0.0000 |
| H-3 | 0.000E+00 | 0.0000 | 1.163E-08 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.610E-12 | 0.0000 |
| Pu-239 | 8.595E-09 | 0.0001 | 2.164E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.736E-07 | 0.0026 |
| Ra-226 | 1.236E-04 | 0.8535 | 5.584E-08 | 0.0004 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.321E-06 | 0.0091 |
| Sr-90 | 6.637E-08 | 0.0005 | 1.436E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.731E-08 | 0.0001 |
| Total | 1.426E-04 | 0.9848 | 3.511E-07 | 0.0024 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.847E-06 | 0.0128 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | 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 | 0.0000 | 7.337E-07 | 0.0051 |
| 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 | 1.735E-06 | 0.0120 |
| 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 | 3.221E-06 | 0.0222 |
| Eu-152 | 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 | 5.568E-06 | 0.0385 |
| Eu-154 | 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 | 7.882E-06 | 0.0544 |
| H-3 | 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 | 1.164E-08 | 0.0001 |
| Pu-239 | 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 | 5.986E-07 | 0.0041 |
| Ra-226 | 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 | 1.249E-04 | 0.8630 |
| 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 | 8.382E-08 | 0.0006 |
| 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 | 1.448E-04 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+00 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-225 | 8.133E-19 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.470E-16 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.470E-16 |
| Ac-227 | 1.405E-17 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.720E-15 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.720E-15 |
| Am-241 | 6.771E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.721E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.721E+01 |
| Bi-210 | 1.450E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.968E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.968E-01 |
| Bi-213 | 8.129E-19 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.467E-16 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.467E-16 |
| Bi-214 | 4.955E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.723E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.723E+01 |
| Co-60 | 1.591E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.744E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.744E-01 |
| Cs-137 | 5.552E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.051E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.051E+00 |
| Eu-152 | 6.209E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.412E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.412E+00 |
| Eu-154 | 1.067E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.861E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.861E+00 |
| Fr-223 | 1.938E-19 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.065E-16 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.065E-16 |
| Gd-152 | 1.141E-17 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.269E-15 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.269E-15 |
| H-3 | 4.409E+03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.252E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.252E+01 |
| Nd-144 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Np-237 | 2.199E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.209E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.209E-05 |
| Pa-231 | 1.342E-15 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.374E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.374E-13 |
| Pa-233 | 1.965E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.080E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.080E-05 |
| Pb-209 | 8.113E-19 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.459E-16 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.459E-16 |
| Pb-210 | 1.502E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.252E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.252E-01 |
| Pb-211 | 9.898E-18 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.439E-15 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.439E-15 |
| Pb-214 | 4.955E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.723E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.723E+01 |
| Po-210 | 7.698E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.231E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.231E-01 |
| Pu-239 | 1.302E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.155E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.155E+01 |
| Ra-223 | 9.901E-18 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.441E-15 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.441E-15 |
| Ra-225 | 9.295E-19 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.108E-16 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.108E-16 |
| Ra-226 | 5.014E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.755E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.755E+01 |
| Rn-222 | 4.956E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.723E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.723E+01 |
| Sm-148 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Sr-90 | 1.616E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.879E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.879E+00 |
| Th-227 | 1.120E-17 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.157E-15 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.157E-15 |
| Th-229 | 1.119E-18 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.150E-16 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.150E-16 |
| Th-231 | 1.274E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.004E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.004E-08 |
| U-233 | 3.879E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.132E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.132E-11 |
| U-235 | 1.280E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.033E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.033E-08 |
| U-235m | 1.301E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.151E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.151E+01 |
| Y-90 | 1.616E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.882E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.882E+00 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 1.000E+00 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 4.824E-19 | 0.0000 | 8.932E-21 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.668E-20 | 0.0000 |
| Ac-227 | 5.345E-21 | 0.0000 | 3.781E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.409E-19 | 0.0000 |
| Am-241 | 5.310E-07 | 0.0037 | 6.637E-08 | 0.0005 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.291E-07 | 0.0009 |
| Bi-210 | 1.494E-08 | 0.0001 | 2.362E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.714E-09 | 0.0000 |
| Bi-213 | 2.451E-18 | 0.0000 | 2.314E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.233E-22 | 0.0000 |
| Bi-214 | 1.083E-04 | 0.7543 | 4.420E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.079E-10 | 0.0000 |
| Co-60 | 1.521E-06 | 0.0106 | 1.192E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.453E-10 | 0.0000 |
| Cs-137 | 3.146E-06 | 0.0219 | 1.353E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.471E-09 | 0.0000 |
| Eu-152 | 5.288E-06 | 0.0368 | 1.816E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.343E-10 | 0.0000 |
| Eu-154 | 7.268E-06 | 0.0506 | 2.478E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.363E-10 | 0.0000 |
| Fr-223 | 4.925E-20 | 0.0000 | 1.420E-24 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.937E-22 | 0.0000 |
| Gd-152 | 0.000E+00 | 0.0000 | 3.199E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.433E-23 | 0.0000 |
| H-3 | 0.000E+00 | 0.0000 | 2.310E-09 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.114E-12 | 0.0000 |
| Nd-144 | 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 |
| Np-237 | 5.379E-12 | 0.0000 | 2.736E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.346E-13 | 0.0000 |
| Pa-231 | 1.696E-17 | 0.0000 | 9.738E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.585E-18 | 0.0000 |
| Pa-233 | 7.951E-11 | 0.0000 | 1.448E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.664E-14 | 0.0000 |
| Pb-209 | 1.758E-21 | 0.0000 | 6.501E-26 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.988E-23 | 0.0000 |
| Pb-210 | 8.571E-09 | 0.0001 | 8.374E-09 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.410E-07 | 0.0024 |
| Pb-211 | 1.281E-17 | 0.0000 | 1.005E-22 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.957E-22 | 0.0000 |
| Pb-214 | 1.480E-05 | 0.1031 | 5.696E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.796E-10 | 0.0000 |
| Po-210 | 2.328E-10 | 0.0000 | 7.249E-09 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.190E-07 | 0.0043 |
| Pu-239 | 8.594E-09 | 0.0001 | 2.164E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.735E-07 | 0.0026 |
| Ra-223 | 1.801E-17 | 0.0000 | 7.277E-20 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.637E-19 | 0.0000 |
| Ra-225 | 2.095E-20 | 0.0000 | 8.225E-21 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.652E-20 | 0.0000 |
| Ra-226 | 3.775E-07 | 0.0026 | 4.061E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.076E-07 | 0.0028 |
| Rn-222 | 2.484E-08 | 0.0002 | 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 |
| Sm-148 | 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 | 1.624E-09 | 0.0000 | 1.367E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.215E-08 | 0.0001 |
| Th-227 | 1.151E-17 | 0.0000 | 8.652E-20 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.549E-20 | 0.0000 |
| Th-229 | 7.468E-19 | 0.0000 | 5.531E-20 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.056E-20 | 0.0000 |
| Th-231 | 1.623E-14 | 0.0000 | 8.922E-20 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.049E-16 | 0.0000 |
| U-233 | 3.174E-18 | 0.0000 | 1.204E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.267E-17 | 0.0000 |
| U-235 | 3.427E-13 | 0.0000 | 1.486E-15 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.080E-15 | 0.0000 |
| U-235m | 0.000E+00 | 0.0000 | 7.280E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.275E-14 | 0.0000 |
| Y-90 | 6.305E-08 | 0.0004 | 2.699E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.671E-09 | 0.0000 |
| Total | 1.414E-04 | 0.9844 | 3.418E-07 | 0.0024 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.895E-06 | 0.0132 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 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 | 5.380E-19 | 0.0000 |
| Ac-227 | 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 | 7.243E-19 | 0.0000 |
| 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 | 7.265E-07 | 0.0051 |
| Bi-210 | 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 | 1.889E-08 | 0.0001 |
| Bi-213 | 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 | 2.451E-18 | 0.0000 |
| Bi-214 | 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 | 1.083E-04 | 0.7543 |
| 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 | 1.521E-06 | 0.0106 |
| 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 | 3.148E-06 | 0.0219 |
| Eu-152 | 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 | 5.289E-06 | 0.0368 |
| Eu-154 | 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 | 7.269E-06 | 0.0506 |
| Fr-223 | 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 | 4.944E-20 | 0.0000 |
| Gd-152 | 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 | 1.063E-22 | 0.0000 |
| H-3 | 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 | 2.311E-09 | 0.0000 |
| Nd-144 | 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 |
| Np-237 | 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 | 6.087E-12 | 0.0000 |
| Pa-231 | 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 | 1.951E-17 | 0.0000 |
| Pa-233 | 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 | 7.956E-11 | 0.0000 |
| Pb-209 | 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 | 1.818E-21 | 0.0000 |
| Pb-210 | 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 | 3.580E-07 | 0.0025 |
| Pb-211 | 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 | 1.281E-17 | 0.0000 |
| Pb-214 | 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 | 1.480E-05 | 0.1031 |
| Po-210 | 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 | 6.265E-07 | 0.0044 |
| Pu-239 | 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 | 5.985E-07 | 0.0042 |
| Ra-223 | 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 | 1.855E-17 | 0.0000 |
| Ra-225 | 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 | 5.569E-20 | 0.0000 |
| Ra-226 | 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 | 8.257E-07 | 0.0057 |
| Rn-222 | 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 | 2.484E-08 | 0.0002 |
| Sm-148 | 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 | 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 | 1.391E-08 | 0.0001 |
| Th-227 | 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 | 1.170E-17 | 0.0000 |
| Th-229 | 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 | 8.526E-19 | 0.0000 |
| Th-231 | 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 | 1.634E-14 | 0.0000 |
| U-233 | 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 | 3.789E-17 | 0.0000 |
| U-235 | 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 | 3.473E-13 | 0.0000 |
| U-235m | 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 | 2.275E-14 | 0.0000 |
| Y-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 | 6.773E-08 | 0.0005 |
| 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 | 1.436E-04 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+00 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Am-241 | 5.311E-07 | 0.0037 | 6.637E-08 | 0.0005 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.291E-07 | 0.0009 |
| Co-60 | 1.521E-06 | 0.0106 | 1.192E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.453E-10 | 0.0000 |
| Cs-137 | 3.146E-06 | 0.0219 | 1.353E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.471E-09 | 0.0000 |
| Eu-152 | 5.288E-06 | 0.0368 | 1.816E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.343E-10 | 0.0000 |
| Eu-154 | 7.268E-06 | 0.0506 | 2.478E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.363E-10 | 0.0000 |
| H-3 | 0.000E+00 | 0.0000 | 2.310E-09 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.114E-12 | 0.0000 |
| Pu-239 | 8.594E-09 | 0.0001 | 2.164E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.735E-07 | 0.0026 |
| Ra-226 | 1.236E-04 | 0.8603 | 5.657E-08 | 0.0004 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.372E-06 | 0.0096 |
| Sr-90 | 6.468E-08 | 0.0005 | 1.394E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.682E-08 | 0.0001 |
| Total | 1.414E-04 | 0.9844 | 3.418E-07 | 0.0024 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.895E-06 | 0.0132 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | 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 | 0.0000 | 7.265E-07 | 0.0051 |
| 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 | 1.521E-06 | 0.0106 |
| 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 | 3.148E-06 | 0.0219 |
| Eu-152 | 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 | 5.289E-06 | 0.0368 |
| Eu-154 | 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 | 7.269E-06 | 0.0506 |
| H-3 | 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 | 2.311E-09 | 0.0000 |
| Pu-239 | 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 | 5.985E-07 | 0.0042 |
| Ra-226 | 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 | 1.250E-04 | 0.8702 |
| 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 | 8.164E-08 | 0.0006 |
| 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 | 1.436E-04 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+00 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-225 | 3.294E-17 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.810E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.810E-14 |
| Ac-227 | 3.737E-16 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.054E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.054E-13 |
| Am-241 | 6.639E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.648E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.648E+01 |
| Bi-210 | 4.299E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.362E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.362E+00 |
| Bi-213 | 3.293E-17 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.810E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.810E-14 |
| Bi-214 | 4.928E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.708E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.708E+01 |
| Co-60 | 1.223E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.720E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.720E-01 |
| Cs-137 | 5.302E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.914E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.914E+00 |
| Eu-152 | 5.602E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.079E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.079E+00 |
| Eu-154 | 9.073E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.986E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.986E+00 |
| Fr-223 | 5.157E-18 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.834E-15 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.834E-15 |
| Gd-152 | 3.253E-17 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.788E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.788E-14 |
| H-3 | 1.736E+02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.930E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.930E-01 |
| Nd-144 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Np-237 | 6.529E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.588E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.588E-05 |
| Pa-231 | 1.209E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.645E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.645E-12 |
| Pa-233 | 6.298E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.461E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.461E-05 |
| Pb-209 | 3.291E-17 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.809E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.809E-14 |
| Pb-210 | 4.392E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.414E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.414E+00 |
| Pb-211 | 3.326E-16 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.828E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.828E-13 |
| Pb-214 | 4.927E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.708E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.708E+01 |
| Po-210 | 3.512E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.930E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.930E+00 |
| Pu-239 | 1.302E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.154E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.154E+01 |
| Ra-223 | 3.326E-16 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.828E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.828E-13 |
| Ra-225 | 3.433E-17 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.887E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.887E-14 |
| Ra-226 | 4.986E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.740E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.740E+01 |
| Rn-222 | 4.928E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.708E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.708E+01 |
| Sm-148 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.723E-30 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.723E-30 |
| Sr-90 | 1.523E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.369E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.369E+00 |
| Th-227 | 3.429E-16 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.885E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.885E-13 |
| Th-229 | 3.646E-17 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.004E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.004E-14 |
| Th-231 | 3.821E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.100E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.100E-07 |
| U-233 | 3.980E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.187E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.187E-10 |
| U-235 | 3.827E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.103E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.103E-07 |
| U-235m | 1.301E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.150E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.150E+01 |
| Y-90 | 1.523E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.371E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.371E+00 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of Radon and its Decay Products as pCi/yr at t= 3.000E+00 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 6.171E-19 | 0.0000 | 1.143E-20 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.971E-20 | 0.0000 |
| Ac-227 | 6.751E-21 | 0.0000 | 4.775E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.306E-19 | 0.0000 |
| Am-241 | 5.206E-07 | 0.0037 | 6.508E-08 | 0.0005 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.266E-07 | 0.0009 |
| Bi-210 | 1.643E-08 | 0.0001 | 2.597E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.083E-09 | 0.0000 |
| Bi-213 | 3.135E-18 | 0.0000 | 2.960E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.578E-22 | 0.0000 |
| Bi-214 | 1.077E-04 | 0.7645 | 4.395E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.067E-10 | 0.0000 |
| Co-60 | 1.169E-06 | 0.0083 | 9.163E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.117E-10 | 0.0000 |
| Cs-137 | 3.004E-06 | 0.0213 | 1.292E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.359E-09 | 0.0000 |
| Eu-152 | 4.772E-06 | 0.0339 | 1.639E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.919E-10 | 0.0000 |
| Eu-154 | 6.183E-06 | 0.0439 | 2.108E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.965E-10 | 0.0000 |
| Fr-223 | 6.220E-20 | 0.0000 | 1.794E-24 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.447E-22 | 0.0000 |
| Gd-152 | 0.000E+00 | 0.0000 | 3.492E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.113E-23 | 0.0000 |
| H-3 | 0.000E+00 | 0.0000 | 9.090E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.384E-14 | 0.0000 |
| Nd-144 | 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 |
| Np-237 | 6.006E-12 | 0.0000 | 3.055E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.853E-13 | 0.0000 |
| Pa-231 | 2.037E-17 | 0.0000 | 1.170E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.904E-18 | 0.0000 |
| Pa-233 | 8.886E-11 | 0.0000 | 1.619E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.212E-14 | 0.0000 |
| Pb-209 | 2.248E-21 | 0.0000 | 8.315E-26 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.660E-23 | 0.0000 |
| Pb-210 | 9.421E-09 | 0.0001 | 9.204E-09 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.748E-07 | 0.0027 |
| Pb-211 | 1.620E-17 | 0.0000 | 1.271E-22 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.006E-21 | 0.0000 |
| Pb-214 | 1.472E-05 | 0.1045 | 5.665E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.775E-10 | 0.0000 |
| Po-210 | 2.571E-10 | 0.0000 | 8.005E-09 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.835E-07 | 0.0049 |
| Pu-239 | 8.592E-09 | 0.0001 | 2.163E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.734E-07 | 0.0027 |
| Ra-223 | 2.277E-17 | 0.0000 | 9.200E-20 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.863E-19 | 0.0000 |
| Ra-225 | 2.678E-20 | 0.0000 | 1.052E-20 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.392E-20 | 0.0000 |
| Ra-226 | 3.754E-07 | 0.0027 | 4.038E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.053E-07 | 0.0029 |
| Rn-222 | 2.470E-08 | 0.0002 | 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 |
| Sm-148 | 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 | 1.531E-09 | 0.0000 | 1.288E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.145E-08 | 0.0001 |
| Th-227 | 1.455E-17 | 0.0000 | 1.093E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.207E-19 | 0.0000 |
| Th-229 | 9.545E-19 | 0.0000 | 7.070E-20 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.462E-20 | 0.0000 |
| Th-231 | 1.822E-14 | 0.0000 | 1.001E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.178E-16 | 0.0000 |
| U-233 | 3.802E-18 | 0.0000 | 1.443E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.716E-17 | 0.0000 |
| U-235 | 3.846E-13 | 0.0000 | 1.667E-15 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.457E-15 | 0.0000 |
| U-235m | 0.000E+00 | 0.0000 | 7.278E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.274E-14 | 0.0000 |
| Y-90 | 5.943E-08 | 0.0004 | 2.544E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.403E-09 | 0.0000 |
| Total | 1.386E-04 | 0.9835 | 3.396E-07 | 0.0024 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.988E-06 | 0.0141 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 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 | 6.882E-19 | 0.0000 |
| Ac-227 | 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 | 9.149E-19 | 0.0000 |
| 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 | 7.123E-07 | 0.0051 |
| Bi-210 | 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 | 2.077E-08 | 0.0001 |
| Bi-213 | 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 | 3.135E-18 | 0.0000 |
| Bi-214 | 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 | 1.077E-04 | 0.7645 |
| 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 | 1.169E-06 | 0.0083 |
| 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 | 3.006E-06 | 0.0213 |
| Eu-152 | 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 | 4.772E-06 | 0.0339 |
| Eu-154 | 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 | 6.184E-06 | 0.0439 |
| Fr-223 | 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 | 6.245E-20 | 0.0000 |
| Gd-152 | 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 | 1.160E-22 | 0.0000 |
| H-3 | 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 | 9.095E-11 | 0.0000 |
| Nd-144 | 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 |
| Np-237 | 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 | 6.797E-12 | 0.0000 |
| Pa-231 | 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 | 2.344E-17 | 0.0000 |
| Pa-233 | 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 | 8.891E-11 | 0.0000 |
| Pb-209 | 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 | 2.325E-21 | 0.0000 |
| Pb-210 | 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 | 3.935E-07 | 0.0028 |
| Pb-211 | 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 | 1.620E-17 | 0.0000 |
| Pb-214 | 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 | 1.472E-05 | 0.1045 |
| Po-210 | 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 | 6.918E-07 | 0.0049 |
| Pu-239 | 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 | 5.984E-07 | 0.0042 |
| Ra-223 | 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 | 2.345E-17 | 0.0000 |
| Ra-225 | 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 | 7.122E-20 | 0.0000 |
| Ra-226 | 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 | 8.211E-07 | 0.0058 |
| Rn-222 | 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 | 2.470E-08 | 0.0002 |
| Sm-148 | 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 | 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 | 1.311E-08 | 0.0001 |
| Th-227 | 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 | 1.478E-17 | 0.0000 |
| Th-229 | 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 | 1.090E-18 | 0.0000 |
| Th-231 | 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 | 1.833E-14 | 0.0000 |
| U-233 | 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 | 4.539E-17 | 0.0000 |
| U-235 | 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 | 3.897E-13 | 0.0000 |
| U-235m | 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 | 2.275E-14 | 0.0000 |
| Y-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 | 6.384E-08 | 0.0005 |
| 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 | 1.409E-04 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 3.000E+00 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Am-241 | 5.207E-07 | 0.0037 | 6.508E-08 | 0.0005 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.266E-07 | 0.0009 |
| Co-60 | 1.169E-06 | 0.0083 | 9.163E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.117E-10 | 0.0000 |
| Cs-137 | 3.004E-06 | 0.0213 | 1.292E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.359E-09 | 0.0000 |
| Eu-152 | 4.772E-06 | 0.0339 | 1.639E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.919E-10 | 0.0000 |
| Eu-154 | 6.183E-06 | 0.0439 | 2.108E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.965E-10 | 0.0000 |
| H-3 | 0.000E+00 | 0.0000 | 9.090E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.384E-14 | 0.0000 |
| Pu-239 | 8.592E-09 | 0.0001 | 2.163E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.734E-07 | 0.0027 |
| Ra-226 | 1.229E-04 | 0.8719 | 5.795E-08 | 0.0004 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.468E-06 | 0.0104 |
| Sr-90 | 6.096E-08 | 0.0004 | 1.314E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.585E-08 | 0.0001 |
| Total | 1.386E-04 | 0.9835 | 3.396E-07 | 0.0024 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.988E-06 | 0.0141 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | 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 | 0.0000 | 7.124E-07 | 0.0051 |
| 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 | 1.169E-06 | 0.0083 |
| 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 | 3.006E-06 | 0.0213 |
| Eu-152 | 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 | 4.772E-06 | 0.0339 |
| Eu-154 | 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 | 6.184E-06 | 0.0439 |
| H-3 | 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 | 9.095E-11 | 0.0000 |
| Pu-239 | 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 | 5.984E-07 | 0.0042 |
| Ra-226 | 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 | 1.244E-04 | 0.8828 |
| 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 | 7.695E-08 | 0.0005 |
| 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 | 1.409E-04 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+01 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-225 | 1.376E-15 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.560E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.560E-13 |
| Ac-227 | 1.282E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.046E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.046E-12 |
| Am-241 | 6.196E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.405E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.405E+01 |
| Bi-210 | 1.279E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.031E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.031E+00 |
| Bi-213 | 1.376E-15 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.559E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.559E-13 |
| Bi-214 | 4.832E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.655E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.655E+01 |
| Co-60 | 4.865E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.674E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.674E-01 |
| Cs-137 | 4.514E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.480E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.480E+00 |
| Eu-152 | 3.909E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.148E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.148E+00 |
| Eu-154 | 5.151E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.831E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.831E+00 |
| Fr-223 | 1.769E-16 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.723E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.723E-14 |
| Gd-152 | 9.141E-17 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.024E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.024E-14 |
| H-3 | 2.054E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.831E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.831E-06 |
| Nd-144 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Np-237 | 2.098E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.153E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.153E-04 |
| Pa-231 | 1.325E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.282E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.282E-11 |
| Pa-233 | 2.076E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.141E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.141E-04 |
| Pb-209 | 1.375E-15 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.558E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.558E-13 |
| Pb-210 | 1.301E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.151E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.151E+00 |
| Pb-211 | 1.239E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.809E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.809E-12 |
| Pb-214 | 4.831E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.655E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.655E+01 |
| Po-210 | 1.210E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.648E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.648E+00 |
| Pu-239 | 1.301E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.148E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.148E+01 |
| Ra-223 | 1.239E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.809E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.809E-12 |
| Ra-225 | 1.393E-15 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.653E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.653E-13 |
| Ra-226 | 4.889E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.687E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.687E+01 |
| Rn-222 | 4.832E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.655E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.655E+01 |
| Sm-148 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.698E-29 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.698E-29 |
| Sr-90 | 1.238E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.803E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.803E+00 |
| Th-227 | 1.238E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.803E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.803E-12 |
| Th-229 | 1.418E-15 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.790E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.790E-13 |
| Th-231 | 1.260E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.924E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.924E-07 |
| U-233 | 4.500E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.473E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.473E-09 |
| U-235 | 1.260E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.926E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.926E-07 |
| U-235m | 1.300E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.144E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.144E+01 |
| Y-90 | 1.238E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.805E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.805E+00 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 1.000E+01 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 1.308E-18 | 0.0000 | 2.421E-20 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.265E-19 | 0.0000 |
| Ac-227 | 1.370E-20 | 0.0000 | 9.694E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.741E-19 | 0.0000 |
| Am-241 | 4.859E-07 | 0.0036 | 6.074E-08 | 0.0005 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.182E-07 | 0.0009 |
| Bi-210 | 2.082E-08 | 0.0002 | 3.290E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.174E-09 | 0.0000 |
| Bi-213 | 6.643E-18 | 0.0000 | 6.272E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.343E-22 | 0.0000 |
| Bi-214 | 1.056E-04 | 0.7913 | 4.310E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.027E-10 | 0.0000 |
| Co-60 | 4.650E-07 | 0.0035 | 3.646E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.443E-11 | 0.0000 |
| Cs-137 | 2.557E-06 | 0.0192 | 1.100E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.008E-09 | 0.0000 |
| Eu-152 | 3.330E-06 | 0.0249 | 1.144E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.734E-10 | 0.0000 |
| Eu-154 | 3.510E-06 | 0.0263 | 1.197E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.522E-10 | 0.0000 |
| Fr-223 | 1.263E-19 | 0.0000 | 3.642E-24 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.967E-22 | 0.0000 |
| Gd-152 | 0.000E+00 | 0.0000 | 4.307E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.001E-22 | 0.0000 |
| H-3 | 0.000E+00 | 0.0000 | 1.071E-15 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.167E-19 | 0.0000 |
| Nd-144 | 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 |
| Np-237 | 8.100E-12 | 0.0000 | 4.120E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.544E-13 | 0.0000 |
| Pa-231 | 3.530E-17 | 0.0000 | 2.027E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.299E-18 | 0.0000 |
| Pa-233 | 1.200E-10 | 0.0000 | 2.187E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.041E-14 | 0.0000 |
| Pb-209 | 4.764E-21 | 0.0000 | 1.762E-25 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.623E-22 | 0.0000 |
| Pb-210 | 1.193E-08 | 0.0001 | 1.166E-08 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.748E-07 | 0.0036 |
| Pb-211 | 3.296E-17 | 0.0000 | 2.587E-22 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.047E-21 | 0.0000 |
| Pb-214 | 1.443E-05 | 0.1081 | 5.554E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.702E-10 | 0.0000 |
| Po-210 | 3.290E-10 | 0.0000 | 1.024E-08 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.746E-07 | 0.0066 |
| Pu-239 | 8.585E-09 | 0.0001 | 2.162E-07 | 0.0016 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.732E-07 | 0.0028 |
| Ra-223 | 4.635E-17 | 0.0000 | 1.872E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.193E-18 | 0.0000 |
| Ra-225 | 5.671E-20 | 0.0000 | 2.227E-20 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.181E-20 | 0.0000 |
| Ra-226 | 3.681E-07 | 0.0028 | 3.959E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.975E-07 | 0.0030 |
| Rn-222 | 2.422E-08 | 0.0002 | 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 |
| Sm-148 | 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 | 1.245E-09 | 0.0000 | 1.047E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.308E-09 | 0.0001 |
| Th-227 | 2.959E-17 | 0.0000 | 2.223E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.454E-19 | 0.0000 |
| Th-229 | 2.018E-18 | 0.0000 | 1.495E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.366E-19 | 0.0000 |
| Th-231 | 2.505E-14 | 0.0000 | 1.377E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.620E-16 | 0.0000 |
| U-233 | 6.519E-18 | 0.0000 | 2.474E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.656E-17 | 0.0000 |
| U-235 | 5.289E-13 | 0.0000 | 2.293E-15 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.754E-15 | 0.0000 |
| U-235m | 0.000E+00 | 0.0000 | 7.273E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.272E-14 | 0.0000 |
| Y-90 | 4.831E-08 | 0.0004 | 2.068E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.579E-09 | 0.0000 |
| Total | 1.309E-04 | 0.9805 | 3.390E-07 | 0.0025 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.260E-06 | 0.0169 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 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 | 1.458E-18 | 0.0000 |
| Ac-227 | 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 | 1.857E-18 | 0.0000 |
| 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 | 6.648E-07 | 0.0050 |
| Bi-210 | 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 | 2.632E-08 | 0.0002 |
| Bi-213 | 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 | 6.644E-18 | 0.0000 |
| Bi-214 | 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 | 1.056E-04 | 0.7913 |
| 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 | 4.650E-07 | 0.0035 |
| 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 | 2.559E-06 | 0.0192 |
| Eu-152 | 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 | 3.330E-06 | 0.0249 |
| Eu-154 | 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 | 3.511E-06 | 0.0263 |
| Fr-223 | 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 | 1.268E-19 | 0.0000 |
| Gd-152 | 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 | 1.431E-22 | 0.0000 |
| H-3 | 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 | 1.072E-15 | 0.0000 |
| Nd-144 | 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 |
| Np-237 | 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 | 9.166E-12 | 0.0000 |
| Pa-231 | 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 | 4.062E-17 | 0.0000 |
| Pa-233 | 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 | 1.201E-10 | 0.0000 |
| Pb-209 | 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 | 4.927E-21 | 0.0000 |
| Pb-210 | 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 | 4.984E-07 | 0.0037 |
| Pb-211 | 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 | 3.297E-17 | 0.0000 |
| Pb-214 | 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 | 1.443E-05 | 0.1081 |
| Po-210 | 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 | 8.852E-07 | 0.0066 |
| Pu-239 | 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 | 5.979E-07 | 0.0045 |
| Ra-223 | 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 | 4.773E-17 | 0.0000 |
| Ra-225 | 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 | 1.508E-19 | 0.0000 |
| Ra-226 | 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 | 8.051E-07 | 0.0060 |
| Rn-222 | 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 | 2.422E-08 | 0.0002 |
| Sm-148 | 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 | 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 | 1.066E-08 | 0.0001 |
| Th-227 | 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 | 3.006E-17 | 0.0000 |
| Th-229 | 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 | 2.304E-18 | 0.0000 |
| Th-231 | 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 | 2.522E-14 | 0.0000 |
| U-233 | 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 | 7.782E-17 | 0.0000 |
| U-235 | 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 | 5.359E-13 | 0.0000 |
| U-235m | 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 | 2.273E-14 | 0.0000 |
| Y-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 | 5.189E-08 | 0.0004 |
| 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 | 1.335E-04 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+01 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Am-241 | 4.861E-07 | 0.0036 | 6.074E-08 | 0.0005 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.182E-07 | 0.0009 |
| Co-60 | 4.650E-07 | 0.0035 | 3.646E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.443E-11 | 0.0000 |
| Cs-137 | 2.557E-06 | 0.0192 | 1.100E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.008E-09 | 0.0000 |
| Eu-152 | 3.330E-06 | 0.0249 | 1.144E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.734E-10 | 0.0000 |
| Eu-154 | 3.510E-06 | 0.0263 | 1.197E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.522E-10 | 0.0000 |
| H-3 | 0.000E+00 | 0.0000 | 1.071E-15 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.167E-19 | 0.0000 |
| Pu-239 | 8.586E-09 | 0.0001 | 2.162E-07 | 0.0016 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.732E-07 | 0.0028 |
| Ra-226 | 1.205E-04 | 0.9026 | 6.192E-08 | 0.0005 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.753E-06 | 0.0131 |
| Sr-90 | 4.956E-08 | 0.0004 | 1.068E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.289E-08 | 0.0001 |
| Total | 1.309E-04 | 0.9805 | 3.390E-07 | 0.0025 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.260E-06 | 0.0169 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | 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 | 0.0000 | 6.650E-07 | 0.0050 |
| 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 | 4.650E-07 | 0.0035 |
| 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 | 2.559E-06 | 0.0192 |
| Eu-152 | 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 | 3.330E-06 | 0.0249 |
| Eu-154 | 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 | 3.511E-06 | 0.0263 |
| H-3 | 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 | 1.072E-15 | 0.0000 |
| Pu-239 | 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 | 5.979E-07 | 0.0045 |
| Ra-226 | 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 | 1.223E-04 | 0.9162 |
| 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 | 6.255E-08 | 0.0005 |
| 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 | 1.335E-04 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+01 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-225 | 3.614E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.986E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.986E-11 |
| Ac-227 | 2.797E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.537E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.537E-10 |
| Am-241 | 5.089E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.796E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.796E+01 |
| Bi-210 | 2.774E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.524E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.524E+01 |
| Bi-213 | 3.614E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.986E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.986E-11 |
| Bi-214 | 4.568E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.510E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.510E+01 |
| Co-60 | 3.495E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.921E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.921E-02 |
| Cs-137 | 2.849E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.565E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.565E+00 |
| Eu-152 | 1.398E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.684E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.684E-01 |
| Eu-154 | 1.022E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.617E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.617E-01 |
| Fr-223 | 3.860E-15 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.121E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.121E-12 |
| Gd-152 | 1.783E-16 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.798E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.798E-14 |
| H-3 | 1.385E-17 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.934E-20 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.934E-20 |
| Nd-144 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Np-237 | 5.684E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.124E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.124E-04 |
| Pa-231 | 1.141E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.269E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.269E-10 |
| Pa-233 | 5.665E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.113E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.113E-04 |
| Pb-209 | 3.614E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.986E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.986E-11 |
| Pb-210 | 2.818E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.548E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.548E+01 |
| Pb-211 | 2.767E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.521E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.521E-10 |
| Pb-214 | 4.567E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.510E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.510E+01 |
| Po-210 | 2.722E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.496E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.496E+01 |
| Pu-239 | 1.298E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.132E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.132E+01 |
| Ra-223 | 2.767E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.521E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.521E-10 |
| Ra-225 | 3.629E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.995E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.995E-11 |
| Ra-226 | 4.622E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.540E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.540E+01 |
| Rn-222 | 4.568E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.510E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.510E+01 |
| Sm-148 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.814E-28 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.814E-28 |
| Sr-90 | 6.849E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.764E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.764E+00 |
| Th-227 | 2.740E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.506E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.506E-10 |
| Th-229 | 3.651E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.006E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.006E-11 |
| Th-231 | 3.654E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.008E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.008E-06 |
| U-233 | 3.752E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.062E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.062E-08 |
| U-235 | 3.655E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.009E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.009E-06 |
| U-235m | 1.297E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.128E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.128E+01 |
| Y-90 | 6.852E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.765E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.765E+00 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+01 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 5.920E-18 | 0.0000 | 1.096E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.728E-19 | 0.0000 |
| Ac-227 | 5.507E-20 | 0.0000 | 3.896E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.513E-18 | 0.0000 |
| Am-241 | 3.990E-07 | 0.0033 | 4.988E-08 | 0.0004 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.704E-08 | 0.0008 |
| Bi-210 | 2.827E-08 | 0.0002 | 4.468E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.027E-09 | 0.0001 |
| Bi-213 | 3.008E-17 | 0.0000 | 2.839E-22 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.514E-21 | 0.0000 |
| Bi-214 | 9.986E-05 | 0.8258 | 4.074E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.916E-10 | 0.0000 |
| Co-60 | 3.341E-08 | 0.0003 | 2.619E-14 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.192E-12 | 0.0000 |
| Cs-137 | 1.614E-06 | 0.0133 | 6.943E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.268E-09 | 0.0000 |
| Eu-152 | 1.191E-06 | 0.0098 | 4.090E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.781E-11 | 0.0000 |
| Eu-154 | 6.966E-07 | 0.0058 | 2.375E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.973E-11 | 0.0000 |
| Fr-223 | 5.075E-19 | 0.0000 | 1.464E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.996E-21 | 0.0000 |
| Gd-152 | 0.000E+00 | 0.0000 | 5.504E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.279E-22 | 0.0000 |
| H-3 | 0.000E+00 | 0.0000 | 6.490E-30 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 |
| Nd-144 | 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 |
| Np-237 | 1.328E-11 | 0.0000 | 6.757E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.073E-12 | 0.0000 |
| Pa-231 | 1.018E-16 | 0.0000 | 5.845E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.513E-18 | 0.0000 |
| Pa-233 | 1.973E-10 | 0.0000 | 3.593E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.157E-13 | 0.0000 |
| Pb-209 | 2.157E-20 | 0.0000 | 7.978E-25 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.349E-22 | 0.0000 |
| Pb-210 | 1.620E-08 | 0.0001 | 1.583E-08 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.445E-07 | 0.0053 |
| Pb-211 | 1.330E-16 | 0.0000 | 1.044E-21 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.264E-21 | 0.0000 |
| Pb-214 | 1.365E-05 | 0.1128 | 5.251E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.500E-10 | 0.0000 |
| Po-210 | 4.512E-10 | 0.0000 | 1.405E-08 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.200E-06 | 0.0099 |
| Pu-239 | 8.566E-09 | 0.0001 | 2.157E-07 | 0.0018 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.723E-07 | 0.0031 |
| Ra-223 | 1.871E-16 | 0.0000 | 7.558E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.817E-18 | 0.0000 |
| Ra-225 | 2.563E-19 | 0.0000 | 1.007E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.246E-19 | 0.0000 |
| Ra-226 | 3.480E-07 | 0.0029 | 3.743E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.758E-07 | 0.0031 |
| Rn-222 | 2.289E-08 | 0.0002 | 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 |
| Sm-148 | 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 | 6.886E-10 | 0.0000 | 5.795E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.150E-09 | 0.0000 |
| Th-227 | 1.192E-16 | 0.0000 | 8.959E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.888E-19 | 0.0000 |
| Th-229 | 9.104E-18 | 0.0000 | 6.743E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.163E-19 | 0.0000 |
| Th-231 | 4.370E-14 | 0.0000 | 2.402E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.826E-16 | 0.0000 |
| U-233 | 1.812E-17 | 0.0000 | 6.875E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.294E-16 | 0.0000 |
| U-235 | 9.225E-13 | 0.0000 | 4.000E-15 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.292E-15 | 0.0000 |
| U-235m | 0.000E+00 | 0.0000 | 7.256E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.267E-14 | 0.0000 |
| Y-90 | 2.673E-08 | 0.0002 | 1.144E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.980E-09 | 0.0000 |
| Total | 1.179E-04 | 0.9749 | 3.335E-07 | 0.0028 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.705E-06 | 0.0224 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 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 | 6.602E-18 | 0.0000 |
| Ac-227 | 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 | 7.464E-18 | 0.0000 |
| 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 | 5.460E-07 | 0.0045 |
| Bi-210 | 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 | 3.574E-08 | 0.0003 |
| Bi-213 | 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 | 3.008E-17 | 0.0000 |
| Bi-214 | 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 | 9.986E-05 | 0.8258 |
| 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 | 3.341E-08 | 0.0003 |
| 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 | 1.615E-06 | 0.0134 |
| Eu-152 | 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 | 1.191E-06 | 0.0098 |
| Eu-154 | 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 | 6.967E-07 | 0.0058 |
| Fr-223 | 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 | 5.095E-19 | 0.0000 |
| Gd-152 | 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 | 1.829E-22 | 0.0000 |
| H-3 | 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 | 6.490E-30 | 0.0000 |
| Nd-144 | 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 |
| Np-237 | 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 | 1.503E-11 | 0.0000 |
| Pa-231 | 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 | 1.171E-16 | 0.0000 |
| Pa-233 | 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 | 1.974E-10 | 0.0000 |
| Pb-209 | 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 | 2.231E-20 | 0.0000 |
| Pb-210 | 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 | 6.766E-07 | 0.0056 |
| Pb-211 | 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 | 1.331E-16 | 0.0000 |
| Pb-214 | 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 | 1.365E-05 | 0.1128 |
| Po-210 | 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 | 1.214E-06 | 0.0100 |
| Pu-239 | 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 | 5.966E-07 | 0.0049 |
| Ra-223 | 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 | 1.927E-16 | 0.0000 |
| Ra-225 | 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 | 6.816E-19 | 0.0000 |
| Ra-226 | 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 | 7.612E-07 | 0.0063 |
| Rn-222 | 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 | 2.289E-08 | 0.0002 |
| Sm-148 | 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 | 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 | 5.897E-09 | 0.0000 |
| Th-227 | 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 | 1.211E-16 | 0.0000 |
| Th-229 | 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 | 1.039E-17 | 0.0000 |
| Th-231 | 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 | 4.399E-14 | 0.0000 |
| U-233 | 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 | 2.163E-16 | 0.0000 |
| U-235 | 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 | 9.348E-13 | 0.0000 |
| U-235m | 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 | 2.268E-14 | 0.0000 |
| Y-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 | 2.871E-08 | 0.0002 |
| 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 | 1.209E-04 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 3.000E+01 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Am-241 | 3.993E-07 | 0.0033 | 4.988E-08 | 0.0004 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.704E-08 | 0.0008 |
| Co-60 | 3.341E-08 | 0.0003 | 2.619E-14 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.192E-12 | 0.0000 |
| Cs-137 | 1.614E-06 | 0.0133 | 6.943E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.268E-09 | 0.0000 |
| Eu-152 | 1.191E-06 | 0.0098 | 4.090E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.781E-11 | 0.0000 |
| Eu-154 | 6.966E-07 | 0.0058 | 2.375E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.973E-11 | 0.0000 |
| H-3 | 0.000E+00 | 0.0000 | 6.490E-30 | 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 |
| Pu-239 | 8.567E-09 | 0.0001 | 2.157E-07 | 0.0018 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.723E-07 | 0.0031 |
| Ra-226 | 1.139E-04 | 0.9420 | 6.785E-08 | 0.0006 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.227E-06 | 0.0184 |
| Sr-90 | 2.742E-08 | 0.0002 | 5.910E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.131E-09 | 0.0001 |
| Total | 1.179E-04 | 0.9749 | 3.335E-07 | 0.0028 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.705E-06 | 0.0224 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | 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 | 0.0000 | 5.462E-07 | 0.0045 |
| 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 | 3.341E-08 | 0.0003 |
| 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 | 1.615E-06 | 0.0134 |
| Eu-152 | 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 | 1.191E-06 | 0.0098 |
| Eu-154 | 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 | 6.967E-07 | 0.0058 |
| H-3 | 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 | 6.490E-30 | 0.0000 |
| Pu-239 | 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 | 5.966E-07 | 0.0049 |
| Ra-226 | 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 | 1.162E-04 | 0.9610 |
| 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 | 3.461E-08 | 0.0003 |
| 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 | 1.209E-04 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 8.890E+01 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-225 | 7.846E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.312E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.312E-10 |
| Ac-227 | 4.259E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.340E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.340E-09 |
| Am-241 | 2.849E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.566E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.566E+01 |
| Bi-210 | 3.685E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.025E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.025E+01 |
| Bi-213 | 7.846E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.312E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.312E-10 |
| Bi-214 | 3.872E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.128E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.128E+01 |
| Co-60 | 1.498E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.234E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.234E-06 |
| Cs-137 | 7.344E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.036E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.036E-01 |
| Eu-152 | 6.770E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.721E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.721E-02 |
| Eu-154 | 8.729E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.797E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.797E-03 |
| Fr-223 | 5.877E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.230E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.230E-11 |
| Gd-152 | 2.221E-16 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.221E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.221E-13 |
| H-3 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Nd-144 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Np-237 | 1.267E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.964E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.964E-04 |
| Pa-231 | 8.790E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.831E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.831E-09 |
| Pa-233 | 1.266E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.957E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.957E-04 |
| Pb-209 | 7.845E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.312E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.312E-10 |
| Pb-210 | 3.742E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.056E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.056E+01 |
| Pb-211 | 4.245E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.333E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.333E-09 |
| Pb-214 | 3.871E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.127E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.127E+01 |
| Po-210 | 3.654E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.008E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.008E+01 |
| Pu-239 | 1.289E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.085E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.085E+01 |
| Ra-223 | 4.245E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.333E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.333E-09 |
| Ra-225 | 7.858E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.319E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.319E-10 |
| Ra-226 | 3.917E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.153E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.153E+01 |
| Rn-222 | 3.872E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.128E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.128E+01 |
| Sm-148 | 1.547E-30 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.500E-28 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.500E-28 |
| Sr-90 | 1.199E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.587E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.587E-01 |
| Th-227 | 4.192E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.304E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.304E-09 |
| Th-229 | 7.874E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.327E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.327E-10 |
| Th-231 | 9.819E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.396E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.396E-06 |
| U-233 | 2.556E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.405E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.405E-07 |
| U-235 | 9.819E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.396E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.396E-06 |
| U-235m | 1.289E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.081E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.081E+01 |
| Y-90 | 1.199E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.589E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.589E-01 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 8.890E+01 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 8.890E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 5.610E-17 | 0.0000 | 1.039E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.428E-18 | 0.0000 |
| Ac-227 | 3.857E-19 | 0.0000 | 2.728E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.460E-17 | 0.0000 |
| Am-241 | 2.234E-07 | 0.0022 | 2.793E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.433E-08 | 0.0005 |
| Bi-210 | 3.128E-08 | 0.0003 | 4.945E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.776E-09 | 0.0001 |
| Bi-213 | 2.850E-16 | 0.0000 | 2.691E-21 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.434E-20 | 0.0000 |
| Bi-214 | 8.464E-05 | 0.8431 | 3.453E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.624E-10 | 0.0000 |
| Co-60 | 1.432E-11 | 0.0000 | 1.123E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.368E-15 | 0.0000 |
| Cs-137 | 4.161E-07 | 0.0041 | 1.790E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.268E-10 | 0.0000 |
| Eu-152 | 5.767E-08 | 0.0006 | 1.981E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.736E-12 | 0.0000 |
| Eu-154 | 5.949E-09 | 0.0001 | 2.028E-14 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.663E-13 | 0.0000 |
| Fr-223 | 3.553E-18 | 0.0000 | 1.025E-22 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.398E-20 | 0.0000 |
| Gd-152 | 0.000E+00 | 0.0000 | 6.078E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.412E-22 | 0.0000 |
| H-3 | 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 |
| Nd-144 | 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 |
| Np-237 | 2.333E-11 | 0.0000 | 1.187E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.885E-12 | 0.0000 |
| Pa-231 | 4.643E-16 | 0.0000 | 2.667E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.340E-17 | 0.0000 |
| Pa-233 | 3.469E-10 | 0.0000 | 6.319E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.035E-13 | 0.0000 |
| Pb-209 | 2.044E-19 | 0.0000 | 7.560E-24 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.964E-21 | 0.0000 |
| Pb-210 | 1.792E-08 | 0.0002 | 1.751E-08 | 0.0002 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.132E-07 | 0.0071 |
| Pb-211 | 9.353E-16 | 0.0000 | 7.341E-21 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.809E-20 | 0.0000 |
| Pb-214 | 1.157E-05 | 0.1152 | 4.451E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.966E-10 | 0.0000 |
| Po-210 | 5.020E-10 | 0.0000 | 1.563E-08 | 0.0002 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.335E-06 | 0.0133 |
| Pu-239 | 8.510E-09 | 0.0001 | 2.143E-07 | 0.0021 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.699E-07 | 0.0037 |
| Ra-223 | 1.315E-15 | 0.0000 | 5.313E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.386E-17 | 0.0000 |
| Ra-225 | 2.426E-18 | 0.0000 | 9.527E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.072E-18 | 0.0000 |
| Ra-226 | 2.950E-07 | 0.0029 | 3.173E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.185E-07 | 0.0032 |
| Rn-222 | 1.941E-08 | 0.0002 | 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 |
| Sm-148 | 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 | 1.205E-10 | 0.0000 | 1.014E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.013E-10 | 0.0000 |
| Th-227 | 8.370E-16 | 0.0000 | 6.289E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.941E-18 | 0.0000 |
| Th-229 | 8.598E-17 | 0.0000 | 6.369E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.821E-18 | 0.0000 |
| Th-231 | 9.171E-14 | 0.0000 | 5.040E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.929E-16 | 0.0000 |
| U-233 | 7.342E-17 | 0.0000 | 2.786E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.245E-16 | 0.0000 |
| U-235 | 1.936E-12 | 0.0000 | 8.393E-15 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.740E-14 | 0.0000 |
| U-235m | 0.000E+00 | 0.0000 | 7.209E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.252E-14 | 0.0000 |
| Y-90 | 4.678E-09 | 0.0000 | 2.002E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.466E-10 | 0.0000 |
| Total | 9.729E-05 | 0.9690 | 3.077E-07 | 0.0031 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.800E-06 | 0.0279 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 8.890E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 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 | 6.256E-17 | 0.0000 |
| Ac-227 | 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 | 5.227E-17 | 0.0000 |
| 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 | 3.057E-07 | 0.0030 |
| Bi-210 | 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 | 3.956E-08 | 0.0004 |
| Bi-213 | 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 | 2.850E-16 | 0.0000 |
| Bi-214 | 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 | 8.464E-05 | 0.8431 |
| 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 | 1.432E-11 | 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 | 4.164E-07 | 0.0041 |
| Eu-152 | 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 | 5.767E-08 | 0.0006 |
| Eu-154 | 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 | 5.949E-09 | 0.0001 |
| Fr-223 | 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 | 3.568E-18 | 0.0000 |
| Gd-152 | 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 | 2.020E-22 | 0.0000 |
| H-3 | 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 |
| Nd-144 | 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 |
| Np-237 | 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 | 2.640E-11 | 0.0000 |
| Pa-231 | 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 | 5.343E-16 | 0.0000 |
| Pa-233 | 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 | 3.471E-10 | 0.0000 |
| Pb-209 | 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 | 2.114E-19 | 0.0000 |
| Pb-210 | 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 | 7.486E-07 | 0.0075 |
| Pb-211 | 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 | 9.353E-16 | 0.0000 |
| Pb-214 | 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 | 1.157E-05 | 0.1152 |
| Po-210 | 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 | 1.351E-06 | 0.0135 |
| Pu-239 | 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 | 5.926E-07 | 0.0059 |
| Ra-223 | 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 | 1.354E-15 | 0.0000 |
| Ra-225 | 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 | 6.451E-18 | 0.0000 |
| Ra-226 | 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 | 6.452E-07 | 0.0064 |
| Rn-222 | 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 | 1.941E-08 | 0.0002 |
| Sm-148 | 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 | 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 | 1.032E-09 | 0.0000 |
| Th-227 | 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 | 8.503E-16 | 0.0000 |
| Th-229 | 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 | 9.817E-17 | 0.0000 |
| Th-231 | 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 | 9.230E-14 | 0.0000 |
| U-233 | 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 | 8.765E-16 | 0.0000 |
| U-235 | 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 | 1.961E-12 | 0.0000 |
| U-235m | 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 | 2.253E-14 | 0.0000 |
| Y-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 | 5.025E-09 | 0.0001 |
| 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 | 1.004E-04 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 8.890E+01 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 8.890E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Am-241 | 2.238E-07 | 0.0022 | 2.793E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.433E-08 | 0.0005 |
| Co-60 | 1.432E-11 | 0.0000 | 1.123E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.368E-15 | 0.0000 |
| Cs-137 | 4.161E-07 | 0.0041 | 1.790E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.268E-10 | 0.0000 |
| Eu-152 | 5.767E-08 | 0.0006 | 1.981E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.736E-12 | 0.0000 |
| Eu-154 | 5.949E-09 | 0.0001 | 2.028E-14 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.663E-13 | 0.0000 |
| H-3 | 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 |
| Pu-239 | 8.512E-09 | 0.0001 | 2.143E-07 | 0.0021 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.699E-07 | 0.0037 |
| Ra-226 | 9.657E-05 | 0.9619 | 6.544E-08 | 0.0007 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.375E-06 | 0.0237 |
| Sr-90 | 4.798E-09 | 0.0000 | 1.034E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.248E-09 | 0.0000 |
| Total | 9.729E-05 | 0.9690 | 3.077E-07 | 0.0031 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.800E-06 | 0.0279 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 8.890E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | 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 | 0.0000 | 3.060E-07 | 0.0030 |
| 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 | 1.432E-11 | 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 | 4.164E-07 | 0.0041 |
| Eu-152 | 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 | 5.767E-08 | 0.0006 |
| Eu-154 | 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 | 5.949E-09 | 0.0001 |
| H-3 | 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 |
| Pu-239 | 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 | 5.927E-07 | 0.0059 |
| Ra-226 | 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 | 9.901E-05 | 0.9862 |
| 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 | 6.057E-09 | 0.0001 |
| 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 | 1.004E-04 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+02 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-225 | 1.079E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.927E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.927E-10 |
| Ac-227 | 5.549E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.049E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.049E-09 |
| Am-241 | 2.554E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.403E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.403E+01 |
| Bi-210 | 3.647E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.004E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.004E+01 |
| Bi-213 | 1.078E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.926E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.926E-10 |
| Bi-214 | 3.753E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.063E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.063E+01 |
| Co-60 | 3.475E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.910E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.910E-06 |
| Cs-137 | 5.689E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.126E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.126E-01 |
| Eu-152 | 3.826E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.103E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.103E-02 |
| Eu-154 | 3.557E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.955E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.955E-03 |
| Fr-223 | 7.657E-14 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.208E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.208E-11 |
| Gd-152 | 2.227E-16 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.224E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.224E-13 |
| H-3 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Nd-144 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Np-237 | 1.355E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.444E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.444E-04 |
| Pa-231 | 1.085E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.965E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.965E-09 |
| Pa-233 | 1.353E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.437E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.437E-04 |
| Pb-209 | 1.078E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.926E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.926E-10 |
| Pb-210 | 3.703E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.035E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.035E+01 |
| Pb-211 | 5.534E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.041E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.041E-09 |
| Pb-214 | 3.753E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.062E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.062E+01 |
| Po-210 | 3.617E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.988E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.988E+01 |
| Pu-239 | 1.288E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.077E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.077E+01 |
| Ra-223 | 5.534E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.041E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.041E-09 |
| Ra-225 | 1.080E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.935E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.935E-10 |
| Ra-226 | 3.797E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.087E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.087E+01 |
| Rn-222 | 3.753E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.063E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.063E+01 |
| Sm-148 | 1.787E-30 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.823E-28 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.823E-28 |
| Sr-90 | 8.630E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.743E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.743E-01 |
| Th-227 | 5.463E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.002E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.002E-09 |
| Th-229 | 1.082E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.945E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.945E-10 |
| Th-231 | 1.085E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.960E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.960E-06 |
| U-233 | 3.086E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.696E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.696E-07 |
| U-235 | 1.085E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.961E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.961E-06 |
| U-235m | 1.287E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.072E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.072E+01 |
| Y-90 | 8.633E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.744E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.744E-01 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 1.000E+02 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 7.325E-17 | 0.0000 | 1.356E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.088E-18 | 0.0000 |
| Ac-227 | 4.799E-19 | 0.0000 | 3.395E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.061E-17 | 0.0000 |
| Am-241 | 2.003E-07 | 0.0021 | 2.503E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.870E-08 | 0.0005 |
| Bi-210 | 3.074E-08 | 0.0003 | 4.858E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.640E-09 | 0.0001 |
| Bi-213 | 3.722E-16 | 0.0000 | 3.513E-21 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.873E-20 | 0.0000 |
| Bi-214 | 8.205E-05 | 0.8438 | 3.348E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.574E-10 | 0.0000 |
| Co-60 | 3.321E-12 | 0.0000 | 2.604E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.173E-16 | 0.0000 |
| Cs-137 | 3.223E-07 | 0.0033 | 1.387E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.531E-10 | 0.0000 |
| Eu-152 | 3.259E-08 | 0.0003 | 1.119E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.677E-12 | 0.0000 |
| Eu-154 | 2.424E-09 | 0.0000 | 8.265E-15 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.123E-13 | 0.0000 |
| Fr-223 | 4.422E-18 | 0.0000 | 1.275E-22 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.739E-20 | 0.0000 |
| Gd-152 | 0.000E+00 | 0.0000 | 6.079E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.412E-22 | 0.0000 |
| H-3 | 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 |
| Nd-144 | 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 |
| Np-237 | 2.458E-11 | 0.0000 | 1.250E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.986E-12 | 0.0000 |
| Pa-231 | 5.546E-16 | 0.0000 | 3.185E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.184E-17 | 0.0000 |
| Pa-233 | 3.654E-10 | 0.0000 | 6.657E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.143E-13 | 0.0000 |
| Pb-209 | 2.669E-19 | 0.0000 | 9.872E-24 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.094E-21 | 0.0000 |
| Pb-210 | 1.761E-08 | 0.0002 | 1.721E-08 | 0.0002 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.007E-07 | 0.0072 |
| Pb-211 | 1.164E-15 | 0.0000 | 9.137E-21 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.231E-20 | 0.0000 |
| Pb-214 | 1.121E-05 | 0.1153 | 4.314E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.875E-10 | 0.0000 |
| Po-210 | 4.934E-10 | 0.0000 | 1.536E-08 | 0.0002 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.312E-06 | 0.0135 |
| Pu-239 | 8.499E-09 | 0.0001 | 2.140E-07 | 0.0022 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.694E-07 | 0.0038 |
| Ra-223 | 1.637E-15 | 0.0000 | 6.613E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.214E-17 | 0.0000 |
| Ra-225 | 3.167E-18 | 0.0000 | 1.244E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.011E-18 | 0.0000 |
| Ra-226 | 2.859E-07 | 0.0029 | 3.076E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.087E-07 | 0.0032 |
| Rn-222 | 1.881E-08 | 0.0002 | 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 |
| Sm-148 | 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 | 8.677E-11 | 0.0000 | 7.302E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.489E-10 | 0.0000 |
| Th-227 | 1.042E-15 | 0.0000 | 7.827E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.639E-18 | 0.0000 |
| Th-229 | 1.122E-16 | 0.0000 | 8.314E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.599E-18 | 0.0000 |
| Th-231 | 9.970E-14 | 0.0000 | 5.480E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.446E-16 | 0.0000 |
| U-233 | 8.580E-17 | 0.0000 | 3.256E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.129E-16 | 0.0000 |
| U-235 | 2.104E-12 | 0.0000 | 9.125E-15 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.892E-14 | 0.0000 |
| U-235m | 0.000E+00 | 0.0000 | 7.200E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.249E-14 | 0.0000 |
| Y-90 | 3.368E-09 | 0.0000 | 1.442E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.495E-10 | 0.0000 |
| Total | 9.418E-05 | 0.9686 | 3.029E-07 | 0.0031 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.748E-06 | 0.0283 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 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 | 8.169E-17 | 0.0000 |
| Ac-227 | 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 | 6.504E-17 | 0.0000 |
| 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 | 2.740E-07 | 0.0028 |
| Bi-210 | 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 | 3.886E-08 | 0.0004 |
| Bi-213 | 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 | 3.722E-16 | 0.0000 |
| Bi-214 | 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 | 8.205E-05 | 0.8438 |
| 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 | 3.321E-12 | 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 | 3.225E-07 | 0.0033 |
| Eu-152 | 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 | 3.259E-08 | 0.0003 |
| Eu-154 | 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 | 2.425E-09 | 0.0000 |
| Fr-223 | 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 | 4.439E-18 | 0.0000 |
| Gd-152 | 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 | 2.020E-22 | 0.0000 |
| H-3 | 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 |
| Nd-144 | 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 |
| Np-237 | 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 | 2.781E-11 | 0.0000 |
| Pa-231 | 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 | 6.383E-16 | 0.0000 |
| Pa-233 | 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 | 3.657E-10 | 0.0000 |
| Pb-209 | 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 | 2.760E-19 | 0.0000 |
| Pb-210 | 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 | 7.355E-07 | 0.0076 |
| Pb-211 | 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 | 1.164E-15 | 0.0000 |
| Pb-214 | 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 | 1.121E-05 | 0.1153 |
| Po-210 | 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 | 1.327E-06 | 0.0137 |
| Pu-239 | 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 | 5.919E-07 | 0.0061 |
| Ra-223 | 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 | 1.686E-15 | 0.0000 |
| Ra-225 | 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 | 8.422E-18 | 0.0000 |
| Ra-226 | 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 | 6.254E-07 | 0.0064 |
| Rn-222 | 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 | 1.881E-08 | 0.0002 |
| Sm-148 | 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 | 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 | 7.430E-10 | 0.0000 |
| Th-227 | 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 | 1.058E-15 | 0.0000 |
| Th-229 | 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 | 1.282E-16 | 0.0000 |
| Th-231 | 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 | 1.003E-13 | 0.0000 |
| U-233 | 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 | 1.024E-15 | 0.0000 |
| U-235 | 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 | 2.132E-12 | 0.0000 |
| U-235m | 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 | 2.250E-14 | 0.0000 |
| Y-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 | 3.618E-09 | 0.0000 |
| 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 | 9.723E-05 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+02 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Am-241 | 2.007E-07 | 0.0021 | 2.504E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.870E-08 | 0.0005 |
| Co-60 | 3.321E-12 | 0.0000 | 2.604E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.173E-16 | 0.0000 |
| Cs-137 | 3.223E-07 | 0.0033 | 1.387E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.531E-10 | 0.0000 |
| Eu-152 | 3.259E-08 | 0.0003 | 1.119E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.677E-12 | 0.0000 |
| Eu-154 | 2.424E-09 | 0.0000 | 8.265E-15 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.123E-13 | 0.0000 |
| H-3 | 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 |
| Pu-239 | 8.501E-09 | 0.0001 | 2.140E-07 | 0.0022 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.694E-07 | 0.0038 |
| Ra-226 | 9.361E-05 | 0.9628 | 6.388E-08 | 0.0007 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.329E-06 | 0.0240 |
| Sr-90 | 3.455E-09 | 0.0000 | 7.446E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.985E-10 | 0.0000 |
| Total | 9.418E-05 | 0.9686 | 3.029E-07 | 0.0031 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.748E-06 | 0.0283 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | 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 | 0.0000 | 2.744E-07 | 0.0028 |
| 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 | 3.321E-12 | 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 | 3.225E-07 | 0.0033 |
| Eu-152 | 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 | 3.259E-08 | 0.0003 |
| Eu-154 | 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 | 2.425E-09 | 0.0000 |
| H-3 | 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 |
| Pu-239 | 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 | 5.919E-07 | 0.0061 |
| Ra-226 | 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 | 9.601E-05 | 0.9874 |
| 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 | 4.361E-09 | 0.0000 |
| 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 | 9.723E-05 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+02 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-225 | 1.621E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.908E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.908E-09 |
| Ac-227 | 4.484E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.464E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.464E-08 |
| Am-241 | 3.562E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.958E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.958E+00 |
| Bi-210 | 2.188E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.203E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.203E+01 |
| Bi-213 | 1.621E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.907E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.907E-09 |
| Bi-214 | 2.141E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.177E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.177E+01 |
| Co-60 | 1.273E-20 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.998E-18 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.998E-18 |
| Cs-137 | 5.703E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.134E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.134E-03 |
| Eu-152 | 1.311E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.207E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.207E-07 |
| Eu-154 | 3.367E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.850E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.850E-10 |
| Fr-223 | 6.188E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.401E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.401E-10 |
| Gd-152 | 2.151E-16 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.182E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.182E-13 |
| H-3 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Nd-144 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Np-237 | 1.853E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.018E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.018E-03 |
| Pa-231 | 6.371E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.501E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.501E-08 |
| Pa-233 | 1.853E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.018E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.018E-03 |
| Pb-209 | 1.621E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.907E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.907E-09 |
| Pb-210 | 2.222E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.221E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.221E+01 |
| Pb-211 | 4.481E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.463E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.463E-08 |
| Pb-214 | 2.141E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.176E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.176E+01 |
| Po-210 | 2.172E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.194E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.194E+01 |
| Pu-239 | 1.259E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.920E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.920E+01 |
| Ra-223 | 4.481E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.463E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.463E-08 |
| Ra-225 | 1.622E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.913E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.913E-09 |
| Ra-226 | 2.166E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.190E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.190E+01 |
| Rn-222 | 2.141E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.177E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.177E+01 |
| Sm-148 | 5.975E-30 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.283E-27 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.283E-27 |
| Sr-90 | 2.321E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.276E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.276E-03 |
| Th-227 | 4.421E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.429E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.429E-08 |
| Th-229 | 1.623E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.918E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.918E-09 |
| Th-231 | 2.389E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.313E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.313E-05 |
| U-233 | 1.268E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.967E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.967E-07 |
| U-235 | 2.389E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.313E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.313E-05 |
| U-235m | 1.258E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.916E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.916E+01 |
| Y-90 | 2.322E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.276E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.276E-03 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of Radon and its Decay Products as pCi/yr at t= 3.000E+02 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 8.344E-16 | 0.0000 | 1.545E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.074E-17 | 0.0000 |
| Ac-227 | 3.063E-18 | 0.0000 | 2.167E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.954E-16 | 0.0000 |
| Am-241 | 2.793E-08 | 0.0005 | 3.492E-09 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.793E-09 | 0.0001 |
| Bi-210 | 1.813E-08 | 0.0003 | 2.865E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.505E-09 | 0.0001 |
| Bi-213 | 4.239E-15 | 0.0000 | 4.002E-20 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.133E-19 | 0.0000 |
| Bi-214 | 4.680E-05 | 0.8444 | 1.909E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.981E-11 | 0.0000 |
| Co-60 | 1.217E-23 | 0.0000 | 2.168E-30 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.163E-27 | 0.0000 |
| Cs-137 | 3.231E-09 | 0.0001 | 1.390E-14 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.538E-12 | 0.0000 |
| Eu-152 | 1.117E-12 | 0.0000 | 3.836E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.173E-17 | 0.0000 |
| Eu-154 | 2.294E-16 | 0.0000 | 7.822E-22 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.955E-20 | 0.0000 |
| Fr-223 | 2.822E-17 | 0.0000 | 8.140E-22 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.110E-19 | 0.0000 |
| Gd-152 | 0.000E+00 | 0.0000 | 5.856E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.361E-22 | 0.0000 |
| H-3 | 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 |
| Nd-144 | 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 |
| Np-237 | 3.130E-11 | 0.0000 | 1.592E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.529E-12 | 0.0000 |
| Pa-231 | 2.711E-15 | 0.0000 | 1.557E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.534E-16 | 0.0000 |
| Pa-233 | 4.657E-10 | 0.0000 | 8.482E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.731E-13 | 0.0000 |
| Pb-209 | 3.040E-18 | 0.0000 | 1.125E-22 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.036E-19 | 0.0000 |
| Pb-210 | 1.038E-08 | 0.0002 | 1.015E-08 | 0.0002 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.132E-07 | 0.0075 |
| Pb-211 | 7.443E-15 | 0.0000 | 5.841E-20 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.623E-19 | 0.0000 |
| Pb-214 | 6.395E-06 | 0.1154 | 2.461E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.640E-10 | 0.0000 |
| Po-210 | 2.911E-10 | 0.0000 | 9.063E-09 | 0.0002 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.739E-07 | 0.0140 |
| Pu-239 | 8.311E-09 | 0.0001 | 2.093E-07 | 0.0038 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.612E-07 | 0.0065 |
| Ra-223 | 1.047E-14 | 0.0000 | 4.228E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.694E-16 | 0.0000 |
| Ra-225 | 3.606E-17 | 0.0000 | 1.416E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.566E-17 | 0.0000 |
| Ra-226 | 1.631E-07 | 0.0029 | 1.754E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.761E-07 | 0.0032 |
| Rn-222 | 1.073E-08 | 0.0002 | 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 |
| Sm-148 | 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 | 2.333E-13 | 0.0000 | 1.964E-14 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.745E-12 | 0.0000 |
| Th-227 | 6.656E-15 | 0.0000 | 5.001E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.519E-17 | 0.0000 |
| Th-229 | 1.277E-15 | 0.0000 | 9.456E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.643E-17 | 0.0000 |
| Th-231 | 2.011E-13 | 0.0000 | 1.105E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.300E-15 | 0.0000 |
| U-233 | 2.961E-16 | 0.0000 | 1.124E-15 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.115E-15 | 0.0000 |
| U-235 | 4.245E-12 | 0.0000 | 1.841E-14 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.816E-14 | 0.0000 |
| U-235m | 0.000E+00 | 0.0000 | 7.040E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.200E-14 | 0.0000 |
| Y-90 | 9.058E-12 | 0.0000 | 3.877E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.711E-13 | 0.0000 |
| Total | 5.344E-05 | 0.9642 | 2.498E-07 | 0.0045 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.736E-06 | 0.0313 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 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 | 9.306E-16 | 0.0000 |
| Ac-227 | 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 | 4.151E-16 | 0.0000 |
| 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 | 3.822E-08 | 0.0007 |
| Bi-210 | 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 | 2.292E-08 | 0.0004 |
| Bi-213 | 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 | 4.239E-15 | 0.0000 |
| Bi-214 | 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 | 4.680E-05 | 0.8444 |
| 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 | 1.217E-23 | 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 | 3.234E-09 | 0.0001 |
| Eu-152 | 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 | 1.117E-12 | 0.0000 |
| Eu-154 | 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 | 2.295E-16 | 0.0000 |
| Fr-223 | 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 | 2.834E-17 | 0.0000 |
| Gd-152 | 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 | 1.946E-22 | 0.0000 |
| H-3 | 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 |
| Nd-144 | 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 |
| Np-237 | 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 | 3.542E-11 | 0.0000 |
| Pa-231 | 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 | 3.120E-15 | 0.0000 |
| Pa-233 | 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 | 4.659E-10 | 0.0000 |
| Pb-209 | 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 | 3.144E-18 | 0.0000 |
| Pb-210 | 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 | 4.337E-07 | 0.0078 |
| Pb-211 | 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 | 7.443E-15 | 0.0000 |
| Pb-214 | 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 | 6.395E-06 | 0.1154 |
| Po-210 | 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 | 7.832E-07 | 0.0141 |
| Pu-239 | 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 | 5.788E-07 | 0.0104 |
| Ra-223 | 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 | 1.078E-14 | 0.0000 |
| Ra-225 | 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 | 9.588E-17 | 0.0000 |
| Ra-226 | 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 | 3.567E-07 | 0.0064 |
| Rn-222 | 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 | 1.073E-08 | 0.0002 |
| Sm-148 | 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 | 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 | 1.998E-12 | 0.0000 |
| Th-227 | 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 | 6.761E-15 | 0.0000 |
| Th-229 | 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 | 1.458E-15 | 0.0000 |
| Th-231 | 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 | 2.024E-13 | 0.0000 |
| U-233 | 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 | 3.535E-15 | 0.0000 |
| U-235 | 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 | 4.302E-12 | 0.0000 |
| U-235m | 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 | 2.200E-14 | 0.0000 |
| Y-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 | 9.730E-12 | 0.0000 |
| 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 | 5.542E-05 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 3.000E+02 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Am-241 | 2.843E-08 | 0.0005 | 3.494E-09 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.796E-09 | 0.0001 |
| Co-60 | 1.217E-23 | 0.0000 | 2.168E-30 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.163E-27 | 0.0000 |
| Cs-137 | 3.231E-09 | 0.0001 | 1.390E-14 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.538E-12 | 0.0000 |
| Eu-152 | 1.117E-12 | 0.0000 | 3.836E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.173E-17 | 0.0000 |
| Eu-154 | 2.294E-16 | 0.0000 | 7.822E-22 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.955E-20 | 0.0000 |
| H-3 | 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 |
| Pu-239 | 8.315E-09 | 0.0002 | 2.093E-07 | 0.0038 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.612E-07 | 0.0065 |
| Ra-226 | 5.340E-05 | 0.9634 | 3.708E-08 | 0.0007 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.368E-06 | 0.0247 |
| Sr-90 | 9.292E-12 | 0.0000 | 2.003E-14 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.416E-12 | 0.0000 |
| Total | 5.344E-05 | 0.9642 | 2.498E-07 | 0.0045 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.736E-06 | 0.0313 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | 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 | 0.0000 | 3.872E-08 | 0.0007 |
| 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 | 1.217E-23 | 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 | 3.234E-09 | 0.0001 |
| Eu-152 | 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 | 1.117E-12 | 0.0000 |
| Eu-154 | 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 | 2.295E-16 | 0.0000 |
| H-3 | 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 |
| Pu-239 | 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 | 5.788E-07 | 0.0104 |
| Ra-226 | 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 | 5.480E-05 | 0.9888 |
| 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 | 1.173E-11 | 0.0000 |
| 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 | 5.542E-05 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+03 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-225 | 1.310E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.198E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.198E-08 |
| Ac-227 | 1.530E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.409E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.409E-08 |
| Am-241 | 3.611E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.984E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.984E-03 |
| Bi-210 | 3.068E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.686E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.686E+00 |
| Bi-213 | 1.310E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.197E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.197E-08 |
| Bi-214 | 3.001E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.649E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.649E+00 |
| Co-60 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Cs-137 | 5.754E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.162E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.162E-10 |
| Eu-152 | 3.090E-25 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.698E-22 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.698E-22 |
| Eu-154 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Fr-223 | 2.112E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.160E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.160E-09 |
| Gd-152 | 1.868E-16 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.026E-13 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.026E-13 |
| H-3 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Nd-144 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Np-237 | 1.258E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.911E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.911E-04 |
| Pa-231 | 1.947E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.070E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.070E-07 |
| Pa-233 | 1.257E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.909E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.909E-04 |
| Pb-209 | 1.310E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.197E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.197E-08 |
| Pb-210 | 3.115E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.712E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.712E+00 |
| Pb-211 | 1.530E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.408E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.408E-08 |
| Pb-214 | 3.001E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.649E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.649E+00 |
| Po-210 | 3.046E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.674E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.674E+00 |
| Pu-239 | 1.164E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.398E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.398E+01 |
| Ra-223 | 1.530E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.408E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.408E-08 |
| Ra-225 | 1.310E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.201E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.201E-08 |
| Ra-226 | 3.036E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.669E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.669E+00 |
| Rn-222 | 3.001E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.649E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.649E+00 |
| Sm-148 | 1.813E-29 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.965E-27 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.965E-27 |
| Sr-90 | 2.341E-15 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.287E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.287E-12 |
| Th-227 | 1.509E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.293E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.293E-08 |
| Th-229 | 1.311E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.202E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.202E-08 |
| Th-231 | 3.429E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.885E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.885E-05 |
| U-233 | 1.847E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.015E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.015E-06 |
| U-235 | 3.429E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.885E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.885E-05 |
| U-235m | 1.163E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.394E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.394E+01 |
| Y-90 | 2.342E-15 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.287E-12 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.287E-12 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 1.000E+03 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 6.172E-15 | 0.0000 | 1.143E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.973E-16 | 0.0000 |
| Ac-227 | 9.761E-18 | 0.0000 | 6.905E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.226E-16 | 0.0000 |
| Am-241 | 2.832E-11 | 0.0000 | 3.539E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.886E-12 | 0.0000 |
| Bi-210 | 2.541E-09 | 0.0003 | 4.016E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.316E-10 | 0.0001 |
| Bi-213 | 3.136E-14 | 0.0000 | 2.961E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.578E-18 | 0.0000 |
| Bi-214 | 6.560E-06 | 0.7983 | 2.677E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.259E-11 | 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 |
| Cs-137 | 3.260E-16 | 0.0000 | 1.403E-21 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.560E-19 | 0.0000 |
| Eu-152 | 2.633E-28 | 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 |
| Eu-154 | 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 |
| Fr-223 | 8.994E-17 | 0.0000 | 2.594E-21 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.538E-19 | 0.0000 |
| Gd-152 | 0.000E+00 | 0.0000 | 5.084E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.181E-22 | 0.0000 |
| H-3 | 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 |
| Nd-144 | 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 |
| Np-237 | 2.106E-11 | 0.0000 | 1.071E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.702E-12 | 0.0000 |
| Pa-231 | 7.793E-15 | 0.0000 | 4.476E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.285E-16 | 0.0000 |
| Pa-233 | 3.133E-10 | 0.0000 | 5.707E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.838E-13 | 0.0000 |
| Pb-209 | 2.249E-17 | 0.0000 | 8.319E-22 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.663E-19 | 0.0000 |
| Pb-210 | 1.456E-09 | 0.0002 | 1.422E-09 | 0.0002 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.792E-08 | 0.0070 |
| Pb-211 | 2.373E-14 | 0.0000 | 1.862E-19 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.474E-18 | 0.0000 |
| Pb-214 | 8.964E-07 | 0.1091 | 3.450E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.299E-11 | 0.0000 |
| Po-210 | 4.081E-11 | 0.0000 | 1.271E-09 | 0.0002 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.085E-07 | 0.0132 |
| Pu-239 | 7.684E-09 | 0.0009 | 1.935E-07 | 0.0235 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.340E-07 | 0.0406 |
| Ra-223 | 3.337E-14 | 0.0000 | 1.348E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.591E-16 | 0.0000 |
| Ra-225 | 2.667E-16 | 0.0000 | 1.047E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.377E-16 | 0.0000 |
| Ra-226 | 2.286E-08 | 0.0028 | 2.459E-09 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.469E-08 | 0.0030 |
| Rn-222 | 1.504E-09 | 0.0002 | 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 |
| Sm-148 | 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 | 2.354E-22 | 0.0000 | 1.981E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.761E-21 | 0.0000 |
| Th-227 | 2.122E-14 | 0.0000 | 1.594E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.759E-16 | 0.0000 |
| Th-229 | 9.438E-15 | 0.0000 | 6.991E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.390E-16 | 0.0000 |
| Th-231 | 2.812E-13 | 0.0000 | 1.546E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.818E-15 | 0.0000 |
| U-233 | 4.109E-16 | 0.0000 | 1.559E-15 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.935E-15 | 0.0000 |
| U-235 | 5.936E-12 | 0.0000 | 2.574E-14 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.335E-14 | 0.0000 |
| U-235m | 0.000E+00 | 0.0000 | 6.509E-18 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.034E-14 | 0.0000 |
| Y-90 | 9.138E-21 | 0.0000 | 3.911E-25 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.770E-22 | 0.0000 |
| Total | 7.493E-06 | 0.9118 | 1.987E-07 | 0.0242 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.257E-07 | 0.0640 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-225 | 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 | 6.884E-15 | 0.0000 |
| Ac-227 | 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 | 1.323E-15 | 0.0000 |
| 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 | 3.874E-11 | 0.0000 |
| Bi-210 | 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 | 3.213E-09 | 0.0004 |
| Bi-213 | 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 | 3.136E-14 | 0.0000 |
| Bi-214 | 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 | 6.560E-06 | 0.7983 |
| 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 |
| 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 | 3.262E-16 | 0.0000 |
| Eu-152 | 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 | 2.633E-28 | 0.0000 |
| Eu-154 | 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 |
| Fr-223 | 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 | 9.030E-17 | 0.0000 |
| Gd-152 | 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 | 1.690E-22 | 0.0000 |
| H-3 | 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 |
| Nd-144 | 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 |
| Np-237 | 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 | 2.383E-11 | 0.0000 |
| Pa-231 | 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 | 8.969E-15 | 0.0000 |
| Pa-233 | 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 | 3.135E-10 | 0.0000 |
| Pb-209 | 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 | 2.326E-17 | 0.0000 |
| Pb-210 | 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 | 6.080E-08 | 0.0074 |
| Pb-211 | 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 | 2.373E-14 | 0.0000 |
| Pb-214 | 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 | 8.965E-07 | 0.1091 |
| Po-210 | 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 | 1.098E-07 | 0.0134 |
| Pu-239 | 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 | 5.351E-07 | 0.0651 |
| Ra-223 | 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 | 3.436E-14 | 0.0000 |
| Ra-225 | 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 | 7.091E-16 | 0.0000 |
| Ra-226 | 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 | 5.001E-08 | 0.0061 |
| Rn-222 | 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 | 1.504E-09 | 0.0002 |
| Sm-148 | 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 | 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 | 2.016E-21 | 0.0000 |
| Th-227 | 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 | 2.155E-14 | 0.0000 |
| Th-229 | 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 | 1.078E-14 | 0.0000 |
| Th-231 | 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 | 2.830E-13 | 0.0000 |
| U-233 | 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 | 4.906E-15 | 0.0000 |
| U-235 | 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 | 6.015E-12 | 0.0000 |
| U-235m | 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 | 2.034E-14 | 0.0000 |
| Y-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 | 9.815E-21 | 0.0000 |
| 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 | 8.218E-06 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+03 years

| Radon Pathway | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Am-241 | 3.628E-10 | 0.0000 | 4.614E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.776E-12 | 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 | 3.260E-16 | 0.0000 | 1.403E-21 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.560E-19 | 0.0000 |
| Eu-152 | 2.633E-28 | 0.0000 | 5.084E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.181E-22 | 0.0000 |
| Eu-154 | 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 |
| H-3 | 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 |
| Pu-239 | 7.690E-09 | 0.0009 | 1.935E-07 | 0.0235 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.340E-07 | 0.0406 |
| Ra-226 | 7.485E-06 | 0.9109 | 5.198E-09 | 0.0006 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.918E-07 | 0.0233 |
| Sr-90 | 9.373E-21 | 0.0000 | 2.020E-23 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.438E-21 | 0.0000 |
| Total | 7.493E-06 | 0.9118 | 1.987E-07 | 0.0242 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.257E-07 | 0.0640 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | 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 | 0.0000 | 3.761E-10 | 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 | 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 | 3.262E-16 | 0.0000 |
| Eu-152 | 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 | 1.690E-22 | 0.0000 |
| Eu-154 | 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 |
| H-3 | 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 |
| Pu-239 | 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 | 5.351E-07 | 0.0651 |
| Ra-226 | 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 | 7.682E-06 | 0.9348 |
| 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 | 1.183E-20 | 0.0000 |
| 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 | 8.218E-06 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Summary : RESRAD Default Parameters
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE28.RAD

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Dose Conversion Factor (and Related) Parameter Summary
Dose Library: DOE STD-1196-2011 (Reference Person)

| Menu | Parameter | Current Value# | Base Case* | Parameter Name |
|---|---|---|---|---|
| A-1 | DCF's for external ground radiation, (mrem/yr)/(pCi/g) | | | |
| A-1 | Ac-228 (Source: DCFPAK3.02) | 5.044E+00 | 5.044E+00 | DCF1( 1) |
| A-1 | Bi-212 (Source: DCFPAK3.02) | 6.258E-01 | 6.258E-01 | DCF1( 2) |
| A-1 | Pb-212 (Source: DCFPAK3.02) | 6.314E-01 | 6.314E-01 | DCF1( 3) |
| A-1 | Po-212 (Source: DCFPAK3.02) | 0.000E+00 | 0.000E+00 | DCF1( 4) |
| A-1 | Po-216 (Source: DCFPAK3.02) | 8.873E-05 | 8.873E-05 | DCF1( 5) |
| A-1 | Ra-224 (Source: DCFPAK3.02) | 4.950E-02 | 4.950E-02 | DCF1( 6) |
| A-1 | Ra-228 (Source: DCFPAK3.02) | 6.575E-05 | 6.575E-05 | DCF1( 7) |
| A-1 | Rn-220 (Source: DCFPAK3.02) | 3.474E-03 | 3.474E-03 | DCF1( 8) |
| A-1 | Th-228 (Source: DCFPAK3.02) | 7.248E-03 | 7.248E-03 | DCF1( 9) |
| A-1 | Th-232 (Source: DCFPAK3.02) | 4.782E-04 | 4.782E-04 | DCF1( 10) |
| A-1 | Tl-208 (Source: DCFPAK3.02) | 2.167E+01 | 2.167E+01 | DCF1( 11) |
| | | | | |
| B-1 | Dose conversion factors for inhalation, mrem/pCi: | | | |
| B-1 | Ac-228 | 5.957E-05 | 5.957E-05 | DCF2( 1) |
| B-1 | Bi-212+D | 1.358E-04 | 1.358E-04 | DCF2( 2) |
| B-1 | Pb-212 | 7.585E-04 | 7.585E-04 | DCF2( 3) |
| B-1 | Ra-224+D | 1.347E-02 | 1.347E-02 | DCF2( 4) |
| B-1 | Ra-228 | 6.327E-02 | 6.327E-02 | DCF2( 5) |
| B-1 | Th-228 | 1.610E-01 | 1.610E-01 | DCF2( 6) |
| B-1 | Th-232 | 4.255E-01 | 4.255E-01 | DCF2( 7) |
| | | | | |
| D-1 | Dose conversion factors for ingestion, mrem/pCi: | | | |
| D-1 | Ac-228 | 1.902E-06 | 1.902E-06 | DCF3( 1) |
| D-1 | Bi-212+D | 1.302E-06 | 1.302E-06 | DCF3( 2) |
| D-1 | Pb-212 | 3.811E-05 | 3.811E-05 | DCF3( 3) |
| D-1 | Ra-224+D | 4.662E-04 | 4.662E-04 | DCF3( 4) |
| D-1 | Ra-228 | 5.920E-03 | 5.920E-03 | DCF3( 5) |
| D-1 | Th-228 | 4.292E-04 | 4.292E-04 | DCF3( 6) |
| D-1 | Th-232 | 1.029E-03 | 1.029E-03 | DCF3( 7) |
| | | | | |
| D-34 | Food transfer factors: | | | |
| D-34 | Ac-228 , plant/soil concentration ratio, dimensionless | 2.500E-03 | 2.500E-03 | RTF( 1,1) |
| D-34 | Ac-228 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 2.000E-05 | 2.000E-05 | RTF( 1,2) |
| D-34 | Ac-228 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 2.000E-05 | 2.000E-05 | RTF( 1,3) |
| D-34 | | | | |
| D-34 | Bi-212+D , plant/soil concentration ratio, dimensionless | 1.000E-01 | 1.000E-01 | RTF( 2,1) |
| D-34 | Bi-212+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 2.000E-03 | 2.000E-03 | RTF( 2,2) |
| D-34 | Bi-212+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-04 | 5.000E-04 | RTF( 2,3) |
| D-34 | | | | |
| D-34 | Pb-212 , plant/soil concentration ratio, dimensionless | 1.000E-02 | 1.000E-02 | RTF( 3,1) |
| D-34 | Pb-212 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 8.000E-04 | 8.000E-04 | RTF( 3,2) |
| D-34 | Pb-212 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 3.000E-04 | 3.000E-04 | RTF( 3,3) |
| D-34 | | | | |
| D-34 | Ra-224+D , plant/soil concentration ratio, dimensionless | 4.000E-02 | 4.000E-02 | RTF( 4,1) |
| D-34 | Ra-224+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.000E-03 | 1.000E-03 | RTF( 4,2) |
| D-34 | Ra-224+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 1.000E-03 | 1.000E-03 | RTF( 4,3) |
| D-34 | | | | |

Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DOE STD-1196-2011 (Reference Person)

| Menu | Parameter | Current Value# | Base Case* | Parameter Name |
|---|---|---|---|---|
| D-34 | Ra-228 , plant/soil concentration ratio, dimensionless | 4.000E-02 | 4.000E-02 | RTF( 5,1) |
| D-34 | Ra-228 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.000E-03 | 1.000E-03 | RTF( 5,2) |
| D-34 | Ra-228 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 1.000E-03 | 1.000E-03 | RTF( 5,3) |
| D-34 | | | | |
| D-34 | Th-228 , plant/soil concentration ratio, dimensionless | 1.000E-03 | 1.000E-03 | RTF( 6,1) |
| D-34 | Th-228 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.000E-04 | 1.000E-04 | RTF( 6,2) |
| D-34 | Th-228 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-06 | 5.000E-06 | RTF( 6,3) |
| D-34 | | | | |
| D-34 | Th-232 , plant/soil concentration ratio, dimensionless | 1.000E-03 | 1.000E-03 | RTF( 7,1) |
| D-34 | Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.000E-04 | 1.000E-04 | RTF( 7,2) |
| D-34 | Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-06 | 5.000E-06 | RTF( 7,3) |
| | | | | |
| D-5 | Bioaccumulation factors, fresh water, L/kg: | | | |
| D-5 | Ac-228 , fish | 1.500E+01 | 1.500E+01 | BIOFAC( 1,1) |
| D-5 | Ac-228 , crustacea and mollusks | 1.000E+03 | 1.000E+03 | BIOFAC( 1,2) |
| D-5 | | | | |
| D-5 | Bi-212+D , fish | 1.500E+01 | 1.500E+01 | BIOFAC( 2,1) |
| D-5 | Bi-212+D , crustacea and mollusks | 1.000E+01 | 1.000E+01 | BIOFAC( 2,2) |
| D-5 | | | | |
| D-5 | Pb-212 , fish | 3.000E+02 | 3.000E+02 | BIOFAC( 3,1) |
| D-5 | Pb-212 , crustacea and mollusks | 1.000E+02 | 1.000E+02 | BIOFAC( 3,2) |
| D-5 | | | | |
| D-5 | Ra-224+D , fish | 5.000E+01 | 5.000E+01 | BIOFAC( 4,1) |
| D-5 | Ra-224+D , crustacea and mollusks | 2.500E+02 | 2.500E+02 | BIOFAC( 4,2) |
| D-5 | | | | |
| D-5 | Ra-228 , fish | 5.000E+01 | 5.000E+01 | BIOFAC( 5,1) |
| D-5 | Ra-228 , crustacea and mollusks | 2.500E+02 | 2.500E+02 | BIOFAC( 5,2) |
| D-5 | | | | |
| D-5 | Th-228 , fish | 1.000E+02 | 1.000E+02 | BIOFAC( 6,1) |
| D-5 | Th-228 , crustacea and mollusks | 5.000E+02 | 5.000E+02 | BIOFAC( 6,2) |
| D-5 | | | | |
| D-5 | Th-232 , fish | 1.000E+02 | 1.000E+02 | BIOFAC( 7,1) |
| D-5 | Th-232 , crustacea and mollusks | 5.000E+02 | 5.000E+02 | 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.

Site-Specific Parameter Summary

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R011 | Area of contaminated zone (m**2) | 4.840E+02 | 1.000E+04 | --- | AREA |
| R011 | Thickness of contaminated zone (m) | 2.000E+00 | 2.000E+00 | --- | THICK0 |
| R011 | Fraction of contamination that is submerged | 0.000E+00 | 0.000E+00 | --- | SUBMFRACT |
| R011 | Length parallel to aquifer flow (m) | not used | 1.000E+02 | --- | LCZPAQ |
| R011 | Basic radiation dose limit (mrem/yr) | 1.200E+01 | 3.000E+01 | --- | BRDL |
| R011 | Time since placement of material (yr) | 0.000E+00 | 0.000E+00 | --- | TI |
| R011 | Times for calculations (yr) | 1.000E+00 | 1.000E+00 | --- | T( 2) |
| R011 | Times for calculations (yr) | 3.000E+00 | 3.000E+00 | --- | T( 3) |
| R011 | Times for calculations (yr) | 1.000E+01 | 1.000E+01 | --- | T( 4) |
| R011 | Times for calculations (yr) | 3.000E+01 | 3.000E+01 | --- | T( 5) |
| R011 | Times for calculations (yr) | 8.890E+01 | 1.000E+02 | --- | T( 6) |
| R011 | Times for calculations (yr) | 1.000E+02 | 3.000E+02 | --- | T( 7) |
| R011 | Times for calculations (yr) | 3.000E+02 | 1.000E+03 | --- | T( 8) |
| R011 | Times for calculations (yr) | 1.000E+03 | 0.000E+00 | --- | T( 9) |
| R011 | Times for calculations (yr) | not used | 0.000E+00 | --- | T(10) |
| | | | | | |
| R012 | Initial principal radionuclide (pCi/g): Th-232 | 1.690E+00 | 0.000E+00 | --- | S1(7) |
| R012 | Concentration in groundwater (pCi/L): Th-232 | not used | 0.000E+00 | --- | W1( 7) |
| | | | | | |
| R013 | Cover depth (m) | 0.000E+00 | 0.000E+00 | --- | COVER0 |
| R013 | Density of cover material (g/cm**3) | not used | 1.500E+00 | --- | DENSCV |
| R013 | Cover depth erosion rate (m/yr) | not used | 1.000E-03 | --- | VCV |
| R013 | Density of contaminated zone (g/cm**3) | 1.500E+00 | 1.500E+00 | --- | DENSCZ |
| R013 | Contaminated zone erosion rate (m/yr) | 1.000E-03 | 1.000E-03 | --- | VCZ |
| R013 | Contaminated zone total porosity | 4.000E-01 | 4.000E-01 | --- | TPCZ |
| R013 | Contaminated zone field capacity | 2.000E-01 | 2.000E-01 | --- | FCCZ |
| R013 | Contaminated zone hydraulic conductivity (m/yr) | 1.000E+01 | 1.000E+01 | --- | HCCZ |
| R013 | Contaminated zone b parameter | 5.300E+00 | 5.300E+00 | --- | BCZ |
| R013 | Average annual wind speed (m/sec) | 2.000E+00 | 2.000E+00 | --- | WIND |
| R013 | Humidity in air (g/m**3) | not used | 8.000E+00 | --- | HUMID |
| R013 | Evapotranspiration coefficient | 5.000E-01 | 5.000E-01 | --- | EVAPTR |
| R013 | Precipitation (m/yr) | 1.000E+00 | 1.000E+00 | --- | PRECIP |
| R013 | Irrigation (m/yr) | 2.000E-01 | 2.000E-01 | --- | RI |
| R013 | Irrigation mode | overhead | overhead | --- | IDITCH |
| R013 | Runoff coefficient | 2.000E-01 | 2.000E-01 | --- | RUNOFF |
| R013 | Watershed area for nearby stream or pond (m**2) | not used | 1.000E+06 | --- | WAREA |
| R013 | Accuracy for water/soil computations | not used | 1.000E-03 | --- | EPS |
| | | | | | |
| R014 | Density of saturated zone (g/cm**3) | not used | 1.500E+00 | --- | DENSAQ |
| R014 | Saturated zone total porosity | not used | 4.000E-01 | --- | TPSZ |
| R014 | Saturated zone effective porosity | not used | 2.000E-01 | --- | EPSZ |
| R014 | Saturated zone field capacity | not used | 2.000E-01 | --- | FCSZ |
| R014 | Saturated zone hydraulic conductivity (m/yr) | not used | 1.000E+02 | --- | HCSZ |
| R014 | Saturated zone hydraulic gradient | not used | 2.000E-02 | --- | HGWT |
| R014 | Saturated zone b parameter | not used | 5.300E+00 | --- | BSZ |
| R014 | Water table drop rate (m/yr) | not used | 1.000E-03 | --- | VWT |
| R014 | Well pump intake depth (m below water table) | not used | 1.000E+01 | --- | DWIBWT |
| R014 | Model: Nondispersion (ND) or Mass-Balance (MB) | not used | ND | --- | MODEL |
| R014 | Well pumping rate (m**3/yr) | not used | 2.500E+02 | --- | UW |
| | | | | | |

Site-Specific Parameter Summary (continued)

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R015 | Number of unsaturated zone strata | not used | 1 | --- | NS |
| R015 | Unsat. zone 1, thickness (m) | not used | 4.000E+00 | --- | H(1) |
| R015 | Unsat. zone 1, soil density (g/cm**3) | not used | 1.500E+00 | --- | DENSUZ(1) |
| R015 | Unsat. zone 1, total porosity | not used | 4.000E-01 | --- | TPUZ(1) |
| R015 | Unsat. zone 1, effective porosity | not used | 2.000E-01 | --- | EPUZ(1) |
| R015 | Unsat. zone 1, field capacity | not used | 2.000E-01 | --- | FCUZ(1) |
| R015 | Unsat. zone 1, soil-specific b parameter | not used | 5.300E+00 | --- | BUZ(1) |
| R015 | Unsat. zone 1, hydraulic conductivity (m/yr) | not used | 1.000E+01 | --- | HCUZ(1) |
| | | | | | |
| R016 | Distribution coefficients for Th-232 | | | | |
| R016 | Contaminated zone (cm**3/g) | 6.000E+04 | 6.000E+04 | --- | DCNUCC( 7) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 6.000E+04 | --- | DCNUCU( 7,1) |
| R016 | Saturated zone (cm**3/g) | not used | 6.000E+04 | --- | DCNUCS( 7) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.778E-06 | ALEACH( 7) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK( 7) |
| | | | | | |
| R016 | Distribution coefficients for daughter Ac-228 | | | | |
| R016 | Contaminated zone (cm**3/g) | 2.000E+01 | 2.000E+01 | --- | DCNUCC( 1) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 2.000E+01 | --- | DCNUCU( 1,1) |
| R016 | Saturated zone (cm**3/g) | not used | 2.000E+01 | --- | DCNUCS( 1) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 8.245E-03 | ALEACH( 1) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK( 1) |
| | | | | | |
| R016 | Distribution coefficients for daughter Bi-212 | | | | |
| R016 | Contaminated zone (cm**3/g) | 0.000E+00 | 0.000E+00 | --- | DCNUCC( 2) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 0.000E+00 | --- | DCNUCU( 2,1) |
| R016 | Saturated zone (cm**3/g) | not used | 0.000E+00 | --- | DCNUCS( 2) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 7.790E-01 | ALEACH( 2) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK( 2) |
| | | | | | |
| R016 | Distribution coefficients for daughter Pb-212 | | | | |
| R016 | Contaminated zone (cm**3/g) | 1.000E+02 | 1.000E+02 | --- | DCNUCC( 3) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 1.000E+02 | --- | DCNUCU( 3,1) |
| R016 | Saturated zone (cm**3/g) | not used | 1.000E+02 | --- | DCNUCS( 3) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 1.663E-03 | ALEACH( 3) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK( 3) |
| | | | | | |
| R016 | Distribution coefficients for daughter Ra-224 | | | | |
| R016 | Contaminated zone (cm**3/g) | 7.000E+01 | 7.000E+01 | --- | DCNUCC( 4) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 7.000E+01 | --- | DCNUCU( 4,1) |
| R016 | Saturated zone (cm**3/g) | not used | 7.000E+01 | --- | DCNUCS( 4) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.374E-03 | ALEACH( 4) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK( 4) |
| | | | | | |
| R016 | Distribution coefficients for daughter Ra-228 | | | | |
| R016 | Contaminated zone (cm**3/g) | 7.000E+01 | 7.000E+01 | --- | DCNUCC( 5) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 7.000E+01 | --- | DCNUCU( 5,1) |
| R016 | Saturated zone (cm**3/g) | not used | 7.000E+01 | --- | DCNUCS( 5) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.374E-03 | ALEACH( 5) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK( 5) |

Site-Specific Parameter Summary (continued)

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R016 | Distribution coefficients for daughter Th-228 | | | | |
| R016 | Contaminated zone (cm**3/g) | 6.000E+04 | 6.000E+04 | --- | DCNUCC( 6) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 6.000E+04 | --- | DCNUCU( 6,1) |
| R016 | Saturated zone (cm**3/g) | not used | 6.000E+04 | --- | DCNUCS( 6) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.778E-06 | ALEACH( 6) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK( 6) |
| | | | | | |
| R017 | Inhalation rate (m**3/yr) | 8.400E+03 | 8.400E+03 | --- | INHALR |
| R017 | Mass loading for inhalation (g/m**3) | 1.000E-04 | 1.000E-04 | --- | MLINH |
| R017 | Exposure duration | 3.000E+01 | 3.000E+01 | --- | ED |
| R017 | Shielding factor, inhalation | 4.000E-01 | 4.000E-01 | --- | SHF3 |
| R017 | Shielding factor, external gamma | 7.000E-01 | 7.000E-01 | --- | SHF1 |
| R017 | Fraction of time spent indoors | 6.840E-01 | 5.000E-01 | --- | FIND |
| R017 | Fraction of time spent outdoors (on site) | 7.300E-02 | 2.500E-01 | --- | FOTD |
| R017 | Shape factor flag, external gamma | 1.000E+00 | 1.000E+00 | >0 shows circular AREA. | FS |
| R017 | Radii of shape factor array (used if FS = -1): | | | | |
| R017 | Outer annular radius (m), ring 1: | not used | 5.000E+01 | --- | RAD_SHAPE( 1) |
| R017 | Outer annular radius (m), ring 2: | not used | 7.071E+01 | --- | RAD_SHAPE( 2) |
| R017 | Outer annular radius (m), ring 3: | not used | 0.000E+00 | --- | RAD_SHAPE( 3) |
| R017 | Outer annular radius (m), ring 4: | not used | 0.000E+00 | --- | RAD_SHAPE( 4) |
| R017 | Outer annular radius (m), ring 5: | not used | 0.000E+00 | --- | RAD_SHAPE( 5) |
| R017 | Outer annular radius (m), ring 6: | not used | 0.000E+00 | --- | RAD_SHAPE( 6) |
| R017 | Outer annular radius (m), ring 7: | not used | 0.000E+00 | --- | RAD_SHAPE( 7) |
| R017 | Outer annular radius (m), ring 8: | not used | 0.000E+00 | --- | RAD_SHAPE( 8) |
| R017 | Outer annular radius (m), ring 9: | not used | 0.000E+00 | --- | RAD_SHAPE( 9) |
| R017 | Outer annular radius (m), ring 10: | not used | 0.000E+00 | --- | RAD_SHAPE(10) |
| R017 | Outer annular radius (m), ring 11: | not used | 0.000E+00 | --- | RAD_SHAPE(11) |
| R017 | Outer annular radius (m), ring 12: | not used | 0.000E+00 | --- | RAD_SHAPE(12) |
| | | | | | |
| R017 | Fractions of annular areas within AREA: | | | | |
| R017 | Ring 1 | not used | 1.000E+00 | --- | FRACA( 1) |
| R017 | Ring 2 | not used | 2.732E-01 | --- | FRACA( 2) |
| R017 | Ring 3 | not used | 0.000E+00 | --- | FRACA( 3) |
| R017 | Ring 4 | not used | 0.000E+00 | --- | FRACA( 4) |
| R017 | Ring 5 | not used | 0.000E+00 | --- | FRACA( 5) |
| R017 | Ring 6 | not used | 0.000E+00 | --- | FRACA( 6) |
| R017 | Ring 7 | not used | 0.000E+00 | --- | FRACA( 7) |
| R017 | Ring 8 | not used | 0.000E+00 | --- | FRACA( 8) |
| R017 | Ring 9 | not used | 0.000E+00 | --- | FRACA( 9) |
| R017 | Ring 10 | not used | 0.000E+00 | --- | FRACA(10) |
| R017 | Ring 11 | not used | 0.000E+00 | --- | FRACA(11) |
| R017 | Ring 12 | not used | 0.000E+00 | --- | FRACA(12) |
| | | | | | |
| R018 | Fruits, vegetables and grain consumption (kg/yr) | not used | 1.600E+02 | --- | DIET(1) |
| R018 | Leafy vegetable consumption (kg/yr) | not used | 1.400E+01 | --- | DIET(2) |
| R018 | Milk consumption (L/yr) | not used | 9.200E+01 | --- | DIET(3) |
| R018 | Meat and poultry consumption (kg/yr) | not used | 6.300E+01 | --- | DIET(4) |
| R018 | Fish consumption (kg/yr) | not used | 5.400E+00 | --- | DIET(5) |
| R018 | Other seafood consumption (kg/yr) | not used | 9.000E-01 | --- | DIET(6) |
| R018 | Soil ingestion rate (g/yr) | 3.650E+01 | 3.650E+01 | --- | SOIL |

Site-Specific Parameter Summary (continued)

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R018 | Drinking water intake (L/yr) | not used | 5.100E+02 | --- | DWI |
| R018 | Contamination fraction of drinking water | not used | 1.000E+00 | --- | FDW |
| R018 | Contamination fraction of household water | not used | 1.000E+00 | --- | FHHW |
| R018 | Contamination fraction of livestock water | not used | 1.000E+00 | --- | FLW |
| R018 | Contamination fraction of irrigation water | not used | 1.000E+00 | --- | FIRW |
| R018 | Contamination fraction of aquatic food | not used | 5.000E-01 | --- | FR9 |
| R018 | Contamination fraction of plant food | not used | -1 | --- | FPLANT |
| R018 | Contamination fraction of meat | not used | -1 | --- | FMEAT |
| R018 | Contamination fraction of milk | not used | -1 | --- | FMILK |
| | | | | | |
| R019 | Livestock fodder intake for meat (kg/day) | not used | 6.800E+01 | --- | LFI5 |
| R019 | Livestock fodder intake for milk (kg/day) | not used | 5.500E+01 | --- | LFI6 |
| R019 | Livestock water intake for meat (L/day) | not used | 5.000E+01 | --- | LWI5 |
| R019 | Livestock water intake for milk (L/day) | not used | 1.600E+02 | --- | LWI6 |
| R019 | Livestock soil intake (kg/day) | not used | 5.000E-01 | --- | LSI |
| R019 | Mass loading for foliar deposition (g/m**3) | not used | 1.000E-04 | --- | MLFD |
| R019 | Depth of soil mixing layer (m) | 1.500E-01 | 1.500E-01 | --- | DM |
| R019 | Depth of roots (m) | not used | 9.000E-01 | --- | DROOT |
| R019 | Drinking water fraction from ground water | not used | 1.000E+00 | --- | FGWDW |
| R019 | Household water fraction from ground water | not used | 1.000E+00 | --- | FGWHH |
| R019 | Livestock water fraction from ground water | not used | 1.000E+00 | --- | FGWLW |
| R019 | Irrigation fraction from ground water | not used | 1.000E+00 | --- | FGWIR |
| | | | | | |
| R19B | Wet weight crop yield for Non-Leafy (kg/m**2) | not used | 7.000E-01 | --- | YV(1) |
| R19B | Wet weight crop yield for Leafy (kg/m**2) | not used | 1.500E+00 | --- | YV(2) |
| R19B | Wet weight crop yield for Fodder (kg/m**2) | not used | 1.100E+00 | --- | YV(3) |
| R19B | Growing Season for Non-Leafy (years) | not used | 1.700E-01 | --- | TE(1) |
| R19B | Growing Season for Leafy (years) | not used | 2.500E-01 | --- | TE(2) |
| R19B | Growing Season for Fodder (years) | not used | 8.000E-02 | --- | TE(3) |
| R19B | Translocation Factor for Non-Leafy | not used | 1.000E-01 | --- | TIV(1) |
| R19B | Translocation Factor for Leafy | not used | 1.000E+00 | --- | TIV(2) |
| R19B | Translocation Factor for Fodder | not used | 1.000E+00 | --- | TIV(3) |
| R19B | Dry Foliar Interception Fraction for Non-Leafy | not used | 2.500E-01 | --- | RDRY(1) |
| R19B | Dry Foliar Interception Fraction for Leafy | not used | 2.500E-01 | --- | RDRY(2) |
| R19B | Dry Foliar Interception Fraction for Fodder | not used | 2.500E-01 | --- | RDRY(3) |
| R19B | Wet Foliar Interception Fraction for Non-Leafy | not used | 2.500E-01 | --- | RWET(1) |
| R19B | Wet Foliar Interception Fraction for Leafy | not used | 2.500E-01 | --- | RWET(2) |
| R19B | Wet Foliar Interception Fraction for Fodder | not used | 2.500E-01 | --- | RWET(3) |
| R19B | Weathering Removal Constant for Vegetation | not used | 2.000E+01 | --- | WLAM |
| | | | | | |
| C14 | C-12 concentration in water (g/cm**3) | not used | 2.000E-05 | --- | C12WTR |
| C14 | C-12 concentration in contaminated soil (g/g) | not used | 3.000E-02 | --- | C12CZ |
| C14 | Fraction of vegetation carbon from soil | not used | 2.000E-02 | --- | CSOIL |
| C14 | Fraction of vegetation carbon from air | not used | 9.800E-01 | --- | CAIR |
| C14 | C-14 evasion layer thickness in soil (m) | not used | 3.000E-01 | --- | DMC |
| C14 | C-14 evasion flux rate from soil (1/sec) | not used | 7.000E-07 | --- | EVSN |
| C14 | C-12 evasion flux rate from soil (1/sec) | not used | 1.000E-10 | --- | REVSN |
| C14 | Fraction of grain in beef cattle feed | not used | 8.000E-01 | --- | AVFG4 |
| C14 | Fraction of grain in milk cow feed | not used | 2.000E-01 | --- | AVFG5 |
| | | | | | |

Site-Specific Parameter Summary (continued)

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| STOR | Storage times of contaminated foodstuffs (days): | | | | |
| STOR | Fruits, non-leafy vegetables, and grain | 1.400E+01 | 1.400E+01 | --- | STOR_T(1) |
| STOR | Leafy vegetables | 1.000E+00 | 1.000E+00 | --- | STOR_T(2) |
| STOR | Milk | 1.000E+00 | 1.000E+00 | --- | STOR_T(3) |
| STOR | Meat and poultry | 2.000E+01 | 2.000E+01 | --- | STOR_T(4) |
| STOR | Fish | 7.000E+00 | 7.000E+00 | --- | STOR_T(5) |
| STOR | Crustacea and mollusks | 7.000E+00 | 7.000E+00 | --- | STOR_T(6) |
| STOR | Well water | 1.000E+00 | 1.000E+00 | --- | STOR_T(7) |
| STOR | Surface water | 1.000E+00 | 1.000E+00 | --- | STOR_T(8) |
| STOR | Livestock fodder | 4.500E+01 | 4.500E+01 | --- | STOR_T(9) |
| | | | | | |
| R021 | Thickness of building foundation (m) | not used | 1.500E-01 | --- | FLOOR1 |
| R021 | Bulk density of building foundation (g/cm**3) | not used | 2.400E+00 | --- | DENSFL |
| R021 | Total porosity of the cover material | not used | 4.000E-01 | --- | TPCV |
| R021 | Total porosity of the building foundation | not used | 1.000E-01 | --- | TPFL |
| R021 | Volumetric water content of the cover material | not used | 5.000E-02 | --- | PH2OCV |
| R021 | Volumetric water content of the foundation | not used | 3.000E-02 | --- | PH2OFL |
| R021 | Diffusion coefficient for radon gas (m/sec): | | | | |
| R021 | in cover material | not used | 2.000E-06 | --- | DIFCV |
| R021 | in foundation material | not used | 3.000E-07 | --- | DIFFL |
| R021 | in contaminated zone soil | not used | 2.000E-06 | --- | DIFCZ |
| R021 | Radon vertical dimension of mixing (m) | not used | 2.000E+00 | --- | HMIX |
| R021 | Average building air exchange rate (1/hr) | not used | 5.000E-01 | --- | REXG |
| R021 | Height of the building (room) (m) | not used | 2.500E+00 | --- | HRM |
| R021 | Building interior area factor | not used | 0.000E+00 | --- | FAI |
| R021 | Building depth below ground surface (m) | not used | -1.000E+00 | --- | DMFL |
| R021 | Emanating power of Rn-222 gas | not used | 2.500E-01 | --- | EMANA(1) |
| R021 | Emanating power of Rn-220 gas | not used | 1.500E-01 | --- | EMANA(2) |
| | | | | | |
| TITL | Number of graphical time points | 32 | --- | --- | NPTS |
| TITL | Maximum number of integration points for dose | 17 | --- | --- | LYMAX |
| TITL | Maximum number of integration points for risk | 257 | --- | --- | KYMAX |

Summary of Pathway Selections

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

Summary : RESRAD Default Parameters
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE28.RAD

| Contaminated Zone Dimensions | | Initial Soil Concentrations, pCi/g | |
|---|---|---|---|
| Area: | 484.00 square meters | Th-232 | 1.690E+00 |
| Thickness: | 2.00 meters | | |
| Cover Depth: | 0.00 meters | | |

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 1.200E+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 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|
| TDOSE(t): | 3.398E-01 | 1.036E+00 | 2.664E+00 | 7.409E+00 | 1.116E+01 | 1.152E+01 | 1.152E+01 | 1.151E+01 | 1.149E+01 |
| M(t): | 2.832E-02 | 8.630E-02 | 2.220E-01 | 6.174E-01 | 9.303E-01 | 9.601E-01 | 9.601E-01 | 9.595E-01 | 9.576E-01 |

Maximum TDOSE(t): 1.152E+01 mrem/yr at t = 88.6 ± 0.2 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 8.862E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 1.131E+01 | 0.9813 | 4.008E-02 | 0.0035 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.752E-01 | 0.0152 |
| Total | 1.131E+01 | 0.9813 | 4.008E-02 | 0.0035 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.752E-01 | 0.0152 |

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 8.862E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 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 | 1.152E+01 | 1.0000 |
| 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 | 1.152E+01 | 1.0000 |

*Sum of all water independent and dependent pathways.

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)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 2.825E-01 | 0.8314 | 2.616E-02 | 0.0770 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.113E-02 | 0.0916 |
| Total | 2.825E-01 | 0.8314 | 2.616E-02 | 0.0770 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.113E-02 | 0.0916 |

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

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 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 | 3.398E-01 | 1.0000 |
| 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 | 3.398E-01 | 1.0000 |

*Sum of all water independent and dependent pathways.

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)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 9.626E-01 | 0.9295 | 2.692E-02 | 0.0260 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.611E-02 | 0.0445 |
| Total | 9.626E-01 | 0.9295 | 2.692E-02 | 0.0260 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.611E-02 | 0.0445 |

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

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 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 | 1.036E+00 | 1.0000 |
| 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 | 1.036E+00 | 1.0000 |

*Sum of all water independent and dependent pathways.

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)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 2.563E+00 | 0.9620 | 2.886E-02 | 0.0108 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.240E-02 | 0.0272 |
| Total | 2.563E+00 | 0.9620 | 2.886E-02 | 0.0108 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.240E-02 | 0.0272 |

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 Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 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 | 2.664E+00 | 1.0000 |
| 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 | 2.664E+00 | 1.0000 |

*Sum of all water independent and dependent pathways.

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)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 7.243E+00 | 0.9777 | 3.482E-02 | 0.0047 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.307E-01 | 0.0176 |
| Total | 7.243E+00 | 0.9777 | 3.482E-02 | 0.0047 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.307E-01 | 0.0176 |

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 Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 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 | 7.409E+00 | 1.0000 |
| 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 | 7.409E+00 | 1.0000 |

*Sum of all water independent and dependent pathways.

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 Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 1.095E+01 | 0.9811 | 3.963E-02 | 0.0035 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.714E-01 | 0.0154 |
| Total | 1.095E+01 | 0.9811 | 3.963E-02 | 0.0035 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.714E-01 | 0.0154 |

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 Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 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 | 1.116E+01 | 1.0000 |
| 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 | 1.116E+01 | 1.0000 |

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 8.890E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 1.131E+01 | 0.9813 | 4.008E-02 | 0.0035 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.752E-01 | 0.0152 |
| Total | 1.131E+01 | 0.9813 | 4.008E-02 | 0.0035 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.752E-01 | 0.0152 |

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 8.890E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 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 | 1.152E+01 | 1.0000 |
| 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 | 1.152E+01 | 1.0000 |

*Sum of all water independent and dependent pathways.

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 Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 1.131E+01 | 0.9813 | 4.008E-02 | 0.0035 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.752E-01 | 0.0152 |
| Total | 1.131E+01 | 0.9813 | 4.008E-02 | 0.0035 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.752E-01 | 0.0152 |

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 Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 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 | 1.152E+01 | 1.0000 |
| 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 | 1.152E+01 | 1.0000 |

*Sum of all water independent and dependent pathways.

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 Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 1.130E+01 | 0.9813 | 4.006E-02 | 0.0035 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.751E-01 | 0.0152 |
| Total | 1.130E+01 | 0.9813 | 4.006E-02 | 0.0035 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.751E-01 | 0.0152 |

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

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 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 | 1.151E+01 | 1.0000 |
| 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 | 1.151E+01 | 1.0000 |

*Sum of all water independent and dependent pathways.

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)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 1.128E+01 | 0.9813 | 3.998E-02 | 0.0035 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.747E-01 | 0.0152 |
| Total | 1.128E+01 | 0.9813 | 3.998E-02 | 0.0035 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.747E-01 | 0.0152 |

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

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| Th-232 | 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 | 1.149E+01 | 1.0000 |
| 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 | 1.149E+01 | 1.0000 |

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

| Parent (i) | Product (j) | Thread Fraction | DSR(j,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Th-232 | Th-232 | 1.000E+00 | 2.932E-02 | 2.932E-02 | 2.932E-02 | 2.932E-02 | 2.932E-02 | 2.932E-02 | 2.931E-02 | 2.930E-02 | 2.924E-02 |
| Th-232 | Ra-228 | 1.000E+00 | 4.716E-03 | 1.341E-02 | 2.791E-02 | 5.791E-02 | 7.802E-02 | 7.989E-02 | 7.989E-02 | 7.984E-02 | 7.969E-02 |
| Th-232 | Ac-228 | 1.000E+00 | 1.398E-01 | 3.982E-01 | 8.288E-01 | 1.720E+00 | 2.318E+00 | 2.373E+00 | 2.373E+00 | 2.372E+00 | 2.367E+00 |
| Th-232 | Th-228 | 1.000E+00 | 9.780E-05 | 6.007E-04 | 2.385E-03 | 8.850E-03 | 1.434E-02 | 1.487E-02 | 1.487E-02 | 1.486E-02 | 1.483E-02 |
| Th-232 | Ra-224+D | 1.000E+00 | 2.039E-04 | 1.284E-03 | 5.153E-03 | 1.922E-02 | 3.118E-02 | 3.233E-02 | 3.233E-02 | 3.231E-02 | 3.224E-02 |
| Th-232 | Pb-212 | 1.000E+00 | 1.940E-03 | 1.226E-02 | 4.924E-02 | 1.837E-01 | 2.982E-01 | 3.091E-01 | 3.091E-01 | 3.090E-01 | 3.084E-01 |
| Th-232 | Bi-212+D | 1.000E+00 | 2.496E-02 | 1.577E-01 | 6.337E-01 | 2.365E+00 | 3.837E+00 | 3.979E+00 | 3.978E+00 | 3.976E+00 | 3.968E+00 |
| Th-232 | ∑DSR(j) | | 2.011E-01 | 6.128E-01 | 1.576E+00 | 4.384E+00 | 6.606E+00 | 6.817E+00 | 6.817E+00 | 6.813E+00 | 6.800E+00 |

The DSR includes contributions from associated (half-life ≤ 10 minut) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 1.200E+01 mrem/yr

| Nuclide (i) | t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|
| Th-232 | 5.968E+01 | 1.958E+01 | 7.612E+00 | 2.737E+00 | 1.817E+00 | 1.760E+00 | 1.760E+00 | 1.761E+00 | 1.765E+00 |

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 88.6 ± 0.2 years

| Nuclide (i) | Initial (pCi/g) | tmin (years) | DSR(i,tmin) | G(i,tmin) (pCi/g) | DSR(i,tmax) | G(i,tmax) (pCi/g) |
|---|---|---|---|---|---|---|
| Th-232 | 1.690E+00 | 88.6 ± 0.2 | 6.817E+00 | 1.760E+00 | 6.817E+00 | 1.760E+00 |

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

| Nuclide (j) | Parent (i) | THF(i) | DOSE(j,t), mrem/yr t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Th-232 | Th-232 | 1.000E+00 | 4.956E-02 | 4.956E-02 | 4.955E-02 | 4.955E-02 | 4.955E-02 | 4.954E-02 | 4.954E-02 | 4.951E-02 | 4.942E-02 |
| Ra-228 | Th-232 | 1.000E+00 | 7.970E-03 | 2.267E-02 | 4.716E-02 | 9.787E-02 | 1.319E-01 | 1.350E-01 | 1.350E-01 | 1.349E-01 | 1.347E-01 |
| Ac-228 | Th-232 | 1.000E+00 | 2.363E-01 | 6.730E-01 | 1.401E+00 | 2.907E+00 | 3.917E+00 | 4.011E+00 | 4.011E+00 | 4.008E+00 | 4.001E+00 |
| Th-228 | Th-232 | 1.000E+00 | 1.653E-04 | 1.015E-03 | 4.031E-03 | 1.496E-02 | 2.424E-02 | 2.513E-02 | 2.513E-02 | 2.512E-02 | 2.507E-02 |
| Ra-224 | Th-232 | 1.000E+00 | 3.446E-04 | 2.170E-03 | 8.708E-03 | 3.247E-02 | 5.269E-02 | 5.463E-02 | 5.463E-02 | 5.460E-02 | 5.449E-02 |
| Pb-212 | Th-232 | 1.000E+00 | 3.279E-03 | 2.071E-02 | 8.322E-02 | 3.105E-01 | 5.039E-01 | 5.224E-01 | 5.224E-01 | 5.222E-01 | 5.211E-01 |
| Bi-212 | Th-232 | 1.000E+00 | 4.218E-02 | 2.665E-01 | 1.071E+00 | 3.996E+00 | 6.485E+00 | 6.724E+00 | 6.724E+00 | 6.720E+00 | 6.706E+00 |

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

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

| Nuclide (j) | Parent (i) | THF(i) | S(j,t), pCi/g t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Th-232 | Th-232 | 1.000E+00 | 1.690E+00 | 1.690E+00 | 1.690E+00 | 1.690E+00 | 1.690E+00 | 1.690E+00 | 1.690E+00 | 1.689E+00 | 1.685E+00 |
| Ra-228 | Th-232 | 1.000E+00 | 0.000E+00 | 1.917E-01 | 5.111E-01 | 1.173E+00 | 1.616E+00 | 1.657E+00 | 1.657E+00 | 1.656E+00 | 1.653E+00 |
| Ac-228 | Th-232 | 1.000E+00 | 0.000E+00 | 1.915E-01 | 5.110E-01 | 1.172E+00 | 1.616E+00 | 1.657E+00 | 1.657E+00 | 1.656E+00 | 1.653E+00 |
| Th-228 | Th-232 | 1.000E+00 | 0.000E+00 | 3.145E-02 | 2.096E-01 | 9.464E-01 | 1.594E+00 | 1.657E+00 | 1.657E+00 | 1.656E+00 | 1.653E+00 |
| Ra-224 | Th-232 | 1.000E+00 | 0.000E+00 | 3.062E-02 | 2.080E-01 | 9.452E-01 | 1.594E+00 | 1.657E+00 | 1.657E+00 | 1.656E+00 | 1.653E+00 |
| Pb-212 | Th-232 | 1.000E+00 | 0.000E+00 | 3.051E-02 | 2.078E-01 | 9.451E-01 | 1.594E+00 | 1.657E+00 | 1.657E+00 | 1.656E+00 | 1.653E+00 |
| Bi-212 | Th-232 | 1.000E+00 | 0.000E+00 | 3.050E-02 | 2.078E-01 | 9.449E-01 | 1.594E+00 | 1.657E+00 | 1.657E+00 | 1.656E+00 | 1.653E+00 |

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

RESCALC.EXE execution time = 1.47 seconds

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Cancer Risk Slope Factors Summary Table
Risk Library: DCFPAK3.02 Morbidity

| Menu | Parameter | Current Value | Base Case* | Parameter Name |
|---|---|---|---|---|
| Sf-1 | Ground external radiation slope factors, 1/yr per (pCi/g): | | | |
| Sf-1 | Ac-228 | 4.04E-06 | 4.04E-06 | SLPF( 1,1) |
| Sf-1 | Bi-212+D | 6.79E-06 | 4.96E-07 | SLPF( 2,1) |
| Sf-1 | Pb-212 | 4.96E-07 | 4.96E-07 | SLPF( 3,1) |
| Sf-1 | Ra-224+D | 4.19E-08 | 3.91E-08 | SLPF( 4,1) |
| Sf-1 | Ra-228 | 3.43E-11 | 3.43E-11 | SLPF( 5,1) |
| Sf-1 | Th-228 | 5.64E-09 | 5.64E-09 | SLPF( 6,1) |
| Sf-1 | Th-232 | 3.58E-10 | 3.58E-10 | SLPF( 7,1) |
| | | | | |
| Sf-2 | Inhalation, slope factors, 1/(pCi): | | | |
| Sf-2 | Ac-228 | 4.92E-11 | 4.92E-11 | SLPF( 1,2) |
| Sf-2 | Bi-212+D | 8.43E-11 | 8.43E-11 | SLPF( 2,2) |
| Sf-2 | Pb-212 | 6.40E-10 | 6.40E-10 | SLPF( 3,2) |
| Sf-2 | Ra-224+D | 1.13E-08 | 1.13E-08 | SLPF( 4,2) |
| Sf-2 | Ra-228 | 4.37E-08 | 4.37E-08 | SLPF( 5,2) |
| Sf-2 | Th-228 | 1.32E-07 | 1.32E-07 | SLPF( 6,2) |
| Sf-2 | Th-232 | 4.33E-08 | 4.33E-08 | SLPF( 7,2) |
| | | | | |
| Sf-3 | Food ingestion, slope factors, 1/(pCi): | | | |
| Sf-3 | Ac-228 | 2.73E-12 | 2.73E-12 | SLPF( 1,3) |
| Sf-3 | Bi-212+D | 1.01E-12 | 1.01E-12 | SLPF( 2,3) |
| Sf-3 | Pb-212 | 3.57E-11 | 3.57E-11 | SLPF( 3,3) |
| Sf-3 | Ra-224+D | 2.38E-10 | 2.38E-10 | SLPF( 4,3) |
| Sf-3 | Ra-228 | 1.42E-09 | 1.42E-09 | SLPF( 5,3) |
| Sf-3 | Th-228 | 1.48E-10 | 1.48E-10 | SLPF( 6,3) |
| Sf-3 | Th-232 | 1.33E-10 | 1.33E-10 | SLPF( 7,3) |
| | | | | |
| Sf-3 | Water ingestion, slope factors, 1/(pCi): | | | |
| Sf-3 | Ac-228 | 1.88E-12 | 1.88E-12 | SLPF( 1,4) |
| Sf-3 | Bi-212+D | 7.18E-13 | 7.18E-13 | SLPF( 2,4) |
| Sf-3 | Pb-212 | 2.52E-11 | 2.52E-11 | SLPF( 3,4) |
| Sf-3 | Ra-224+D | 1.67E-10 | 1.67E-10 | SLPF( 4,4) |
| Sf-3 | Ra-228 | 1.04E-09 | 1.04E-09 | SLPF( 5,4) |
| Sf-3 | Th-228 | 1.08E-10 | 1.08E-10 | SLPF( 6,4) |
| Sf-3 | Th-232 | 1.01E-10 | 1.01E-10 | SLPF( 7,4) |
| | | | | |
| Sf-3 | Soil ingestion, slope factors, 1/(pCi): | | | |
| Sf-3 | Ac-228 | 2.73E-12 | 2.73E-12 | SLPF( 1,5) |
| Sf-3 | Bi-212+D | 1.01E-12 | 1.01E-12 | SLPF( 2,5) |
| Sf-3 | Pb-212 | 3.57E-11 | 3.57E-11 | SLPF( 3,5) |
| Sf-3 | Ra-224+D | 2.38E-10 | 2.38E-10 | SLPF( 4,5) |
| Sf-3 | Ra-228 | 1.42E-09 | 1.42E-09 | SLPF( 5,5) |
| Sf-3 | Th-228 | 1.48E-10 | 1.48E-10 | SLPF( 6,5) |
| Sf-3 | Th-232 | 1.33E-10 | 1.33E-10 | SLPF( 7,5) |
| | | | | |
| Sf-Rn | Radon Inhalation slope factors, 1/(pCi): | | | |
| Sf-Rn | Rn-220Inhalation slope factors, 1/(pCi): | 1.90E-13 | 1.90E-13 | SLPFRN(2,1) |
| Sf-Rn | Po-216Inhalation slope factors, 1/(pCi): | 3.00E-15 | 3.00E-15 | SLPFRN(2,2) |
| Sf-Rn | Pb-212Inhalation slope factors, 1/(pCi): | 3.90E-11 | 3.90E-11 | SLPFRN(2,3) |
| Sf-Rn | Bi-212Inhalation slope factors, 1/(pCi): | 3.70E-11 | 3.70E-11 | SLPFRN(2,4) |

Cancer Risk Slope Factors Summary Table (continued)
Risk Library: DCFPAK3.02 Morbidity

| Menu | Parameter | Current Value | Base Case* | Parameter Name |
|---|---|---|---|---|
| Sf-Rn | Radon K factors, (mrem/WLM): | | | |
| Sf-Rn | Rn-220 Indoor | 1.88E+02 | 1.88E+02 | KFACTR(2,1) |
| Sf-Rn | Rn-220 Outdoor | 1.88E+02 | 1.88E+02 | KFACTR(2,2) |

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

Risk Slope and Environmental Transport Factors for the Ground Pathway

| Nuclide (i) | Slope(i)* | ETFG(i,t) At Time in Years (dimensionless) t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|
| Ac-228 | 4.040E-06 | 4.799E-01 | 4.799E-01 | 4.799E-01 | 4.799E-01 | 4.799E-01 | 4.799E-01 | 4.799E-01 | 4.799E-01 | 4.799E-01 |
| Bi-212 | 4.960E-07 | 4.819E-01 | 4.819E-01 | 4.819E-01 | 4.819E-01 | 4.819E-01 | 4.819E-01 | 4.819E-01 | 4.819E-01 | 4.819E-01 |
| Pb-212 | 4.960E-07 | 4.985E-01 | 4.985E-01 | 4.985E-01 | 4.985E-01 | 4.985E-01 | 4.985E-01 | 4.985E-01 | 4.985E-01 | 4.985E-01 |
| Po-212 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Po-216 | 7.100E-11 | 4.819E-01 | 4.819E-01 | 4.819E-01 | 4.819E-01 | 4.819E-01 | 4.819E-01 | 4.819E-01 | 4.819E-01 | 4.819E-01 |
| Ra-224 | 3.910E-08 | 4.958E-01 | 4.958E-01 | 4.958E-01 | 4.958E-01 | 4.958E-01 | 4.958E-01 | 4.958E-01 | 4.958E-01 | 4.958E-01 |
| Ra-228 | 3.430E-11 | 5.504E-01 | 5.504E-01 | 5.504E-01 | 5.504E-01 | 5.504E-01 | 5.504E-01 | 5.504E-01 | 5.504E-01 | 5.504E-01 |
| Rn-220 | 2.770E-09 | 4.808E-01 | 4.808E-01 | 4.808E-01 | 4.808E-01 | 4.808E-01 | 4.808E-01 | 4.808E-01 | 4.808E-01 | 4.808E-01 |
| Th-228 | 5.640E-09 | 5.022E-01 | 5.022E-01 | 5.022E-01 | 5.022E-01 | 5.022E-01 | 5.022E-01 | 5.022E-01 | 5.022E-01 | 5.022E-01 |
| Th-232 | 3.580E-10 | 5.498E-01 | 5.498E-01 | 5.498E-01 | 5.498E-01 | 5.498E-01 | 5.498E-01 | 5.498E-01 | 5.498E-01 | 5.498E-01 |
| Tl-208 | 1.750E-05 | 4.824E-01 | 4.824E-01 | 4.824E-01 | 4.824E-01 | 4.824E-01 | 4.824E-01 | 4.824E-01 | 4.824E-01 | 4.823E-01 |

* - Units are 1/yr per (pCi/g) at infinite depth and area. Multiplication by ETFG(i,t) converts to site conditions.

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 0.000E+00 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-228 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Bi-212 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Pb-212 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Ra-224 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Ra-228 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Th-228 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Th-232 | 6.079E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.260E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.260E+01 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 0.000E+00 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 7.090E-05 | 0.3807 | 6.471E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.337E-09 | 0.0000 |
| Bi-212 | 1.053E-04 | 0.5656 | 9.761E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.346E-10 | 0.0000 |
| Pb-212 | 7.957E-06 | 0.0427 | 7.407E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.535E-08 | 0.0001 |
| Ra-224 | 6.678E-07 | 0.0036 | 1.310E-08 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.026E-07 | 0.0006 |
| Ra-228 | 6.904E-10 | 0.0000 | 5.743E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.964E-07 | 0.0037 |
| Th-228 | 9.122E-08 | 0.0005 | 1.534E-07 | 0.0008 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.374E-08 | 0.0003 |
| Th-232 | 9.978E-09 | 0.0001 | 7.894E-08 | 0.0004 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.031E-08 | 0.0005 |
| Total | 1.849E-04 | 0.9932 | 3.037E-07 | 0.0016 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.702E-07 | 0.0052 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 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 | 7.090E-05 | 0.3807 |
| Bi-212 | 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 | 1.053E-04 | 0.5656 |
| Pb-212 | 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 | 7.973E-06 | 0.0428 |
| Ra-224 | 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 | 7.834E-07 | 0.0042 |
| Ra-228 | 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 | 7.546E-07 | 0.0041 |
| Th-228 | 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 | 3.083E-07 | 0.0017 |
| Th-232 | 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 | 1.792E-07 | 0.0010 |
| 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 | 1.862E-04 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 0.000E+00 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 1.849E-04 | 0.9932 | 3.037E-07 | 0.0016 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.702E-07 | 0.0052 |
| Total | 1.849E-04 | 0.9932 | 3.037E-07 | 0.0016 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.702E-07 | 0.0052 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 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 | 1.862E-04 | 1.0000 |
| 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 | 1.862E-04 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+00 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-228 | 6.888E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.561E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.561E+00 |
| Bi-212 | 1.097E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.079E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.079E-01 |
| Pb-212 | 1.098E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.081E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.081E-01 |
| Ra-224 | 1.101E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.094E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.094E-01 |
| Ra-228 | 6.895E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.564E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.564E+00 |
| Th-228 | 1.131E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.205E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.205E-01 |
| Th-232 | 6.078E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.260E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.260E+01 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 1.000E+00 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 7.384E-05 | 0.3791 | 6.740E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.393E-09 | 0.0000 |
| Bi-212 | 1.105E-04 | 0.5671 | 1.024E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.559E-10 | 0.0000 |
| Pb-212 | 8.347E-06 | 0.0429 | 7.770E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.610E-08 | 0.0001 |
| Ra-224 | 7.005E-07 | 0.0036 | 1.375E-08 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.076E-07 | 0.0006 |
| Ra-228 | 7.191E-10 | 0.0000 | 5.982E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.254E-07 | 0.0037 |
| Th-228 | 9.569E-08 | 0.0005 | 1.609E-07 | 0.0008 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.686E-08 | 0.0003 |
| Th-232 | 9.978E-09 | 0.0001 | 7.894E-08 | 0.0004 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.031E-08 | 0.0005 |
| Total | 1.935E-04 | 0.9932 | 3.143E-07 | 0.0016 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.008E-06 | 0.0052 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 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 | 7.385E-05 | 0.3791 |
| Bi-212 | 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 | 1.105E-04 | 0.5671 |
| Pb-212 | 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 | 8.364E-06 | 0.0429 |
| Ra-224 | 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 | 8.218E-07 | 0.0042 |
| Ra-228 | 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 | 7.859E-07 | 0.0040 |
| Th-228 | 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 | 3.234E-07 | 0.0017 |
| Th-232 | 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 | 1.792E-07 | 0.0009 |
| 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 | 1.948E-04 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+00 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 1.935E-04 | 0.9932 | 3.143E-07 | 0.0016 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.008E-06 | 0.0052 |
| Total | 1.935E-04 | 0.9932 | 3.143E-07 | 0.0016 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.008E-06 | 0.0052 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 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 | 1.948E-04 | 1.0000 |
| 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 | 1.948E-04 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+00 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-228 | 1.838E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.834E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.834E+00 |
| Bi-212 | 7.473E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.779E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.779E+00 |
| Pb-212 | 7.475E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.779E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.779E+00 |
| Ra-224 | 7.482E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.782E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.782E+00 |
| Ra-228 | 1.838E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.836E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.836E+00 |
| Th-228 | 7.539E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.803E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.803E+00 |
| Th-232 | 6.078E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.260E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.260E+01 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+00 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 7.870E-05 | 0.3738 | 7.183E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.484E-09 | 0.0000 |
| Bi-212 | 1.204E-04 | 0.5721 | 1.116E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.970E-10 | 0.0000 |
| Pb-212 | 9.100E-06 | 0.0432 | 8.472E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.755E-08 | 0.0001 |
| Ra-224 | 7.637E-07 | 0.0036 | 1.499E-08 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.173E-07 | 0.0006 |
| Ra-228 | 7.664E-10 | 0.0000 | 6.375E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.731E-07 | 0.0037 |
| Th-228 | 1.043E-07 | 0.0005 | 1.754E-07 | 0.0008 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.289E-08 | 0.0003 |
| Th-232 | 9.978E-09 | 0.0000 | 7.894E-08 | 0.0004 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.031E-08 | 0.0004 |
| Total | 2.091E-04 | 0.9933 | 3.341E-07 | 0.0016 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.073E-06 | 0.0051 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 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 | 7.870E-05 | 0.3738 |
| Bi-212 | 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 | 1.204E-04 | 0.5721 |
| Pb-212 | 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 | 9.119E-06 | 0.0433 |
| Ra-224 | 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 | 8.960E-07 | 0.0043 |
| Ra-228 | 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 | 8.376E-07 | 0.0040 |
| Th-228 | 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 | 3.526E-07 | 0.0017 |
| Th-232 | 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 | 1.792E-07 | 0.0009 |
| 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 | 2.105E-04 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 3.000E+00 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 2.091E-04 | 0.9933 | 3.341E-07 | 0.0016 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.073E-06 | 0.0051 |
| Total | 2.091E-04 | 0.9933 | 3.341E-07 | 0.0016 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.073E-06 | 0.0051 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 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 | 2.105E-04 | 1.0000 |
| 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 | 2.105E-04 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+01 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-228 | 4.217E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.568E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.568E+01 |
| Bi-212 | 3.399E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.264E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.264E+01 |
| Pb-212 | 3.399E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.264E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.264E+01 |
| Ra-224 | 3.400E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.264E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.264E+01 |
| Ra-228 | 4.217E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.568E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.568E+01 |
| Th-228 | 3.404E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.266E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.266E+01 |
| Th-232 | 6.078E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.260E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.260E+01 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 1.000E+01 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 8.890E-05 | 0.3611 | 8.115E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.677E-09 | 0.0000 |
| Bi-212 | 1.438E-04 | 0.5840 | 1.333E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.934E-10 | 0.0000 |
| Pb-212 | 1.086E-05 | 0.0441 | 1.011E-09 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.095E-08 | 0.0001 |
| Ra-224 | 9.117E-07 | 0.0037 | 1.789E-08 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.400E-07 | 0.0006 |
| Ra-228 | 8.658E-10 | 0.0000 | 7.201E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.733E-07 | 0.0035 |
| Th-228 | 1.245E-07 | 0.0005 | 2.093E-07 | 0.0009 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.699E-08 | 0.0004 |
| Th-232 | 9.978E-09 | 0.0000 | 7.894E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.031E-08 | 0.0004 |
| Total | 2.446E-04 | 0.9935 | 3.794E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.214E-06 | 0.0049 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 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 | 8.891E-05 | 0.3611 |
| Bi-212 | 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 | 1.438E-04 | 0.5840 |
| Pb-212 | 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 | 1.089E-05 | 0.0442 |
| Ra-224 | 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 | 1.070E-06 | 0.0043 |
| Ra-228 | 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 | 9.462E-07 | 0.0038 |
| Th-228 | 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 | 4.208E-07 | 0.0017 |
| Th-232 | 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 | 1.792E-07 | 0.0007 |
| 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 | 2.462E-04 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+01 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 2.446E-04 | 0.9935 | 3.794E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.214E-06 | 0.0049 |
| Total | 2.446E-04 | 0.9935 | 3.794E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.214E-06 | 0.0049 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 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 | 2.462E-04 | 1.0000 |
| 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 | 2.462E-04 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+01 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-228 | 5.811E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.161E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.161E+01 |
| Bi-212 | 5.734E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.132E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.132E+01 |
| Pb-212 | 5.734E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.132E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.132E+01 |
| Ra-224 | 5.734E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.132E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.132E+01 |
| Ra-228 | 5.812E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.161E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.161E+01 |
| Th-228 | 5.735E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.132E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.132E+01 |
| Th-232 | 6.078E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.260E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.260E+01 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+01 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 9.574E-05 | 0.3522 | 8.739E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.806E-09 | 0.0000 |
| Bi-212 | 1.611E-04 | 0.5924 | 1.493E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.646E-10 | 0.0000 |
| Pb-212 | 1.217E-05 | 0.0448 | 1.133E-09 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.347E-08 | 0.0001 |
| Ra-224 | 1.021E-06 | 0.0038 | 2.004E-08 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.568E-07 | 0.0006 |
| Ra-228 | 9.324E-10 | 0.0000 | 7.755E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.405E-07 | 0.0035 |
| Th-228 | 1.394E-07 | 0.0005 | 2.344E-07 | 0.0009 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.741E-08 | 0.0004 |
| Th-232 | 9.977E-09 | 0.0000 | 7.893E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.030E-08 | 0.0003 |
| Total | 2.701E-04 | 0.9937 | 4.123E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.311E-06 | 0.0048 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 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 | 9.574E-05 | 0.3522 |
| Bi-212 | 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 | 1.611E-04 | 0.5924 |
| Pb-212 | 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 | 1.219E-05 | 0.0449 |
| Ra-224 | 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-06 | 0.0044 |
| Ra-228 | 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 | 1.019E-06 | 0.0037 |
| Th-228 | 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 | 4.712E-07 | 0.0017 |
| Th-232 | 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 | 1.792E-07 | 0.0007 |
| 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 | 2.719E-04 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 3.000E+01 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 2.701E-04 | 0.9937 | 4.123E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.311E-06 | 0.0048 |
| Total | 2.701E-04 | 0.9937 | 4.123E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.311E-06 | 0.0048 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 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 | 2.719E-04 | 1.0000 |
| 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 | 2.719E-04 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 8.890E+01 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-228 | 5.960E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 |
| Bi-212 | 5.959E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.215E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.215E+01 |
| Pb-212 | 5.959E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 |
| Ra-224 | 5.959E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 |
| Ra-228 | 5.960E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 |
| Th-228 | 5.960E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 |
| Th-232 | 6.077E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.260E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.260E+01 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 8.890E+01 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 8.890E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 9.637E-05 | 0.3514 | 8.796E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.817E-09 | 0.0000 |
| Bi-212 | 1.627E-04 | 0.5931 | 1.508E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.713E-10 | 0.0000 |
| Pb-212 | 1.229E-05 | 0.0448 | 1.144E-09 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.370E-08 | 0.0001 |
| Ra-224 | 1.031E-06 | 0.0038 | 2.024E-08 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.584E-07 | 0.0006 |
| Ra-228 | 9.384E-10 | 0.0000 | 7.806E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.466E-07 | 0.0035 |
| Th-228 | 1.408E-07 | 0.0005 | 2.367E-07 | 0.0009 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.838E-08 | 0.0004 |
| Th-232 | 9.976E-09 | 0.0000 | 7.892E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.029E-08 | 0.0003 |
| Total | 2.725E-04 | 0.9937 | 4.153E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.320E-06 | 0.0048 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 8.890E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 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 | 9.637E-05 | 0.3514 |
| Bi-212 | 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 | 1.627E-04 | 0.5932 |
| Pb-212 | 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 | 1.232E-05 | 0.0449 |
| Ra-224 | 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 | 1.210E-06 | 0.0044 |
| Ra-228 | 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 | 1.026E-06 | 0.0037 |
| Th-228 | 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 | 4.759E-07 | 0.0017 |
| Th-232 | 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 | 1.792E-07 | 0.0007 |
| 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 | 2.742E-04 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 8.890E+01 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 8.890E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 2.725E-04 | 0.9937 | 4.153E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.320E-06 | 0.0048 |
| Total | 2.725E-04 | 0.9937 | 4.153E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.320E-06 | 0.0048 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 8.890E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 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 | 2.742E-04 | 1.0000 |
| 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 | 2.742E-04 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+02 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-228 | 5.960E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 |
| Bi-212 | 5.959E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.215E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.215E+01 |
| Pb-212 | 5.959E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 |
| Ra-224 | 5.959E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 |
| Ra-228 | 5.960E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 |
| Th-228 | 5.960E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.216E+01 |
| Th-232 | 6.077E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.259E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.259E+01 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 1.000E+02 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 9.636E-05 | 0.3514 | 8.796E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.817E-09 | 0.0000 |
| Bi-212 | 1.627E-04 | 0.5931 | 1.508E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.713E-10 | 0.0000 |
| Pb-212 | 1.229E-05 | 0.0448 | 1.144E-09 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.370E-08 | 0.0001 |
| Ra-224 | 1.031E-06 | 0.0038 | 2.024E-08 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.584E-07 | 0.0006 |
| Ra-228 | 9.384E-10 | 0.0000 | 7.806E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.466E-07 | 0.0035 |
| Th-228 | 1.408E-07 | 0.0005 | 2.367E-07 | 0.0009 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.838E-08 | 0.0004 |
| Th-232 | 9.975E-09 | 0.0000 | 7.892E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.028E-08 | 0.0003 |
| Total | 2.725E-04 | 0.9937 | 4.153E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.320E-06 | 0.0048 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 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 | 9.637E-05 | 0.3514 |
| Bi-212 | 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 | 1.627E-04 | 0.5932 |
| Pb-212 | 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 | 1.232E-05 | 0.0449 |
| Ra-224 | 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 | 1.210E-06 | 0.0044 |
| Ra-228 | 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 | 1.026E-06 | 0.0037 |
| Th-228 | 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 | 4.759E-07 | 0.0017 |
| Th-232 | 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 | 1.792E-07 | 0.0007 |
| 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 | 2.742E-04 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+02 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 2.725E-04 | 0.9937 | 4.153E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.320E-06 | 0.0048 |
| Total | 2.725E-04 | 0.9937 | 4.153E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.320E-06 | 0.0048 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 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 | 2.742E-04 | 1.0000 |
| 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 | 2.742E-04 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+02 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-228 | 5.956E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.215E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.215E+01 |
| Bi-212 | 5.955E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.214E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.214E+01 |
| Pb-212 | 5.956E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.215E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.215E+01 |
| Ra-224 | 5.956E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.215E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.215E+01 |
| Ra-228 | 5.956E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.215E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.215E+01 |
| Th-228 | 5.956E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.215E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.215E+01 |
| Th-232 | 6.073E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.258E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.258E+01 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+02 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 9.631E-05 | 0.3514 | 8.791E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.816E-09 | 0.0000 |
| Bi-212 | 1.626E-04 | 0.5931 | 1.507E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.709E-10 | 0.0000 |
| Pb-212 | 1.228E-05 | 0.0448 | 1.144E-09 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.369E-08 | 0.0001 |
| Ra-224 | 1.031E-06 | 0.0038 | 2.023E-08 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.583E-07 | 0.0006 |
| Ra-228 | 9.379E-10 | 0.0000 | 7.801E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.460E-07 | 0.0035 |
| Th-228 | 1.407E-07 | 0.0005 | 2.366E-07 | 0.0009 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.832E-08 | 0.0004 |
| Th-232 | 9.970E-09 | 0.0000 | 7.887E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.023E-08 | 0.0003 |
| Total | 2.723E-04 | 0.9937 | 4.151E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.319E-06 | 0.0048 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 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 | 9.631E-05 | 0.3514 |
| Bi-212 | 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 | 1.626E-04 | 0.5932 |
| Pb-212 | 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 | 1.231E-05 | 0.0449 |
| Ra-224 | 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 | 1.209E-06 | 0.0044 |
| Ra-228 | 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 | 1.025E-06 | 0.0037 |
| Th-228 | 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 | 4.756E-07 | 0.0017 |
| Th-232 | 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 | 1.791E-07 | 0.0007 |
| 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 | 2.741E-04 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 3.000E+02 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 2.723E-04 | 0.9937 | 4.151E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.319E-06 | 0.0048 |
| Total | 2.723E-04 | 0.9937 | 4.151E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.319E-06 | 0.0048 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 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 | 2.741E-04 | 1.0000 |
| 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 | 2.741E-04 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+03 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-228 | 5.945E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.210E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.210E+01 |
| Bi-212 | 5.944E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.210E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.210E+01 |
| Pb-212 | 5.944E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.210E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.210E+01 |
| Ra-224 | 5.944E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.210E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.210E+01 |
| Ra-228 | 5.945E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.210E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.210E+01 |
| Th-228 | 5.945E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.210E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.210E+01 |
| Th-232 | 6.062E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.254E+01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.254E+01 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 1.000E+03 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 9.612E-05 | 0.3514 | 8.774E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.813E-09 | 0.0000 |
| Bi-212 | 1.622E-04 | 0.5931 | 1.504E-10 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.696E-10 | 0.0000 |
| Pb-212 | 1.226E-05 | 0.0448 | 1.141E-09 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.364E-08 | 0.0001 |
| Ra-224 | 1.029E-06 | 0.0038 | 2.019E-08 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.580E-07 | 0.0006 |
| Ra-228 | 9.361E-10 | 0.0000 | 7.786E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.442E-07 | 0.0035 |
| Th-228 | 1.404E-07 | 0.0005 | 2.361E-07 | 0.0009 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.813E-08 | 0.0004 |
| Th-232 | 9.950E-09 | 0.0000 | 7.872E-08 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.006E-08 | 0.0003 |
| Total | 2.718E-04 | 0.9937 | 4.143E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.317E-06 | 0.0048 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-228 | 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 | 9.612E-05 | 0.3514 |
| Bi-212 | 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 | 1.622E-04 | 0.5931 |
| Pb-212 | 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 | 1.228E-05 | 0.0449 |
| Ra-224 | 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 | 1.207E-06 | 0.0044 |
| Ra-228 | 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 | 1.023E-06 | 0.0037 |
| Th-228 | 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 | 4.747E-07 | 0.0017 |
| Th-232 | 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 | 1.787E-07 | 0.0007 |
| 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 | 2.735E-04 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+03 years

| Radon | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pathway | Rn-222 | Po-218 | Pb-214 | Bi-214 | Rn-220 | Po-216 | Pb-212 | Bi-212 |
| Water-ind. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Water-dep. | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Total | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 2.718E-04 | 0.9937 | 4.143E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.317E-06 | 0.0048 |
| Total | 2.718E-04 | 0.9937 | 4.143E-07 | 0.0015 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.317E-06 | 0.0048 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Th-232 | 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 | 2.735E-04 | 1.0000 |
| 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 | 2.735E-04 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Summary : RESRAD Default Parameters
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE28.RAD

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Dose Conversion Factor (and Related) Parameter Summary
Dose Library: DOE STD-1196-2011 (Reference Person)

| Menu | Parameter | Current Value# | Base Case* | Parameter Name |
|---|---|---|---|---|
| A-1 | DCF's for external ground radiation, (mrem/yr)/(pCi/g) | | | |
| A-1 | Ac-227 (Source: DCFPAK3.02) | 2.615E-04 | 2.615E-04 | DCF1( 1) |
| A-1 | At-219 (Source: DCFPAK3.02) | 0.000E+00 | 0.000E+00 | DCF1( 2) |
| A-1 | Bi-211 (Source: DCFPAK3.02) | 2.410E-01 | 2.410E-01 | DCF1( 3) |
| A-1 | Bi-215 (Source: DCFPAK3.02) | 1.369E+00 | 1.369E+00 | DCF1( 4) |
| A-1 | Fr-223 (Source: DCFPAK3.02) | 1.758E-01 | 1.758E-01 | DCF1( 5) |
| A-1 | Pa-231 (Source: DCFPAK3.02) | 1.608E-01 | 1.608E-01 | DCF1( 6) |
| A-1 | Pb-211 (Source: DCFPAK3.02) | 3.680E-01 | 3.680E-01 | DCF1( 7) |
| A-1 | Po-211 (Source: DCFPAK3.02) | 4.707E-02 | 4.707E-02 | DCF1( 8) |
| A-1 | Po-215 (Source: DCFPAK3.02) | 9.452E-04 | 9.452E-04 | DCF1( 9) |
| A-1 | Ra-223 (Source: DCFPAK3.02) | 5.791E-01 | 5.791E-01 | DCF1( 10) |
| A-1 | Rn-219 (Source: DCFPAK3.02) | 2.970E-01 | 2.970E-01 | DCF1( 11) |
| A-1 | Th-227 (Source: DCFPAK3.02) | 5.641E-01 | 5.641E-01 | DCF1( 12) |
| A-1 | Th-231 (Source: DCFPAK3.02) | 3.250E-02 | 3.250E-02 | DCF1( 13) |
| A-1 | Tl-207 (Source: DCFPAK3.02) | 2.391E-02 | 2.391E-02 | DCF1( 14) |
| A-1 | U-235 (Source: DCFPAK3.02) | 7.005E-01 | 7.005E-01 | DCF1( 15) |
| | | | | |
| B-1 | Dose conversion factors for inhalation, mrem/pCi: | | | |
| B-1 | Ac-227 | 5.957E-01 | 5.957E-01 | DCF2( 1) |
| B-1 | Fr-223 | 4.921E-05 | 4.921E-05 | DCF2( 4) |
| B-1 | Fr-223+D | 4.921E-05 | 4.921E-05 | DCF2( 5) |
| B-1 | Pa-231 | 8.769E-01 | 8.769E-01 | DCF2( 6) |
| B-1 | Pb-211+D | 5.032E-05 | 5.032E-05 | DCF2( 9) |
| B-1 | Ra-223+D | 3.474E-02 | 3.474E-02 | DCF2( 10) |
| B-1 | Th-227 | 4.144E-02 | 4.144E-02 | DCF2( 11) |
| B-1 | Th-231 | 1.399E-06 | 1.399E-06 | DCF2( 12) |
| B-1 | U-235 | 3.378E-02 | 3.378E-02 | DCF2( 15) |
| | | | | |
| D-1 | Dose conversion factors for ingestion, mrem/pCi: | | | |
| D-1 | Ac-227 | 1.450E-03 | 1.450E-03 | DCF3( 1) |
| D-1 | Fr-223 | 1.195E-05 | 1.195E-05 | DCF3( 4) |
| D-1 | Fr-223+D | 1.195E-05 | 1.195E-05 | DCF3( 5) |
| D-1 | Pa-231 | 2.068E-03 | 2.068E-03 | DCF3( 6) |
| D-1 | Pb-211+D | 9.694E-07 | 9.694E-07 | DCF3( 9) |
| D-1 | Ra-223+D | 8.029E-04 | 8.029E-04 | DCF3( 10) |
| D-1 | Th-227 | 5.439E-05 | 5.439E-05 | DCF3( 11) |
| D-1 | Th-231 | 1.706E-06 | 1.706E-06 | DCF3( 12) |
| D-1 | U-235 | 2.031E-04 | 2.031E-04 | DCF3( 15) |
| | | | | |
| D-34 | Food transfer factors: | | | |
| D-34 | Ac-227 , plant/soil concentration ratio, dimensionless | 2.500E-03 | 2.500E-03 | RTF( 1,1) |
| D-34 | Ac-227 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 2.000E-05 | 2.000E-05 | RTF( 1,2) |
| D-34 | Ac-227 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 2.000E-05 | 2.000E-05 | RTF( 1,3) |
| D-34 | | | | |
| D-34 | Fr-223 , plant/soil concentration ratio, dimensionless | 3.000E-02 | 3.000E-02 | RTF( 4,1) |
| D-34 | Fr-223 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 3.000E-02 | 3.000E-02 | RTF( 4,2) |
| D-34 | Fr-223 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 8.000E-03 | 8.000E-03 | RTF( 4,3) |
| D-34 | | | | |

Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DOE STD-1196-2011 (Reference Person)

| Menu | Parameter | Current Value# | Base Case* | Parameter Name |
|---|---|---|---|---|
| D-34 | Fr-223+D , plant/soil concentration ratio, dimensionless | 3.000E-02 | 3.000E-02 | RTF( 5,1) |
| D-34 | Fr-223+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 3.000E-02 | 3.000E-02 | RTF( 5,2) |
| D-34 | Fr-223+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 8.000E-03 | 8.000E-03 | RTF( 5,3) |
| D-34 | | | | |
| D-34 | Pa-231 , plant/soil concentration ratio, dimensionless | 1.000E-02 | 1.000E-02 | RTF( 6,1) |
| D-34 | Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 5.000E-03 | 5.000E-03 | RTF( 6,2) |
| D-34 | Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-06 | 5.000E-06 | RTF( 6,3) |
| D-34 | | | | |
| D-34 | Pb-211+D , plant/soil concentration ratio, dimensionless | 1.000E-02 | 1.000E-02 | RTF( 9,1) |
| D-34 | Pb-211+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 8.000E-04 | 8.000E-04 | RTF( 9,2) |
| D-34 | Pb-211+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 3.000E-04 | 3.000E-04 | RTF( 9,3) |
| D-34 | | | | |
| D-34 | Ra-223+D , plant/soil concentration ratio, dimensionless | 4.000E-02 | 4.000E-02 | RTF( 10,1) |
| D-34 | Ra-223+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.000E-03 | 1.000E-03 | RTF( 10,2) |
| D-34 | Ra-223+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 1.000E-03 | 1.000E-03 | RTF( 10,3) |
| D-34 | | | | |
| D-34 | Th-227 , plant/soil concentration ratio, dimensionless | 1.000E-03 | 1.000E-03 | RTF( 11,1) |
| D-34 | Th-227 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.000E-04 | 1.000E-04 | RTF( 11,2) |
| D-34 | Th-227 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-06 | 5.000E-06 | RTF( 11,3) |
| D-34 | | | | |
| D-34 | Th-231 , plant/soil concentration ratio, dimensionless | 1.000E-03 | 1.000E-03 | RTF( 12,1) |
| D-34 | Th-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.000E-04 | 1.000E-04 | RTF( 12,2) |
| D-34 | Th-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 5.000E-06 | 5.000E-06 | RTF( 12,3) |
| D-34 | | | | |
| D-34 | U-235 , plant/soil concentration ratio, dimensionless | 2.500E-03 | 2.500E-03 | RTF( 15,1) |
| D-34 | U-235 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 3.400E-04 | 3.400E-04 | RTF( 15,2) |
| D-34 | U-235 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) | 6.000E-04 | 6.000E-04 | RTF( 15,3) |
| D-34 | | | | |
| | | | | |
| D-5 | Bioaccumulation factors, fresh water, L/kg: | | | |
| D-5 | Ac-227 , fish | 1.500E+01 | 1.500E+01 | BIOFAC( 1,1) |
| D-5 | Ac-227 , crustacea and mollusks | 1.000E+03 | 1.000E+03 | BIOFAC( 1,2) |
| D-5 | | | | |
| D-5 | Fr-223 , fish | 3.000E+01 | 3.000E+01 | BIOFAC( 4,1) |
| D-5 | Fr-223 , crustacea and mollusks | 0.000E+00 | -1.000E+00 | BIOFAC( 4,2) |
| D-5 | | | | |
| D-5 | Fr-223+D , fish | 3.000E+01 | 3.000E+01 | BIOFAC( 5,1) |
| D-5 | Fr-223+D , crustacea and mollusks | 0.000E+00 | -1.000E+00 | BIOFAC( 5,2) |
| D-5 | | | | |
| D-5 | Pa-231 , fish | 1.000E+01 | 1.000E+01 | BIOFAC( 6,1) |
| D-5 | Pa-231 , crustacea and mollusks | 1.100E+02 | 1.100E+02 | BIOFAC( 6,2) |
| D-5 | | | | |
| D-5 | Pb-211+D , fish | 3.000E+02 | 3.000E+02 | BIOFAC( 9,1) |
| D-5 | Pb-211+D , crustacea and mollusks | 1.000E+02 | 1.000E+02 | BIOFAC( 9,2) |
| D-5 | | | | |
| D-5 | Ra-223+D , fish | 5.000E+01 | 5.000E+01 | BIOFAC( 10,1) |
| D-5 | Ra-223+D , crustacea and mollusks | 2.500E+02 | 2.500E+02 | BIOFAC( 10,2) |
| D-5 | | | | |
| D-5 | Th-227 , fish | 1.000E+02 | 1.000E+02 | BIOFAC( 11,1) |
| D-5 | Th-227 , crustacea and mollusks | 5.000E+02 | 5.000E+02 | BIOFAC( 11,2) |

Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DOE STD-1196-2011 (Reference Person)

| Menu | Parameter | Current Value# | Base Case* | Parameter Name |
|---|---|---|---|---|
| D-5 | Th-231 , fish | 1.000E+02 | 1.000E+02 | BIOFAC( 12,1) |
| D-5 | Th-231 , crustacea and mollusks | 5.000E+02 | 5.000E+02 | BIOFAC( 12,2) |
| D-5 | | | | |
| D-5 | U-235 , fish | 1.000E+01 | 1.000E+01 | BIOFAC( 15,1) |
| D-5 | U-235 , crustacea and mollusks | 6.000E+01 | 6.000E+01 | BIOFAC( 15,2) |
| D-5 | | | | |

#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.

Site-Specific Parameter Summary

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R011 | Area of contaminated zone (m**2) | 1.214E+04 | 1.000E+04 | --- | AREA |
| R011 | Thickness of contaminated zone (m) | 2.000E+00 | 2.000E+00 | --- | THICK0 |
| R011 | Fraction of contamination that is submerged | 0.000E+00 | 0.000E+00 | --- | SUBMFRACT |
| R011 | Length parallel to aquifer flow (m) | not used | 1.000E+02 | --- | LCZPAQ |
| R011 | Basic radiation dose limit (mrem/yr) | 1.200E+01 | 3.000E+01 | --- | BRDL |
| R011 | Time since placement of material (yr) | 0.000E+00 | 0.000E+00 | --- | TI |
| R011 | Times for calculations (yr) | 1.000E+00 | 1.000E+00 | --- | T( 2) |
| R011 | Times for calculations (yr) | 3.000E+00 | 3.000E+00 | --- | T( 3) |
| R011 | Times for calculations (yr) | 1.000E+01 | 1.000E+01 | --- | T( 4) |
| R011 | Times for calculations (yr) | 3.000E+01 | 3.000E+01 | --- | T( 5) |
| R011 | Times for calculations (yr) | 8.890E+01 | 1.000E+02 | --- | T( 6) |
| R011 | Times for calculations (yr) | 1.000E+02 | 3.000E+02 | --- | T( 7) |
| R011 | Times for calculations (yr) | 3.000E+02 | 1.000E+03 | --- | T( 8) |
| R011 | Times for calculations (yr) | 1.000E+03 | 0.000E+00 | --- | T( 9) |
| R011 | Times for calculations (yr) | not used | 0.000E+00 | --- | T(10) |
| | | | | | |
| R012 | Initial principal radionuclide (pCi/g): U-235 | 1.950E-01 | 0.000E+00 | --- | S1(15) |
| R012 | Concentration in groundwater (pCi/L): U-235 | not used | 0.000E+00 | --- | W1(15) |
| | | | | | |
| R013 | Cover depth (m) | 0.000E+00 | 0.000E+00 | --- | COVER0 |
| R013 | Density of cover material (g/cm**3) | not used | 1.500E+00 | --- | DENSCV |
| R013 | Cover depth erosion rate (m/yr) | not used | 1.000E-03 | --- | VCV |
| R013 | Density of contaminated zone (g/cm**3) | 1.500E+00 | 1.500E+00 | --- | DENSCZ |
| R013 | Contaminated zone erosion rate (m/yr) | 1.000E-03 | 1.000E-03 | --- | VCZ |
| R013 | Contaminated zone total porosity | 4.000E-01 | 4.000E-01 | --- | TPCZ |
| R013 | Contaminated zone field capacity | 2.000E-01 | 2.000E-01 | --- | FCCZ |
| R013 | Contaminated zone hydraulic conductivity (m/yr) | 1.000E+01 | 1.000E+01 | --- | HCCZ |
| R013 | Contaminated zone b parameter | 5.300E+00 | 5.300E+00 | --- | BCZ |
| R013 | Average annual wind speed (m/sec) | 2.000E+00 | 2.000E+00 | --- | WIND |
| R013 | Humidity in air (g/m**3) | not used | 8.000E+00 | --- | HUMID |
| R013 | Evapotranspiration coefficient | 5.000E-01 | 5.000E-01 | --- | EVAPTR |
| R013 | Precipitation (m/yr) | 1.000E+00 | 1.000E+00 | --- | PRECIP |
| R013 | Irrigation (m/yr) | 2.000E-01 | 2.000E-01 | --- | RI |
| R013 | Irrigation mode | overhead | overhead | --- | IDITCH |
| R013 | Runoff coefficient | 2.000E-01 | 2.000E-01 | --- | RUNOFF |
| R013 | Watershed area for nearby stream or pond (m**2) | not used | 1.000E+06 | --- | WAREA |
| R013 | Accuracy for water/soil computations | not used | 1.000E-03 | --- | EPS |
| | | | | | |
| R014 | Density of saturated zone (g/cm**3) | not used | 1.500E+00 | --- | DENSAQ |
| R014 | Saturated zone total porosity | not used | 4.000E-01 | --- | TPSZ |
| R014 | Saturated zone effective porosity | not used | 2.000E-01 | --- | EPSZ |
| R014 | Saturated zone field capacity | not used | 2.000E-01 | --- | FCSZ |
| R014 | Saturated zone hydraulic conductivity (m/yr) | not used | 1.000E+02 | --- | HCSZ |
| R014 | Saturated zone hydraulic gradient | not used | 2.000E-02 | --- | HGWT |
| R014 | Saturated zone b parameter | not used | 5.300E+00 | --- | BSZ |
| R014 | Water table drop rate (m/yr) | not used | 1.000E-03 | --- | VWT |
| R014 | Well pump intake depth (m below water table) | not used | 1.000E+01 | --- | DWIBWT |
| R014 | Model: Nondispersion (ND) or Mass-Balance (MB) | not used | ND | --- | MODEL |
| R014 | Well pumping rate (m**3/yr) | not used | 2.500E+02 | --- | UW |
| | | | | | |

Site-Specific Parameter Summary (continued)

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R015 | Number of unsaturated zone strata | not used | 1 | --- | NS |
| R015 | Unsat. zone 1, thickness (m) | not used | 4.000E+00 | --- | H(1) |
| R015 | Unsat. zone 1, soil density (g/cm**3) | not used | 1.500E+00 | --- | DENSUZ(1) |
| R015 | Unsat. zone 1, total porosity | not used | 4.000E-01 | --- | TPUZ(1) |
| R015 | Unsat. zone 1, effective porosity | not used | 2.000E-01 | --- | EPUZ(1) |
| R015 | Unsat. zone 1, field capacity | not used | 2.000E-01 | --- | FCUZ(1) |
| R015 | Unsat. zone 1, soil-specific b parameter | not used | 5.300E+00 | --- | BUZ(1) |
| R015 | Unsat. zone 1, hydraulic conductivity (m/yr) | not used | 1.000E+01 | --- | HCUZ(1) |
| | | | | | |
| R016 | Distribution coefficients for U-235 | | | | |
| R016 | Contaminated zone (cm**3/g) | 5.000E+01 | 5.000E+01 | --- | DCNUCC(15) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 5.000E+01 | --- | DCNUCU(15,1) |
| R016 | Saturated zone (cm**3/g) | not used | 5.000E+01 | --- | DCNUCS(15) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 3.319E-03 | ALEACH(15) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(15) |
| | | | | | |
| R016 | Distribution coefficients for daughter Ac-227 | | | | |
| R016 | Contaminated zone (cm**3/g) | 2.000E+01 | 2.000E+01 | --- | DCNUCC( 1) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 2.000E+01 | --- | DCNUCU( 1,1) |
| R016 | Saturated zone (cm**3/g) | not used | 2.000E+01 | --- | DCNUCS( 1) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 8.245E-03 | ALEACH( 1) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK( 1) |
| | | | | | |
| R016 | Distribution coefficients for daughter Fr-223 | | | | |
| R016 | Contaminated zone (cm**3/g) | 2.000E+02 | 2.000E+02 | --- | DCNUCC( 4) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 2.000E+02 | --- | DCNUCU( 4,1) |
| R016 | Saturated zone (cm**3/g) | not used | 2.000E+02 | --- | DCNUCS( 4) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 8.324E-04 | ALEACH( 4) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK( 4) |
| | | | | | |
| R016 | Distribution coefficients for daughter Pa-231 | | | | |
| R016 | Contaminated zone (cm**3/g) | 5.000E+01 | 5.000E+01 | --- | DCNUCC( 6) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 5.000E+01 | --- | DCNUCU( 6,1) |
| R016 | Saturated zone (cm**3/g) | not used | 5.000E+01 | --- | DCNUCS( 6) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 3.319E-03 | ALEACH( 6) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK( 6) |
| | | | | | |
| R016 | Distribution coefficients for daughter Pb-211 | | | | |
| R016 | Contaminated zone (cm**3/g) | 1.000E+02 | 1.000E+02 | --- | DCNUCC( 9) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 1.000E+02 | --- | DCNUCU( 9,1) |
| R016 | Saturated zone (cm**3/g) | not used | 1.000E+02 | --- | DCNUCS( 9) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 1.663E-03 | ALEACH( 9) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK( 9) |
| | | | | | |
| R016 | Distribution coefficients for daughter Ra-223 | | | | |
| R016 | Contaminated zone (cm**3/g) | 7.000E+01 | 7.000E+01 | --- | DCNUCC(10) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 7.000E+01 | --- | DCNUCU(10,1) |
| R016 | Saturated zone (cm**3/g) | not used | 7.000E+01 | --- | DCNUCS(10) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.374E-03 | ALEACH(10) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(10) |

Site-Specific Parameter Summary (continued)

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R016 | Distribution coefficients for daughter Th-227 | | | | |
| R016 | Contaminated zone (cm**3/g) | 6.000E+04 | 6.000E+04 | --- | DCNUCC(11) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 6.000E+04 | --- | DCNUCU(11,1) |
| R016 | Saturated zone (cm**3/g) | not used | 6.000E+04 | --- | DCNUCS(11) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.778E-06 | ALEACH(11) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(11) |
| | | | | | |
| R016 | Distribution coefficients for daughter Th-231 | | | | |
| R016 | Contaminated zone (cm**3/g) | 6.000E+04 | 6.000E+04 | --- | DCNUCC(12) |
| R016 | Unsaturated zone 1 (cm**3/g) | not used | 6.000E+04 | --- | DCNUCU(12,1) |
| R016 | Saturated zone (cm**3/g) | not used | 6.000E+04 | --- | DCNUCS(12) |
| R016 | Leach rate (/yr) | 0.000E+00 | 0.000E+00 | 2.778E-06 | ALEACH(12) |
| R016 | Solubility constant | 0.000E+00 | 0.000E+00 | not used | SOLUBK(12) |
| | | | | | |
| R017 | Inhalation rate (m**3/yr) | 8.400E+03 | 8.400E+03 | --- | INHALR |
| R017 | Mass loading for inhalation (g/m**3) | 1.000E-04 | 1.000E-04 | --- | MLINH |
| R017 | Exposure duration | 3.000E+01 | 3.000E+01 | --- | ED |
| R017 | Shielding factor, inhalation | 4.000E-01 | 4.000E-01 | --- | SHF3 |
| R017 | Shielding factor, external gamma | 7.000E-01 | 7.000E-01 | --- | SHF1 |
| R017 | Fraction of time spent indoors | 6.840E-01 | 5.000E-01 | --- | FIND |
| R017 | Fraction of time spent outdoors (on site) | 7.300E-02 | 2.500E-01 | --- | FOTD |
| R017 | Shape factor flag, external gamma | 1.000E+00 | 1.000E+00 | >0 shows circular AREA. | FS |
| R017 | Radii of shape factor array (used if FS = -1): | | | | |
| R017 | Outer annular radius (m), ring 1: | not used | 5.000E+01 | --- | RAD_SHAPE( 1) |
| R017 | Outer annular radius (m), ring 2: | not used | 7.071E+01 | --- | RAD_SHAPE( 2) |
| R017 | Outer annular radius (m), ring 3: | not used | 0.000E+00 | --- | RAD_SHAPE( 3) |
| R017 | Outer annular radius (m), ring 4: | not used | 0.000E+00 | --- | RAD_SHAPE( 4) |
| R017 | Outer annular radius (m), ring 5: | not used | 0.000E+00 | --- | RAD_SHAPE( 5) |
| R017 | Outer annular radius (m), ring 6: | not used | 0.000E+00 | --- | RAD_SHAPE( 6) |
| R017 | Outer annular radius (m), ring 7: | not used | 0.000E+00 | --- | RAD_SHAPE( 7) |
| R017 | Outer annular radius (m), ring 8: | not used | 0.000E+00 | --- | RAD_SHAPE( 8) |
| R017 | Outer annular radius (m), ring 9: | not used | 0.000E+00 | --- | RAD_SHAPE( 9) |
| R017 | Outer annular radius (m), ring 10: | not used | 0.000E+00 | --- | RAD_SHAPE(10) |
| R017 | Outer annular radius (m), ring 11: | not used | 0.000E+00 | --- | RAD_SHAPE(11) |
| R017 | Outer annular radius (m), ring 12: | not used | 0.000E+00 | --- | RAD_SHAPE(12) |
| | | | | | |
| R017 | Fractions of annular areas within AREA: | | | | |
| R017 | Ring 1 | not used | 1.000E+00 | --- | FRACA( 1) |
| R017 | Ring 2 | not used | 2.732E-01 | --- | FRACA( 2) |
| R017 | Ring 3 | not used | 0.000E+00 | --- | FRACA( 3) |
| R017 | Ring 4 | not used | 0.000E+00 | --- | FRACA( 4) |
| R017 | Ring 5 | not used | 0.000E+00 | --- | FRACA( 5) |
| R017 | Ring 6 | not used | 0.000E+00 | --- | FRACA( 6) |
| R017 | Ring 7 | not used | 0.000E+00 | --- | FRACA( 7) |
| R017 | Ring 8 | not used | 0.000E+00 | --- | FRACA( 8) |
| R017 | Ring 9 | not used | 0.000E+00 | --- | FRACA( 9) |
| R017 | Ring 10 | not used | 0.000E+00 | --- | FRACA(10) |
| R017 | Ring 11 | not used | 0.000E+00 | --- | FRACA(11) |
| R017 | Ring 12 | not used | 0.000E+00 | --- | FRACA(12) |
| | | | | | |

Site-Specific Parameter Summary (continued)

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| R018 | Fruits, vegetables and grain consumption (kg/yr) | not used | 1.600E+02 | --- | DIET(1) |
| R018 | Leafy vegetable consumption (kg/yr) | not used | 1.400E+01 | --- | DIET(2) |
| R018 | Milk consumption (L/yr) | not used | 9.200E+01 | --- | DIET(3) |
| R018 | Meat and poultry consumption (kg/yr) | not used | 6.300E+01 | --- | DIET(4) |
| R018 | Fish consumption (kg/yr) | not used | 5.400E+00 | --- | DIET(5) |
| R018 | Other seafood consumption (kg/yr) | not used | 9.000E-01 | --- | DIET(6) |
| R018 | Soil ingestion rate (g/yr) | 3.650E+01 | 3.650E+01 | --- | SOIL |
| R018 | Drinking water intake (L/yr) | not used | 5.100E+02 | --- | DWI |
| R018 | Contamination fraction of drinking water | not used | 1.000E+00 | --- | FDW |
| R018 | Contamination fraction of household water | not used | 1.000E+00 | --- | FHHW |
| R018 | Contamination fraction of livestock water | not used | 1.000E+00 | --- | FLW |
| R018 | Contamination fraction of irrigation water | not used | 1.000E+00 | --- | FIRW |
| R018 | Contamination fraction of aquatic food | not used | 5.000E-01 | --- | FR9 |
| R018 | Contamination fraction of plant food | not used | -1 | --- | FPLANT |
| R018 | Contamination fraction of meat | not used | -1 | --- | FMEAT |
| R018 | Contamination fraction of milk | not used | -1 | --- | FMILK |
| | | | | | |
| R019 | Livestock fodder intake for meat (kg/day) | not used | 6.800E+01 | --- | LFI5 |
| R019 | Livestock fodder intake for milk (kg/day) | not used | 5.500E+01 | --- | LFI6 |
| R019 | Livestock water intake for meat (L/day) | not used | 5.000E+01 | --- | LWI5 |
| R019 | Livestock water intake for milk (L/day) | not used | 1.600E+02 | --- | LWI6 |
| R019 | Livestock soil intake (kg/day) | not used | 5.000E-01 | --- | LSI |
| R019 | Mass loading for foliar deposition (g/m**3) | not used | 1.000E-04 | --- | MLFD |
| R019 | Depth of soil mixing layer (m) | 1.500E-01 | 1.500E-01 | --- | DM |
| R019 | Depth of roots (m) | not used | 9.000E-01 | --- | DROOT |
| R019 | Drinking water fraction from ground water | not used | 1.000E+00 | --- | FGWDW |
| R019 | Household water fraction from ground water | not used | 1.000E+00 | --- | FGWHH |
| R019 | Livestock water fraction from ground water | not used | 1.000E+00 | --- | FGWLW |
| R019 | Irrigation fraction from ground water | not used | 1.000E+00 | --- | FGWIR |
| | | | | | |
| R19B | Wet weight crop yield for Non-Leafy (kg/m**2) | not used | 7.000E-01 | --- | YV(1) |
| R19B | Wet weight crop yield for Leafy (kg/m**2) | not used | 1.500E+00 | --- | YV(2) |
| R19B | Wet weight crop yield for Fodder (kg/m**2) | not used | 1.100E+00 | --- | YV(3) |
| R19B | Growing Season for Non-Leafy (years) | not used | 1.700E-01 | --- | TE(1) |
| R19B | Growing Season for Leafy (years) | not used | 2.500E-01 | --- | TE(2) |
| R19B | Growing Season for Fodder (years) | not used | 8.000E-02 | --- | TE(3) |
| R19B | Translocation Factor for Non-Leafy | not used | 1.000E-01 | --- | TIV(1) |
| R19B | Translocation Factor for Leafy | not used | 1.000E+00 | --- | TIV(2) |
| R19B | Translocation Factor for Fodder | not used | 1.000E+00 | --- | TIV(3) |
| R19B | Dry Foliar Interception Fraction for Non-Leafy | not used | 2.500E-01 | --- | RDRY(1) |
| R19B | Dry Foliar Interception Fraction for Leafy | not used | 2.500E-01 | --- | RDRY(2) |
| R19B | Dry Foliar Interception Fraction for Fodder | not used | 2.500E-01 | --- | RDRY(3) |
| R19B | Wet Foliar Interception Fraction for Non-Leafy | not used | 2.500E-01 | --- | RWET(1) |
| R19B | Wet Foliar Interception Fraction for Leafy | not used | 2.500E-01 | --- | RWET(2) |
| R19B | Wet Foliar Interception Fraction for Fodder | not used | 2.500E-01 | --- | RWET(3) |
| R19B | Weathering Removal Constant for Vegetation | not used | 2.000E+01 | --- | WLAM |
| | | | | | |
| C14 | C-12 concentration in water (g/cm**3) | not used | 2.000E-05 | --- | C12WTR |
| C14 | C-12 concentration in contaminated soil (g/g) | not used | 3.000E-02 | --- | C12CZ |
| C14 | Fraction of vegetation carbon from soil | not used | 2.000E-02 | --- | CSOIL |

Site-Specific Parameter Summary (continued)

| Menu | Parameter | User Input | Default | Used by RESRAD (If different from user input) | Parameter Name |
|---|---|---|---|---|---|
| C14 | Fraction of vegetation carbon from air | not used | 9.800E-01 | --- | CAIR |
| C14 | C-14 evasion layer thickness in soil (m) | not used | 3.000E-01 | --- | DMC |
| C14 | C-14 evasion flux rate from soil (1/sec) | not used | 7.000E-07 | --- | EVSN |
| C14 | C-12 evasion flux rate from soil (1/sec) | not used | 1.000E-10 | --- | REVSN |
| C14 | Fraction of grain in beef cattle feed | not used | 8.000E-01 | --- | AVFG4 |
| C14 | Fraction of grain in milk cow feed | not used | 2.000E-01 | --- | AVFG5 |
| | | | | | |
| STOR | Storage times of contaminated foodstuffs (days): | | | | |
| STOR | Fruits, non-leafy vegetables, and grain | 1.400E+01 | 1.400E+01 | --- | STOR_T(1) |
| STOR | Leafy vegetables | 1.000E+00 | 1.000E+00 | --- | STOR_T(2) |
| STOR | Milk | 1.000E+00 | 1.000E+00 | --- | STOR_T(3) |
| STOR | Meat and poultry | 2.000E+01 | 2.000E+01 | --- | STOR_T(4) |
| STOR | Fish | 7.000E+00 | 7.000E+00 | --- | STOR_T(5) |
| STOR | Crustacea and mollusks | 7.000E+00 | 7.000E+00 | --- | STOR_T(6) |
| STOR | Well water | 1.000E+00 | 1.000E+00 | --- | STOR_T(7) |
| STOR | Surface water | 1.000E+00 | 1.000E+00 | --- | STOR_T(8) |
| STOR | Livestock fodder | 4.500E+01 | 4.500E+01 | --- | STOR_T(9) |
| | | | | | |
| R021 | Thickness of building foundation (m) | not used | 1.500E-01 | --- | FLOOR1 |
| R021 | Bulk density of building foundation (g/cm**3) | not used | 2.400E+00 | --- | DENSFL |
| R021 | Total porosity of the cover material | not used | 4.000E-01 | --- | TPCV |
| R021 | Total porosity of the building foundation | not used | 1.000E-01 | --- | TPFL |
| R021 | Volumetric water content of the cover material | not used | 5.000E-02 | --- | PH2OCV |
| R021 | Volumetric water content of the foundation | not used | 3.000E-02 | --- | PH2OFL |
| R021 | Diffusion coefficient for radon gas (m/sec): | | | | |
| R021 | in cover material | not used | 2.000E-06 | --- | DIFCV |
| R021 | in foundation material | not used | 3.000E-07 | --- | DIFFL |
| R021 | in contaminated zone soil | not used | 2.000E-06 | --- | DIFCZ |
| R021 | Radon vertical dimension of mixing (m) | not used | 2.000E+00 | --- | HMIX |
| R021 | Average building air exchange rate (1/hr) | not used | 5.000E-01 | --- | REXG |
| R021 | Height of the building (room) (m) | not used | 2.500E+00 | --- | HRM |
| R021 | Building interior area factor | not used | 0.000E+00 | --- | FAI |
| R021 | Building depth below ground surface (m) | not used | -1.000E+00 | --- | DMFL |
| R021 | Emanating power of Rn-222 gas | not used | 2.500E-01 | --- | EMANA(1) |
| R021 | Emanating power of Rn-220 gas | not used | 1.500E-01 | --- | EMANA(2) |
| | | | | | |
| TITL | Number of graphical time points | 32 | --- | --- | NPTS |
| TITL | Maximum number of integration points for dose | 17 | --- | --- | LYMAX |
| TITL | Maximum number of integration points for risk | 257 | --- | --- | KYMAX |

Summary of Pathway Selections

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

Summary : RESRAD Default Parameters
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE28.RAD

| Contaminated Zone Dimensions | | Initial Soil Concentrations, pCi/g | |
|---|---|---|---|
| Area: | 12140.00 square meters | U-235 | 1.950E-01 |
| Thickness: | 2.00 meters | | |
| Cover Depth: | 0.00 meters | | |

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 1.200E+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 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|
| TDOSE(t): | 7.662E-02 | 7.644E-02 | 7.594E-02 | 7.421E-02 | 6.950E-02 | 5.735E-02 | 5.531E-02 | 2.884E-02 | 2.950E-03 |
| M(t): | 6.385E-03 | 6.370E-03 | 6.328E-03 | 6.184E-03 | 5.791E-03 | 4.779E-03 | 4.609E-03 | 2.404E-03 | 2.458E-04 |

Maximum TDOSE(t): 7.662E-02 mrem/yr at t = 0.000E+00 years

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)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 7.519E-02 | 0.9813 | 3.308E-04 | 0.0043 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.102E-03 | 0.0144 |
| Total | 7.519E-02 | 0.9813 | 3.308E-04 | 0.0043 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.102E-03 | 0.0144 |

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

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 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 | 7.662E-02 | 1.0000 |
| 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 | 7.662E-02 | 1.0000 |

*Sum of all water independent and dependent pathways.

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)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 7.502E-02 | 0.9813 | 3.298E-04 | 0.0043 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.099E-03 | 0.0144 |
| Total | 7.502E-02 | 0.9813 | 3.298E-04 | 0.0043 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.099E-03 | 0.0144 |

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

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 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 | 7.644E-02 | 1.0000 |
| 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 | 7.644E-02 | 1.0000 |

*Sum of all water independent and dependent pathways.

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)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 7.452E-02 | 0.9813 | 3.280E-04 | 0.0043 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.092E-03 | 0.0144 |
| Total | 7.452E-02 | 0.9813 | 3.280E-04 | 0.0043 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.092E-03 | 0.0144 |

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 Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 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 | 7.594E-02 | 1.0000 |
| 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 | 7.594E-02 | 1.0000 |

*Sum of all water independent and dependent pathways.

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)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 7.282E-02 | 0.9813 | 3.219E-04 | 0.0043 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.069E-03 | 0.0144 |
| Total | 7.282E-02 | 0.9813 | 3.219E-04 | 0.0043 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.069E-03 | 0.0144 |

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 Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 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 | 7.421E-02 | 1.0000 |
| 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 | 7.421E-02 | 1.0000 |

*Sum of all water independent and dependent pathways.

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 Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 6.818E-02 | 0.9811 | 3.057E-04 | 0.0044 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.006E-03 | 0.0145 |
| Total | 6.818E-02 | 0.9811 | 3.057E-04 | 0.0044 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.006E-03 | 0.0145 |

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 Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 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 | 6.950E-02 | 1.0000 |
| 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 | 6.950E-02 | 1.0000 |

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 8.890E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 5.624E-02 | 0.9806 | 2.639E-04 | 0.0046 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.466E-04 | 0.0148 |
| Total | 5.624E-02 | 0.9806 | 2.639E-04 | 0.0046 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.466E-04 | 0.0148 |

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 8.890E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 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 | 5.735E-02 | 1.0000 |
| 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 | 5.735E-02 | 1.0000 |

*Sum of all water independent and dependent pathways.

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 Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 5.424E-02 | 0.9805 | 2.567E-04 | 0.0046 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.196E-04 | 0.0148 |
| Total | 5.424E-02 | 0.9805 | 2.567E-04 | 0.0046 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.196E-04 | 0.0148 |

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 Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 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 | 5.531E-02 | 1.0000 |
| 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 | 5.531E-02 | 1.0000 |

*Sum of all water independent and dependent pathways.

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 Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 2.823E-02 | 0.9788 | 1.544E-04 | 0.0054 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.560E-04 | 0.0158 |
| Total | 2.823E-02 | 0.9788 | 1.544E-04 | 0.0054 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.560E-04 | 0.0158 |

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

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 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 | 2.884E-02 | 1.0000 |
| 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 | 2.884E-02 | 1.0000 |

*Sum of all water independent and dependent pathways.

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)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 2.871E-03 | 0.9733 | 2.267E-05 | 0.0077 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.623E-05 | 0.0191 |
| Total | 2.871E-03 | 0.9733 | 2.267E-05 | 0.0077 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.623E-05 | 0.0191 |

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

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All Pathways* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. | mrem/yr | fract. |
| U-235 | 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 | 2.950E-03 | 1.0000 |
| 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 | 2.950E-03 | 1.0000 |

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

| Parent (i) | Product (j) | Thread Fraction | DSR(j,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U-235 | U-235 | 9.862E-01 | 3.702E-01 | 3.690E-01 | 3.665E-01 | 3.581E-01 | 3.351E-01 | 2.756E-01 | 2.656E-01 | 1.368E-01 | 1.339E-02 |
| U-235 | Th-231 | 9.862E-01 | 1.733E-02 | 1.764E-02 | 1.753E-02 | 1.713E-02 | 1.603E-02 | 1.318E-02 | 1.270E-02 | 6.541E-03 | 6.406E-04 |
| U-235 | Pa-231 | 9.862E-01 | 1.917E-06 | 5.766E-06 | 1.339E-05 | 3.927E-05 | 1.068E-04 | 2.572E-04 | 2.787E-04 | 4.281E-04 | 1.386E-04 |
| U-235 | Ac-227 | 9.862E-01 | 7.583E-09 | 5.276E-08 | 2.715E-07 | 2.190E-06 | 1.393E-05 | 5.952E-05 | 6.713E-05 | 1.274E-04 | 4.412E-05 |
| U-235 | Th-227 | 9.862E-01 | 2.626E-08 | 2.057E-07 | 1.116E-06 | 9.258E-06 | 5.943E-05 | 2.547E-04 | 2.873E-04 | 5.457E-04 | 1.890E-04 |
| U-235 | Ra-223+D | 9.862E-01 | 3.684E-08 | 3.128E-07 | 1.757E-06 | 1.483E-05 | 9.572E-05 | 4.110E-04 | 4.636E-04 | 8.811E-04 | 3.052E-04 |
| U-235 | Pb-211+D | 9.862E-01 | 2.498E-08 | 2.121E-07 | 1.191E-06 | 1.006E-05 | 6.493E-05 | 2.788E-04 | 3.144E-04 | 5.976E-04 | 2.070E-04 |
| U-235 | ∑DSR(j) | | 3.875E-01 | 3.866E-01 | 3.841E-01 | 3.753E-01 | 3.515E-01 | 2.900E-01 | 2.797E-01 | 1.459E-01 | 1.492E-02 |
| U-235 | U-235 | 1.380E-02 | 5.180E-03 | 5.163E-03 | 5.128E-03 | 5.011E-03 | 4.689E-03 | 3.856E-03 | 3.717E-03 | 1.914E-03 | 1.874E-04 |
| U-235 | Th-231 | 1.380E-02 | 2.425E-04 | 2.469E-04 | 2.453E-04 | 2.396E-04 | 2.242E-04 | 1.844E-04 | 1.777E-04 | 9.152E-05 | 8.963E-06 |
| U-235 | Pa-231 | 1.380E-02 | 2.683E-08 | 8.068E-08 | 1.873E-07 | 5.495E-07 | 1.494E-06 | 3.599E-06 | 3.899E-06 | 5.990E-06 | 1.939E-06 |
| U-235 | Ac-227 | 1.380E-02 | 1.061E-10 | 7.382E-10 | 3.799E-09 | 3.065E-08 | 1.949E-07 | 8.329E-07 | 9.393E-07 | 1.783E-06 | 6.174E-07 |
| U-235 | Fr-223 | 1.380E-02 | 1.401E-10 | 9.750E-10 | 5.017E-09 | 4.048E-08 | 2.575E-07 | 1.100E-06 | 1.241E-06 | 2.355E-06 | 8.155E-07 |
| U-235 | Ra-223+D | 1.380E-02 | 6.427E-10 | 4.819E-09 | 2.562E-08 | 2.102E-07 | 1.345E-06 | 5.756E-06 | 6.492E-06 | 1.233E-05 | 4.269E-06 |
| U-235 | Pb-211+D | 1.380E-02 | 4.358E-10 | 3.268E-09 | 1.737E-08 | 1.426E-07 | 9.120E-07 | 3.904E-06 | 4.403E-06 | 8.362E-06 | 2.896E-06 |
| U-235 | ∑DSR(j) | | 5.422E-03 | 5.410E-03 | 5.374E-03 | 5.251E-03 | 4.917E-03 | 4.056E-03 | 3.911E-03 | 2.036E-03 | 2.069E-04 |
| U-235 | U-235 | 8.280E-07 | 3.108E-07 | 3.098E-07 | 3.077E-07 | 3.007E-07 | 2.813E-07 | 2.314E-07 | 2.230E-07 | 1.148E-07 | 1.125E-08 |
| U-235 | Th-231 | 8.280E-07 | 1.455E-08 | 1.481E-08 | 1.472E-08 | 1.438E-08 | 1.345E-08 | 1.107E-08 | 1.067E-08 | 5.491E-09 | 5.378E-10 |
| U-235 | Pa-231 | 8.280E-07 | 1.610E-12 | 4.841E-12 | 1.124E-11 | 3.297E-11 | 8.963E-11 | 2.160E-10 | 2.340E-10 | 3.594E-10 | 1.164E-10 |
| U-235 | Ac-227 | 8.280E-07 | 6.367E-15 | 4.430E-14 | 2.279E-13 | 1.839E-12 | 1.170E-11 | 4.998E-11 | 5.636E-11 | 1.070E-10 | 3.705E-11 |
| U-235 | Fr-223+D | 8.280E-07 | 7.335E-14 | 5.104E-13 | 2.626E-12 | 2.119E-11 | 1.348E-10 | 5.759E-10 | 6.494E-10 | 1.233E-09 | 4.269E-10 |
| U-235 | Pb-211+D | 8.280E-07 | 2.985E-14 | 2.077E-13 | 1.069E-12 | 8.624E-12 | 5.486E-11 | 2.344E-10 | 2.643E-10 | 5.018E-10 | 1.738E-10 |
| U-235 | ∑DSR(j) | | 3.254E-07 | 3.246E-07 | 3.225E-07 | 3.151E-07 | 2.951E-07 | 2.435E-07 | 2.349E-07 | 1.225E-07 | 1.254E-08 |

The DSR includes contributions from associated (half-life ≤ 10 minut) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 1.200E+01 mrem/yr

| Nuclide (i) | t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|
| U-235 | 3.054E+01 | 3.061E+01 | 3.081E+01 | 3.153E+01 | 3.367E+01 | 4.080E+01 | 4.231E+01 | 8.112E+01 | 7.933E+02 |

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

| Nuclide (i) | Initial (pCi/g) | tmin (years) | DSR(i,tmin) | G(i,tmin) (pCi/g) | DSR(i,tmax) | G(i,tmax) (pCi/g) |
|---|---|---|---|---|---|---|
| U-235 | 1.950E-01 | 0.000E+00 | 3.929E-01 | 3.054E+01 | 3.929E-01 | 3.054E+01 |

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

| Nuclide (j) | Parent (i) | THF(i) | DOSE(j,t), mrem/yr t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U-235 | U-235 | 9.862E-01 | 7.219E-02 | 7.195E-02 | 7.147E-02 | 6.983E-02 | 6.534E-02 | 5.374E-02 | 5.180E-02 | 2.667E-02 | 2.612E-03 |
| U-235 | U-235 | 1.380E-02 | 1.010E-03 | 1.007E-03 | 1.000E-03 | 9.771E-04 | 9.143E-04 | 7.520E-04 | 7.248E-04 | 3.732E-04 | 3.655E-05 |
| U-235 | ∑DOSE(j) | | 7.320E-02 | 7.295E-02 | 7.247E-02 | 7.081E-02 | 6.626E-02 | 5.449E-02 | 5.252E-02 | 2.704E-02 | 2.649E-03 |
| Th-231 | U-235 | 9.862E-01 | 3.380E-03 | 3.441E-03 | 3.418E-03 | 3.339E-03 | 3.125E-03 | 2.570E-03 | 2.477E-03 | 1.275E-03 | 1.249E-04 |
| Th-231 | U-235 | 1.380E-02 | 4.730E-05 | 4.814E-05 | 4.783E-05 | 4.673E-05 | 4.373E-05 | 3.596E-05 | 3.466E-05 | 1.785E-05 | 1.748E-06 |
| Th-231 | U-235 | 8.280E-07 | 2.838E-09 | 2.889E-09 | 2.870E-09 | 2.804E-09 | 2.624E-09 | 2.158E-09 | 2.080E-09 | 1.071E-09 | 1.049E-10 |
| Th-231 | ∑DOSE(j) | | 3.427E-03 | 3.489E-03 | 3.466E-03 | 3.386E-03 | 3.169E-03 | 2.606E-03 | 2.512E-03 | 1.293E-03 | 1.267E-04 |
| Pa-231 | U-235 | 9.862E-01 | 3.739E-07 | 1.124E-06 | 2.611E-06 | 7.658E-06 | 2.082E-05 | 5.016E-05 | 5.434E-05 | 8.348E-05 | 2.702E-05 |
| Pa-231 | U-235 | 1.380E-02 | 5.231E-09 | 1.573E-08 | 3.653E-08 | 1.072E-07 | 2.913E-07 | 7.018E-07 | 7.604E-07 | 1.168E-06 | 3.781E-07 |
| Pa-231 | U-235 | 8.280E-07 | 3.139E-13 | 9.441E-13 | 2.192E-12 | 6.430E-12 | 1.748E-11 | 4.211E-11 | 4.562E-11 | 7.009E-11 | 2.269E-11 |
| Pa-231 | ∑DOSE(j) | | 3.791E-07 | 1.140E-06 | 2.647E-06 | 7.765E-06 | 2.111E-05 | 5.086E-05 | 5.510E-05 | 8.465E-05 | 2.740E-05 |
| Ac-227 | U-235 | 9.862E-01 | 1.479E-09 | 1.029E-08 | 5.294E-08 | 4.271E-07 | 2.716E-06 | 1.161E-05 | 1.309E-05 | 2.485E-05 | 8.604E-06 |
| Ac-227 | U-235 | 1.380E-02 | 2.069E-11 | 1.440E-10 | 7.407E-10 | 5.976E-09 | 3.801E-08 | 1.624E-07 | 1.832E-07 | 3.477E-07 | 1.204E-07 |
| Ac-227 | U-235 | 8.280E-07 | 1.241E-15 | 8.638E-15 | 4.445E-14 | 3.586E-13 | 2.281E-12 | 9.745E-12 | 1.099E-11 | 2.086E-11 | 7.224E-12 |
| Ac-227 | ∑DOSE(j) | | 1.499E-09 | 1.043E-08 | 5.368E-08 | 4.331E-07 | 2.754E-06 | 1.177E-05 | 1.327E-05 | 2.520E-05 | 8.725E-06 |
| Th-227 | U-235 | 9.862E-01 | 5.121E-09 | 4.011E-08 | 2.176E-07 | 1.805E-06 | 1.159E-05 | 4.966E-05 | 5.602E-05 | 1.064E-04 | 3.685E-05 |
| Ra-223 | U-235 | 9.862E-01 | 7.183E-09 | 6.099E-08 | 3.425E-07 | 2.892E-06 | 1.867E-05 | 8.014E-05 | 9.040E-05 | 1.718E-04 | 5.951E-05 |
| Ra-223 | U-235 | 1.380E-02 | 1.253E-10 | 9.397E-10 | 4.995E-09 | 4.099E-08 | 2.622E-07 | 1.122E-06 | 1.266E-06 | 2.404E-06 | 8.325E-07 |
| Ra-223 | ∑DOSE(j) | | 7.308E-09 | 6.193E-08 | 3.475E-07 | 2.933E-06 | 1.893E-05 | 8.126E-05 | 9.167E-05 | 1.742E-04 | 6.034E-05 |
| Pb-211 | U-235 | 9.862E-01 | 4.870E-09 | 4.136E-08 | 2.323E-07 | 1.961E-06 | 1.266E-05 | 5.436E-05 | 6.132E-05 | 1.165E-04 | 4.036E-05 |
| Pb-211 | U-235 | 1.380E-02 | 8.497E-11 | 6.373E-10 | 3.388E-09 | 2.780E-08 | 1.778E-07 | 7.613E-07 | 8.586E-07 | 1.631E-06 | 5.647E-07 |
| Pb-211 | U-235 | 8.280E-07 | 5.820E-15 | 4.050E-14 | 2.085E-13 | 1.682E-12 | 1.070E-11 | 4.571E-11 | 5.155E-11 | 9.786E-11 | 3.388E-11 |
| Pb-211 | ∑DOSE(j) | | 4.955E-09 | 4.200E-08 | 2.357E-07 | 1.989E-06 | 1.284E-05 | 5.512E-05 | 6.218E-05 | 1.182E-04 | 4.093E-05 |
| Fr-223 | U-235 | 1.380E-02 | 2.732E-11 | 1.901E-10 | 9.784E-10 | 7.893E-09 | 5.020E-08 | 2.145E-07 | 2.419E-07 | 4.593E-07 | 1.590E-07 |
| Fr-223 | U-235 | 8.280E-07 | 1.430E-14 | 9.952E-14 | 5.121E-13 | 4.132E-12 | 2.628E-11 | 1.123E-10 | 1.266E-10 | 2.404E-10 | 8.324E-11 |
| Fr-223 | ∑DOSE(j) | | 2.734E-11 | 1.902E-10 | 9.789E-10 | 7.897E-09 | 5.023E-08 | 2.146E-07 | 2.421E-07 | 4.595E-07 | 1.591E-07 |
| U-235 | U-235 | 8.280E-07 | 6.061E-08 | 6.041E-08 | 6.001E-08 | 5.863E-08 | 5.486E-08 | 4.512E-08 | 4.349E-08 | 2.239E-08 | 2.193E-09 |

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

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

| Nuclide (j) | Parent (i) | THF(i) | S(j,t), pCi/g t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U-235 | U-235 | 9.862E-01 | 1.923E-01 | 1.917E-01 | 1.904E-01 | 1.860E-01 | 1.741E-01 | 1.432E-01 | 1.380E-01 | 7.105E-02 | 6.959E-03 |
| U-235 | U-235 | 1.380E-02 | 2.691E-03 | 2.682E-03 | 2.664E-03 | 2.603E-03 | 2.436E-03 | 2.003E-03 | 1.931E-03 | 9.941E-04 | 9.737E-05 |
| U-235 | ∑S(j): | | 1.950E-01 | 1.944E-01 | 1.931E-01 | 1.886E-01 | 1.765E-01 | 1.452E-01 | 1.399E-01 | 7.204E-02 | 7.056E-03 |
| Th-231 | U-235 | 9.862E-01 | 0.000E+00 | 1.917E-01 | 1.904E-01 | 1.860E-01 | 1.741E-01 | 1.432E-01 | 1.380E-01 | 7.105E-02 | 6.959E-03 |
| Th-231 | U-235 | 1.380E-02 | 0.000E+00 | 2.682E-03 | 2.664E-03 | 2.603E-03 | 2.436E-03 | 2.003E-03 | 1.931E-03 | 9.941E-04 | 9.737E-05 |
| Th-231 | U-235 | 8.280E-07 | 0.000E+00 | 1.609E-07 | 1.599E-07 | 1.562E-07 | 1.462E-07 | 1.202E-07 | 1.159E-07 | 5.965E-08 | 5.842E-09 |
| Th-231 | ∑S(j): | | 0.000E+00 | 1.944E-01 | 1.931E-01 | 1.886E-01 | 1.765E-01 | 1.452E-01 | 1.399E-01 | 7.204E-02 | 7.056E-03 |
| Pa-231 | U-235 | 9.862E-01 | 0.000E+00 | 4.038E-06 | 1.207E-05 | 3.934E-05 | 1.104E-04 | 2.690E-04 | 2.916E-04 | 4.496E-04 | 1.457E-04 |
| Pa-231 | U-235 | 1.380E-02 | 0.000E+00 | 5.651E-08 | 1.689E-07 | 5.505E-07 | 1.545E-06 | 3.764E-06 | 4.081E-06 | 6.290E-06 | 2.038E-06 |
| Pa-231 | U-235 | 8.280E-07 | 0.000E+00 | 3.391E-12 | 1.013E-11 | 3.303E-11 | 9.273E-11 | 2.259E-10 | 2.449E-10 | 3.774E-10 | 1.223E-10 |
| Pa-231 | ∑S(j): | | 0.000E+00 | 4.095E-06 | 1.224E-05 | 3.989E-05 | 1.120E-04 | 2.728E-04 | 2.957E-04 | 4.558E-04 | 1.477E-04 |
| Ac-227 | U-235 | 9.862E-01 | 0.000E+00 | 6.324E-08 | 5.550E-07 | 5.559E-06 | 3.771E-05 | 1.644E-04 | 1.856E-04 | 3.541E-04 | 1.228E-04 |
| Ac-227 | U-235 | 1.380E-02 | 0.000E+00 | 8.849E-10 | 7.765E-09 | 7.778E-08 | 5.276E-07 | 2.301E-06 | 2.598E-06 | 4.955E-06 | 1.718E-06 |
| Ac-227 | U-235 | 8.280E-07 | 0.000E+00 | 5.310E-14 | 4.660E-13 | 4.667E-12 | 3.166E-11 | 1.381E-10 | 1.559E-10 | 2.973E-10 | 1.031E-10 |
| Ac-227 | ∑S(j): | | 0.000E+00 | 6.413E-08 | 5.627E-07 | 5.637E-06 | 3.824E-05 | 1.667E-04 | 1.882E-04 | 3.591E-04 | 1.245E-04 |
| Th-227 | U-235 | 9.862E-01 | 0.000E+00 | 5.462E-08 | 5.289E-07 | 5.483E-06 | 3.756E-05 | 1.643E-04 | 1.855E-04 | 3.541E-04 | 1.228E-04 |
| Ra-223 | U-235 | 9.862E-01 | 0.000E+00 | 4.959E-08 | 5.131E-07 | 5.437E-06 | 3.747E-05 | 1.642E-04 | 1.854E-04 | 3.541E-04 | 1.228E-04 |
| Ra-223 | U-235 | 1.380E-02 | 0.000E+00 | 8.086E-10 | 7.539E-09 | 7.712E-08 | 5.263E-07 | 2.299E-06 | 2.596E-06 | 4.954E-06 | 1.718E-06 |
| Ra-223 | ∑S(j): | | 0.000E+00 | 5.040E-08 | 5.206E-07 | 5.514E-06 | 3.799E-05 | 1.665E-04 | 1.880E-04 | 3.590E-04 | 1.245E-04 |
| Pb-211 | U-235 | 9.862E-01 | 0.000E+00 | 4.958E-08 | 5.131E-07 | 5.436E-06 | 3.747E-05 | 1.642E-04 | 1.854E-04 | 3.541E-04 | 1.228E-04 |
| Pb-211 | U-235 | 1.380E-02 | 0.000E+00 | 8.085E-10 | 7.538E-09 | 7.712E-08 | 5.263E-07 | 2.299E-06 | 2.596E-06 | 4.954E-06 | 1.718E-06 |
| Pb-211 | U-235 | 8.280E-07 | 0.000E+00 | 5.308E-14 | 4.659E-13 | 4.667E-12 | 3.166E-11 | 1.381E-10 | 1.559E-10 | 2.973E-10 | 1.031E-10 |
| Pb-211 | ∑S(j): | | 0.000E+00 | 5.039E-08 | 5.206E-07 | 5.514E-06 | 3.799E-05 | 1.665E-04 | 1.880E-04 | 3.590E-04 | 1.245E-04 |
| Fr-223 | U-235 | 1.380E-02 | 0.000E+00 | 8.848E-10 | 7.765E-09 | 7.778E-08 | 5.276E-07 | 2.301E-06 | 2.598E-06 | 4.955E-06 | 1.718E-06 |
| Fr-223 | U-235 | 8.280E-07 | 0.000E+00 | 5.309E-14 | 4.659E-13 | 4.667E-12 | 3.166E-11 | 1.381E-10 | 1.559E-10 | 2.973E-10 | 1.031E-10 |
| Fr-223 | ∑S(j): | | 0.000E+00 | 8.849E-10 | 7.766E-09 | 7.778E-08 | 5.277E-07 | 2.301E-06 | 2.598E-06 | 4.955E-06 | 1.718E-06 |
| U-235 | U-235 | 8.280E-07 | 1.615E-07 | 1.609E-07 | 1.599E-07 | 1.562E-07 | 1.462E-07 | 1.202E-07 | 1.159E-07 | 5.965E-08 | 5.842E-09 |

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

RESCALC.EXE execution time = 1.87 seconds

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Cancer Risk Slope Factors Summary Table
Risk Library: DCFPAK3.02 Morbidity

| Menu | Parameter | Current Value | Base Case* | Parameter Name |
|---|---|---|---|---|
| Sf-1 | Ground external radiation slope factors, 1/yr per (pCi/g): | | | |
| Sf-1 | Ac-227 | 1.98E-10 | 1.98E-10 | SLPF( 1,1) |
| Sf-1 | Fr-223 | 1.35E-07 | 1.35E-07 | SLPF( 4,1) |
| Sf-1 | Fr-223+D | 1.22E-06 | 1.35E-07 | SLPF( 5,1) |
| Sf-1 | Pa-231 | 1.27E-07 | 1.27E-07 | SLPF( 6,1) |
| Sf-1 | Pb-211+D | 4.97E-07 | 2.91E-07 | SLPF( 9,1) |
| Sf-1 | Ra-223+D | 6.91E-07 | 4.55E-07 | SLPF( 10,1) |
| Sf-1 | Th-227 | 4.45E-07 | 4.45E-07 | SLPF( 11,1) |
| Sf-1 | Th-231 | 2.49E-08 | 2.49E-08 | SLPF( 12,1) |
| Sf-1 | U-235 | 5.51E-07 | 5.51E-07 | SLPF( 15,1) |
| | | | | |
| Sf-2 | Inhalation, slope factors, 1/(pCi): | | | |
| Sf-2 | Ac-227 | 1.49E-07 | 1.49E-07 | SLPF( 1,2) |
| Sf-2 | Fr-223 | 4.07E-11 | 4.07E-11 | SLPF( 4,2) |
| Sf-2 | Fr-223+D | 4.07E-11 | 4.07E-11 | SLPF( 5,2) |
| Sf-2 | Pa-231 | 7.62E-08 | 7.62E-08 | SLPF( 6,2) |
| Sf-2 | Pb-211+D | 4.03E-11 | 4.03E-11 | SLPF( 9,2) |
| Sf-2 | Ra-223+D | 2.92E-08 | 2.92E-08 | SLPF( 10,2) |
| Sf-2 | Th-227 | 3.50E-08 | 3.50E-08 | SLPF( 11,2) |
| Sf-2 | Th-231 | 1.50E-12 | 1.50E-12 | SLPF( 12,2) |
| Sf-2 | U-235 | 2.50E-08 | 2.50E-08 | SLPF( 15,2) |
| | | | | |
| Sf-3 | Food ingestion, slope factors, 1/(pCi): | | | |
| Sf-3 | Ac-227 | 2.45E-10 | 2.45E-10 | SLPF( 1,3) |
| Sf-3 | Fr-223 | 1.01E-11 | 1.01E-11 | SLPF( 4,3) |
| Sf-3 | Fr-223+D | 1.01E-11 | 1.01E-11 | SLPF( 5,3) |
| Sf-3 | Pa-231 | 2.26E-10 | 2.26E-10 | SLPF( 6,3) |
| Sf-3 | Pb-211+D | 5.81E-13 | 5.81E-13 | SLPF( 9,3) |
| Sf-3 | Ra-223+D | 3.39E-10 | 3.39E-10 | SLPF( 10,3) |
| Sf-3 | Th-227 | 7.03E-11 | 7.03E-11 | SLPF( 11,3) |
| Sf-3 | Th-231 | 3.22E-12 | 3.22E-12 | SLPF( 12,3) |
| Sf-3 | U-235 | 9.43E-11 | 9.43E-11 | SLPF( 15,3) |
| | | | | |
| Sf-3 | Water ingestion, slope factors, 1/(pCi): | | | |
| Sf-3 | Ac-227 | 2.01E-10 | 2.01E-10 | SLPF( 1,4) |
| Sf-3 | Fr-223 | 7.36E-12 | 7.36E-12 | SLPF( 4,4) |
| Sf-3 | Fr-223+D | 7.36E-12 | 7.36E-12 | SLPF( 5,4) |
| Sf-3 | Pa-231 | 1.72E-10 | 1.72E-10 | SLPF( 6,4) |
| Sf-3 | Pb-211+D | 4.11E-13 | 4.11E-13 | SLPF( 9,4) |
| Sf-3 | Ra-223+D | 2.38E-10 | 2.38E-10 | SLPF( 10,4) |
| Sf-3 | Th-227 | 4.81E-11 | 4.81E-11 | SLPF( 11,4) |
| Sf-3 | Th-231 | 2.19E-12 | 2.19E-12 | SLPF( 12,4) |
| Sf-3 | U-235 | 6.95E-11 | 6.95E-11 | SLPF( 15,4) |
| | | | | |
| Sf-3 | Soil ingestion, slope factors, 1/(pCi): | | | |
| Sf-3 | Ac-227 | 2.45E-10 | 2.45E-10 | SLPF( 1,5) |
| Sf-3 | Fr-223 | 1.01E-11 | 1.01E-11 | SLPF( 4,5) |
| Sf-3 | Fr-223+D | 1.01E-11 | 1.01E-11 | SLPF( 5,5) |
| Sf-3 | Pa-231 | 2.26E-10 | 2.26E-10 | SLPF( 6,5) |
| Sf-3 | Pb-211+D | 5.81E-13 | 5.81E-13 | SLPF( 9,5) |

Cancer Risk Slope Factors Summary Table (continued)
Risk Library: DCFPAK3.02 Morbidity

| Menu | Parameter | Current Value | Base Case* | Parameter Name |
|---|---|---|---|---|
| Sf-3 | Ra-223+D | 3.39E-10 | 3.39E-10 | SLPF( 10,5) |
| Sf-3 | Th-227 | 7.03E-11 | 7.03E-11 | SLPF( 11,5) |
| Sf-3 | Th-231 | 3.22E-12 | 3.22E-12 | SLPF( 12,5) |
| Sf-3 | U-235 | 9.43E-11 | 9.43E-11 | SLPF( 15,5) |

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

Risk Slope and Environmental Transport Factors for the Ground Pathway

| Nuclide (i) | Slope(i)* | ETFG(i,t) At Time in Years (dimensionless) t= 0.000E+00 | 1.000E+00 | 3.000E+00 | 1.000E+01 | 3.000E+01 | 8.890E+01 | 1.000E+02 | 3.000E+02 | 1.000E+03 |
|---|---|---|---|---|---|---|---|---|---|---|
| Ac-227 | 1.990E-10 | 5.340E-01 | 5.340E-01 | 5.340E-01 | 5.340E-01 | 5.340E-01 | 5.340E-01 | 5.340E-01 | 5.340E-01 | 5.340E-01 |
| At-219 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Bi-211 | 1.900E-07 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 |
| Bi-215 | 1.080E-06 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 | 5.225E-01 |
| Fr-223 | 1.350E-07 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 |
| Pa-231 | 1.270E-07 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 | 5.253E-01 |
| Pb-211 | 2.910E-07 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 |
| Po-211 | 3.760E-08 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 | 5.176E-01 |
| Po-215 | 7.480E-10 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 | 5.203E-01 |
| Ra-223 | 4.550E-07 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 |
| Rn-219 | 2.350E-07 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 | 5.252E-01 |
| Th-227 | 4.450E-07 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 |
| Th-231 | 2.490E-08 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 | 5.518E-01 |
| Tl-207 | 1.590E-08 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 | 5.182E-01 |
| U-235 | 5.510E-07 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 | 5.263E-01 |

* - Units are 1/yr per (pCi/g) at infinite depth and area. Multiplication by ETFG(i,t) converts to site conditions.

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 0.000E+00 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-227 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Fr-223 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Pa-231 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Pb-211 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Ra-223 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Th-227 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| Th-231 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 |
| U-235 | 9.804E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.388E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.388E+00 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 4.524E-14 | 0.0000 | 3.200E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.886E-12 | 0.0000 |
| Fr-223 | 4.169E-13 | 0.0000 | 1.202E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.640E-15 | 0.0000 |
| Pa-231 | 1.159E-10 | 0.0001 | 6.656E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.083E-11 | 0.0000 |
| Pb-211 | 1.088E-10 | 0.0001 | 8.541E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.760E-15 | 0.0000 |
| Ra-223 | 1.530E-10 | 0.0001 | 6.182E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.940E-12 | 0.0000 |
| Th-227 | 9.769E-11 | 0.0001 | 7.340E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.101E-13 | 0.0000 |
| Th-231 | 7.609E-08 | 0.0444 | 4.182E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.919E-10 | 0.0003 |
| U-235 | 1.615E-06 | 0.9425 | 7.002E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.451E-08 | 0.0085 |
| Total | 1.691E-06 | 0.9871 | 7.013E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.502E-08 | 0.0088 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 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 | 6.131E-12 | 0.0000 |
| Fr-223 | 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 | 4.185E-13 | 0.0000 |
| Pa-231 | 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 | 1.334E-10 | 0.0001 |
| Pb-211 | 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 | 1.088E-10 | 0.0001 |
| Ra-223 | 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 | 1.576E-10 | 0.0001 |
| Th-227 | 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 | 9.924E-11 | 0.0001 |
| Th-231 | 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 | 7.658E-08 | 0.0447 |
| U-235 | 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 | 1.636E-06 | 0.9550 |
| 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 | 1.713E-06 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 1.691E-06 | 0.9871 | 7.013E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.502E-08 | 0.0088 |
| Total | 1.691E-06 | 0.9871 | 7.013E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.502E-08 | 0.0088 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 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 | 1.713E-06 | 1.0000 |
| 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 | 1.713E-06 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+00 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-227 | 3.224E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.772E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.772E-06 |
| Fr-223 | 4.449E-11 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.445E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.445E-08 |
| Pa-231 | 2.059E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.131E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.131E-04 |
| Pb-211 | 2.533E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.392E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.392E-06 |
| Ra-223 | 2.534E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.393E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.393E-06 |
| Th-227 | 2.746E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.509E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.509E-06 |
| Th-231 | 9.772E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.370E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.370E+00 |
| U-235 | 9.772E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.370E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.370E+00 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 4.942E-14 | 0.0000 | 3.496E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.152E-12 | 0.0000 |
| Fr-223 | 4.553E-13 | 0.0000 | 1.313E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.791E-15 | 0.0000 |
| Pa-231 | 1.233E-10 | 0.0001 | 7.084E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.153E-11 | 0.0000 |
| Pb-211 | 1.189E-10 | 0.0001 | 9.334E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.387E-15 | 0.0000 |
| Ra-223 | 1.672E-10 | 0.0001 | 6.756E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.305E-12 | 0.0000 |
| Th-227 | 1.067E-10 | 0.0001 | 8.020E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.851E-13 | 0.0000 |
| Th-231 | 7.625E-08 | 0.0446 | 4.191E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.930E-10 | 0.0003 |
| U-235 | 1.609E-06 | 0.9422 | 6.979E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.447E-08 | 0.0085 |
| Total | 1.686E-06 | 0.9871 | 6.991E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.498E-08 | 0.0088 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 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 | 6.697E-12 | 0.0000 |
| Fr-223 | 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 | 4.571E-13 | 0.0000 |
| Pa-231 | 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 | 1.419E-10 | 0.0001 |
| Pb-211 | 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 | 1.189E-10 | 0.0001 |
| Ra-223 | 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 | 1.722E-10 | 0.0001 |
| Th-227 | 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 | 1.084E-10 | 0.0001 |
| Th-231 | 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 | 7.675E-08 | 0.0449 |
| U-235 | 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 | 1.631E-06 | 0.9547 |
| 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 | 1.708E-06 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 1.686E-06 | 0.9871 | 6.991E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.498E-08 | 0.0088 |
| Total | 1.686E-06 | 0.9871 | 6.991E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.498E-08 | 0.0088 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 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 | 1.708E-06 | 1.0000 |
| 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 | 1.708E-06 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+00 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-227 | 2.829E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.555E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.555E-05 |
| Fr-223 | 3.904E-10 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.146E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.146E-07 |
| Pa-231 | 6.153E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.381E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.381E-04 |
| Pb-211 | 2.617E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.438E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.438E-05 |
| Ra-223 | 2.618E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.439E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.439E-05 |
| Th-227 | 2.659E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.461E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.461E-05 |
| Th-231 | 9.707E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.335E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.335E+00 |
| U-235 | 9.707E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.335E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.335E+00 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 5.836E-14 | 0.0000 | 4.128E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.723E-12 | 0.0000 |
| Fr-223 | 5.377E-13 | 0.0000 | 1.551E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.115E-15 | 0.0000 |
| Pa-231 | 1.381E-10 | 0.0001 | 7.930E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.291E-11 | 0.0000 |
| Pb-211 | 1.406E-10 | 0.0001 | 1.103E-15 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.730E-15 | 0.0000 |
| Ra-223 | 1.976E-10 | 0.0001 | 7.984E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.088E-12 | 0.0000 |
| Th-227 | 1.261E-10 | 0.0001 | 9.476E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.046E-12 | 0.0000 |
| Th-231 | 7.575E-08 | 0.0446 | 4.163E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.897E-10 | 0.0003 |
| U-235 | 1.599E-06 | 0.9421 | 6.932E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.437E-08 | 0.0085 |
| Total | 1.675E-06 | 0.9871 | 6.947E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.488E-08 | 0.0088 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 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 | 7.909E-12 | 0.0000 |
| Fr-223 | 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 | 5.399E-13 | 0.0000 |
| Pa-231 | 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 | 1.589E-10 | 0.0001 |
| Pb-211 | 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 | 1.406E-10 | 0.0001 |
| Ra-223 | 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 | 2.035E-10 | 0.0001 |
| Th-227 | 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 | 1.281E-10 | 0.0001 |
| Th-231 | 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 | 7.624E-08 | 0.0449 |
| U-235 | 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 | 1.620E-06 | 0.9547 |
| 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 | 1.697E-06 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 1.675E-06 | 0.9871 | 6.947E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.488E-08 | 0.0088 |
| Total | 1.675E-06 | 0.9871 | 6.947E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.488E-08 | 0.0088 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 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 | 1.697E-06 | 1.0000 |
| 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 | 1.697E-06 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+01 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-227 | 2.834E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.557E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.557E-04 |
| Fr-223 | 3.911E-09 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.149E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 2.149E-06 |
| Pa-231 | 2.006E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.102E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.102E-03 |
| Pb-211 | 2.772E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.523E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.523E-04 |
| Ra-223 | 2.772E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.523E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.523E-04 |
| Th-227 | 2.757E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.515E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.515E-04 |
| Th-231 | 9.484E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.212E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.212E+00 |
| U-235 | 9.484E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.212E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.212E+00 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 9.498E-14 | 0.0000 | 6.719E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.059E-12 | 0.0000 |
| Fr-223 | 8.752E-13 | 0.0000 | 2.524E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.443E-15 | 0.0000 |
| Pa-231 | 1.881E-10 | 0.0001 | 1.080E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.758E-11 | 0.0000 |
| Pb-211 | 2.293E-10 | 0.0001 | 1.799E-15 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.424E-14 | 0.0000 |
| Ra-223 | 3.224E-10 | 0.0002 | 1.302E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.300E-12 | 0.0000 |
| Th-227 | 2.056E-10 | 0.0001 | 1.544E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.705E-12 | 0.0000 |
| Th-231 | 7.401E-08 | 0.0446 | 4.068E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.785E-10 | 0.0003 |
| U-235 | 1.562E-06 | 0.9419 | 6.773E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.404E-08 | 0.0085 |
| Total | 1.637E-06 | 0.9871 | 6.794E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.455E-08 | 0.0088 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 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 | 1.287E-11 | 0.0000 |
| Fr-223 | 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 | 8.787E-13 | 0.0000 |
| Pa-231 | 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 | 2.165E-10 | 0.0001 |
| Pb-211 | 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 | 2.293E-10 | 0.0001 |
| Ra-223 | 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 | 3.320E-10 | 0.0002 |
| Th-227 | 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 | 2.088E-10 | 0.0001 |
| Th-231 | 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 | 7.449E-08 | 0.0449 |
| U-235 | 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 | 1.583E-06 | 0.9545 |
| 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 | 1.658E-06 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 1.637E-06 | 0.9871 | 6.794E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.455E-08 | 0.0088 |
| Total | 1.637E-06 | 0.9871 | 6.794E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.455E-08 | 0.0088 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 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 | 1.658E-06 | 1.0000 |
| 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 | 1.658E-06 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+01 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-227 | 1.922E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.056E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.056E-03 |
| Fr-223 | 2.653E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.458E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.458E-05 |
| Pa-231 | 5.631E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.094E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.094E-03 |
| Pb-211 | 1.910E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.050E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.050E-03 |
| Ra-223 | 1.910E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.050E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.050E-03 |
| Th-227 | 1.888E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.038E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.038E-03 |
| Th-231 | 8.875E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.877E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.877E+00 |
| U-235 | 8.875E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.877E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.877E+00 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 2.263E-13 | 0.0000 | 1.601E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.443E-11 | 0.0000 |
| Fr-223 | 2.085E-12 | 0.0000 | 6.013E-17 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.201E-15 | 0.0000 |
| Pa-231 | 3.182E-10 | 0.0002 | 1.828E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.975E-11 | 0.0000 |
| Pb-211 | 5.481E-10 | 0.0004 | 4.302E-15 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.404E-14 | 0.0000 |
| Ra-223 | 7.707E-10 | 0.0005 | 3.113E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.984E-11 | 0.0000 |
| Th-227 | 4.907E-10 | 0.0003 | 3.687E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.069E-12 | 0.0000 |
| Th-231 | 6.926E-08 | 0.0446 | 3.806E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.478E-10 | 0.0003 |
| U-235 | 1.462E-06 | 0.9411 | 6.338E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.314E-08 | 0.0085 |
| Total | 1.533E-06 | 0.9871 | 6.380E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.365E-08 | 0.0088 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 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 | 3.067E-11 | 0.0000 |
| Fr-223 | 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 | 2.093E-12 | 0.0000 |
| Pa-231 | 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 | 3.662E-10 | 0.0002 |
| Pb-211 | 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 | 5.481E-10 | 0.0004 |
| Ra-223 | 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 | 7.936E-10 | 0.0005 |
| Th-227 | 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 | 4.985E-10 | 0.0003 |
| Th-231 | 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 | 6.970E-08 | 0.0449 |
| U-235 | 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 | 1.481E-06 | 0.9537 |
| 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 | 1.553E-06 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 1.533E-06 | 0.9871 | 6.380E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.365E-08 | 0.0088 |
| Total | 1.533E-06 | 0.9871 | 6.380E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.365E-08 | 0.0088 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 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 | 1.553E-06 | 1.0000 |
| 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 | 1.553E-06 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 8.890E+01 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-227 | 8.383E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.607E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.607E-03 |
| Fr-223 | 1.157E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.358E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 6.358E-05 |
| Pa-231 | 1.372E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.538E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.538E-03 |
| Pb-211 | 8.371E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.600E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.600E-03 |
| Ra-223 | 8.371E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.600E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.600E-03 |
| Th-227 | 8.260E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.540E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.540E-03 |
| Th-231 | 7.299E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.011E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.011E+00 |
| U-235 | 7.299E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.011E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.011E+00 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 8.890E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 6.216E-13 | 0.0000 | 4.397E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.965E-11 | 0.0000 |
| Fr-223 | 5.727E-12 | 0.0000 | 1.652E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.253E-14 | 0.0000 |
| Pa-231 | 6.058E-10 | 0.0005 | 3.480E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.663E-11 | 0.0000 |
| Pb-211 | 1.509E-09 | 0.0012 | 1.185E-14 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 9.376E-14 | 0.0000 |
| Ra-223 | 2.122E-09 | 0.0017 | 8.574E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.464E-11 | 0.0000 |
| Th-227 | 1.350E-09 | 0.0011 | 1.014E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.120E-11 | 0.0000 |
| Th-231 | 5.696E-08 | 0.0445 | 3.131E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.682E-10 | 0.0003 |
| U-235 | 1.202E-06 | 0.9382 | 5.213E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.081E-08 | 0.0084 |
| Total | 1.265E-06 | 0.9870 | 5.310E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.134E-08 | 0.0088 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 8.890E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 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 | 8.424E-11 | 0.0001 |
| Fr-223 | 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 | 5.750E-12 | 0.0000 |
| Pa-231 | 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 | 6.972E-10 | 0.0005 |
| Pb-211 | 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 | 1.510E-09 | 0.0012 |
| Ra-223 | 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 | 2.186E-09 | 0.0017 |
| Th-227 | 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 | 1.371E-09 | 0.0011 |
| Th-231 | 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 | 5.733E-08 | 0.0447 |
| U-235 | 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 | 1.218E-06 | 0.9507 |
| 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 | 1.281E-06 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 8.890E+01 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 1.265E-06 | 0.9870 | 5.310E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.134E-08 | 0.0088 |
| Total | 1.265E-06 | 0.9870 | 5.310E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.134E-08 | 0.0088 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 8.890E+01 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 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 | 1.281E-06 | 1.0000 |
| 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 | 1.281E-06 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+02 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-227 | 9.464E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.201E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.201E-03 |
| Fr-223 | 1.306E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.178E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 7.178E-05 |
| Pa-231 | 1.487E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.171E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 8.171E-03 |
| Pb-211 | 9.452E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.194E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.194E-03 |
| Ra-223 | 9.452E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.194E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.194E-03 |
| Th-227 | 9.327E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.126E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 5.126E-03 |
| Th-231 | 7.035E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.866E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.866E+00 |
| U-235 | 7.035E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.866E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.866E+00 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 6.836E-13 | 0.0000 | 4.836E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.360E-11 | 0.0000 |
| Fr-223 | 6.299E-12 | 0.0000 | 1.817E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.478E-14 | 0.0000 |
| Pa-231 | 6.464E-10 | 0.0005 | 3.712E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.042E-11 | 0.0000 |
| Pb-211 | 1.660E-09 | 0.0013 | 1.303E-14 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.031E-13 | 0.0000 |
| Ra-223 | 2.335E-09 | 0.0019 | 9.432E-12 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.011E-11 | 0.0000 |
| Th-227 | 1.485E-09 | 0.0012 | 1.116E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.232E-11 | 0.0000 |
| Th-231 | 5.490E-08 | 0.0444 | 3.017E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.549E-10 | 0.0003 |
| U-235 | 1.159E-06 | 0.9376 | 5.024E-09 | 0.0041 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.041E-08 | 0.0084 |
| Total | 1.220E-06 | 0.9870 | 5.130E-09 | 0.0042 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.095E-08 | 0.0089 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 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 | 9.265E-11 | 0.0001 |
| Fr-223 | 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 | 6.324E-12 | 0.0000 |
| Pa-231 | 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 | 7.439E-10 | 0.0006 |
| Pb-211 | 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 | 1.661E-09 | 0.0013 |
| Ra-223 | 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 | 2.404E-09 | 0.0019 |
| Th-227 | 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 | 1.509E-09 | 0.0012 |
| Th-231 | 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 | 5.525E-08 | 0.0447 |
| U-235 | 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 | 1.174E-06 | 0.9501 |
| 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 | 1.236E-06 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 1.220E-06 | 0.9870 | 5.130E-09 | 0.0042 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.095E-08 | 0.0089 |
| Total | 1.220E-06 | 0.9870 | 5.130E-09 | 0.0042 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.095E-08 | 0.0089 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 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 | 1.236E-06 | 1.0000 |
| 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 | 1.236E-06 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+02 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-227 | 1.805E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.921E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.921E-03 |
| Fr-223 | 2.491E-07 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.369E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.369E-04 |
| Pa-231 | 2.292E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.260E-02 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.260E-02 |
| Pb-211 | 1.805E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.920E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.920E-03 |
| Ra-223 | 1.805E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.920E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.920E-03 |
| Th-227 | 1.780E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.784E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 9.784E-03 |
| Th-231 | 3.622E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.991E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.991E+00 |
| U-235 | 3.622E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.991E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.991E+00 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 1.148E-12 | 0.0000 | 8.122E-11 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 7.324E-11 | 0.0001 |
| Fr-223 | 1.058E-11 | 0.0000 | 3.051E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 4.161E-14 | 0.0000 |
| Pa-231 | 9.109E-10 | 0.0014 | 5.232E-11 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 8.515E-11 | 0.0001 |
| Pb-211 | 2.791E-09 | 0.0043 | 2.191E-14 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.734E-13 | 0.0000 |
| Ra-223 | 3.925E-09 | 0.0061 | 1.586E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.011E-10 | 0.0002 |
| Th-227 | 2.496E-09 | 0.0039 | 1.875E-11 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.070E-11 | 0.0000 |
| Th-231 | 2.827E-08 | 0.0439 | 1.554E-13 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.827E-10 | 0.0003 |
| U-235 | 5.966E-07 | 0.9270 | 2.587E-09 | 0.0040 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.362E-09 | 0.0083 |
| Total | 6.350E-07 | 0.9867 | 2.755E-09 | 0.0043 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.825E-09 | 0.0091 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 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 | 1.556E-10 | 0.0002 |
| Fr-223 | 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 | 1.062E-11 | 0.0000 |
| Pa-231 | 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 | 1.048E-09 | 0.0016 |
| Pb-211 | 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 | 2.792E-09 | 0.0043 |
| Ra-223 | 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 | 4.042E-09 | 0.0063 |
| Th-227 | 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 | 2.535E-09 | 0.0039 |
| Th-231 | 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 | 2.845E-08 | 0.0442 |
| U-235 | 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 | 6.045E-07 | 0.9393 |
| 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 | 6.436E-07 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 6.350E-07 | 0.9867 | 2.755E-09 | 0.0043 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.825E-09 | 0.0091 |
| Total | 6.350E-07 | 0.9867 | 2.755E-09 | 0.0043 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.825E-09 | 0.0091 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 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 | 6.436E-07 | 1.0000 |
| 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 | 6.436E-07 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+03 years

| Radio- | Water Independent Pathways (Inhalation w/o radon) | | | | | Water Dependent Pathways | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Inhalation | Plant | Meat | Milk | Soil | Water | Fish | Plant | Meat | Milk | Ingestion* |
| Ac-227 | 6.259E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.440E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.440E-03 |
| Fr-223 | 8.637E-08 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.747E-05 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.747E-05 |
| Pa-231 | 7.427E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.082E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 4.082E-03 |
| Pb-211 | 6.260E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.440E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.440E-03 |
| Ra-223 | 6.260E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.440E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.440E-03 |
| Th-227 | 6.174E-06 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.393E-03 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 3.393E-03 |
| Th-231 | 3.548E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.950E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.950E-01 |
| U-235 | 3.548E-04 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.950E-01 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 0.000E+00 | 1.950E-01 |

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 3.834E-13 | 0.0000 | 2.712E-11 | 0.0004 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.445E-11 | 0.0004 |
| Fr-223 | 3.532E-12 | 0.0001 | 1.019E-16 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.389E-14 | 0.0000 |
| Pa-231 | 2.855E-10 | 0.0044 | 1.640E-11 | 0.0003 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 2.669E-11 | 0.0004 |
| Pb-211 | 9.323E-10 | 0.0142 | 7.317E-15 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.791E-14 | 0.0000 |
| Ra-223 | 1.311E-09 | 0.0200 | 5.296E-12 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 3.375E-11 | 0.0005 |
| Th-227 | 8.335E-10 | 0.0127 | 6.263E-12 | 0.0001 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.912E-12 | 0.0001 |
| Th-231 | 2.768E-09 | 0.0423 | 1.522E-14 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 1.790E-11 | 0.0003 |
| U-235 | 5.843E-08 | 0.8920 | 2.534E-10 | 0.0039 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 5.252E-10 | 0.0080 |
| Total | 6.456E-08 | 0.9856 | 3.085E-10 | 0.0047 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.350E-10 | 0.0097 |

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Plant | | Meat | | Milk | | All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| Ac-227 | 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 | 5.196E-11 | 0.0008 |
| Fr-223 | 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 | 3.546E-12 | 0.0001 |
| Pa-231 | 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 | 3.286E-10 | 0.0050 |
| Pb-211 | 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 | 9.324E-10 | 0.0142 |
| Ra-223 | 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 | 1.350E-09 | 0.0206 |
| Th-227 | 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 | 8.467E-10 | 0.0129 |
| Th-231 | 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 | 2.786E-09 | 0.0425 |
| U-235 | 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 | 5.921E-08 | 0.9038 |
| 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 | 6.551E-08 | 1.0000 |

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

| Radio- | Ground | | Inhalation | | Radon | | Plant | | Meat | | Milk | | Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 6.456E-08 | 0.9856 | 3.085E-10 | 0.0047 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.350E-10 | 0.0097 |
| Total | 6.456E-08 | 0.9856 | 3.085E-10 | 0.0047 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 0.000E+00 | 0.0000 | 6.350E-10 | 0.0097 |

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

| Radio- | Water | | Fish | | Radon | | Plant | | Meat | | Milk | | All pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. | risk | fract. |
| U-235 | 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 | 6.551E-08 | 1.0000 |
| 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 | 6.551E-08 | 1.0000 |

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

# Appendix D. PRG Calculator Output Files

# Site-Specific
# Resident Soil Inputs - Secular Equilibrium



*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| A (PEF Dispersion Constant) | 16.2302 | 13.8139 |
| B (PEF Dispersion Constant) | 18.7762 | 20.1624 |
| City (Climate Zone) | Default | San Francisco, CA (2) |
| C (PEF Dispersion Constant) | 216.108 | 234.2869 |
| $CF_{res\text{-}produce}$ (contaminated plant fraction) unitless | 1 | 1 |
| $CF_{res\text{-}apple}$ (contaminated apple fraction) unitless | 1 | 1 |
| $CF_{res\text{-}asparagus}$ (contaminated asparagus fraction) unitless | 1 | 1 |
| $CF_{res\text{-}berry}$ (contaminated berry fraction) unitless | 1 | 1 |
| $CF_{res\text{-}broccoli}$ (contaminated broccoli fraction) unitless | 1 | 1 |
| $CF_{res\text{-}beet}$ (contaminated beet fraction) unitless | 1 | 1 |
| $CF_{res\text{-}cabbage}$ (contaminated cabbage fraction) unitless | 1 | 1 |
| $CF_{res\text{-}cereal\ grain}$ (contaminated cereal grain fraction) unitless | 1 | 1 |
| $CF_{res\text{-}citrus}$ (contaminated citrus fraction) unitless | 1 | 1 |
| $CF_{res\text{-}corn}$ (contaminated corn fraction) unitless | 1 | 1 |
| $CF_{res\text{-}carrot}$ (contaminated carrot fraction) unitless | 1 | 1 |
| $CF_{res\text{-}cucumber}$ (contaminated cucumber fraction) unitless | 1 | 1 |
| $CF_{res\text{-}lettuce}$ (contaminated lettuce fraction) unitless | 1 | 1 |
| $CF_{res\text{-}lima\ bean}$ (contaminated lima bean fraction) unitless | 1 | 1 |
| $CF_{res\text{-}okra}$ (contaminated okra fraction) unitless | 1 | 1 |
| $CF_{res\text{-}onion}$ (contaminated onion fraction) unitless | 1 | 1 |
| $CF_{res\text{-}peach}$ (contaminated peach fraction) unitless | 1 | 1 |
| $CF_{res\text{-}pea}$ (contaminated pea fraction) unitless | 1 | 1 |
| $CF_{res\text{-}pear}$ (contaminated pear fraction) unitless | 1 | 1 |
| $CF_{res\text{-}potato}$ (contaminated potato fraction) unitless | 1 | 1 |
| $CF_{res\text{-}pumpkin}$ (contaminated pumpkin fraction) unitless | 1 | 1 |
| $CF_{res\text{-}rice}$ (contaminated rice fraction) unitless | 1 | 1 |
| $CF_{res\text{-}snap\ bean}$ (contaminated snap bean fraction) unitless | 1 | 1 |
| $CF_{res\text{-}strawberry}$ (contaminated strawberry fraction) unitless | 1 | 1 |
| $CF_{res\text{-}tomato}$ (contaminated tomato fraction) unitless | 1 | 1 |
| $ED_{res\text{-}a}$ (exposure duration - resident adult) yr | 20 | 20 |

Output generated 07MAY2019:11:39:56

# Site-Specific
# Resident Soil Inputs - Secular Equilibrium

*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| $ED_{res-c}$ (exposure duration - resident child) yr | 6 | 6 |
| $EF_{res-a}$ (exposure frequency - resident adult) day/yr | 350 | 350 |
| $EF_{res-c}$ (exposure frequency - resident child) day/yr | 350 | 350 |
| $IFAP_{res-adj}$ (age-adjusted apple ingestion factor) g | 667520 | 667520 |
| $IFAS_{res-adj}$ (age-adjusted asparagus ingestion factor) g | 300300 | 300300 |
| $IFBE_{res-adj}$ (age-adjusted berry ingestion factor) g | 297990 | 297990 |
| $IFBR_{res-adj}$ (age-adjusted broccoli ingestion factor) g | 251510 | 251510 |
| $IFBT_{res-adj}$ (age-adjusted beet ingestion factor) g | 245490 | 245490 |
| $IFCB_{res-adj}$ (age-adjusted cabbage ingestion factor) g | 670530 | 670530 |
| $IFCG_{res-adj}$ (age-adjusted cereal grain ingestion factor) g | 611800 | 611800 |
| $IFCI_{res-adj}$ (age-adjusted citrus ingestion factor) g | 2573410 | 2573410 |
| $IFCO_{res-adj}$ (age-adjusted corn ingestion factor) g | 468580 | 468580 |
| $IFCR_{res-adj}$ (age-adjusted carrot ingestion factor) g | 222390 | 222390 |
| $IFCU_{res-adj}$ (age-adjusted cucumber ingestion factor) g | 630140 | 630140 |
| $IFLE_{res-adj}$ (age-adjusted lettuce ingestion factor) g | 271320 | 271320 |
| $IFLI_{res-adj}$ (age-adjusted lima bean ingestion factor) g | 250250 | 250250 |
| $IFOK_{res-adj}$ (age-adjusted okra ingestion factor) g | 222530 | 222530 |
| $IFON_{res-adj}$ (age-adjusted onion ingestion factor) g | 164780 | 164780 |
| $IFPC_{res-adj}$ (age-adjusted peach ingestion factor) g | 1043840 | 1043840 |
| $IFPE_{res-adj}$ (age-adjusted pea ingestion factor) g | 315210 | 315210 |
| $IFPR_{res-adj}$ (age-adjusted pear ingestion factor) g | 503370 | 503370 |
| $IFPT_{res-adj}$ (age-adjusted potato ingestion factor) g | 1003170 | 1003170 |
| $IFPU_{res-adj}$ (age-adjusted pumpkin ingestion factor) g | 548520 | 548520 |
| $IFRI_{res-adj}$ (age-adjusted rice ingestion factor) g | 572880 | 572880 |
| $IFSN_{res-adj}$ (age-adjusted snap bean ingestion factor) g | 434630 | 434630 |
| $IFST_{res-adj}$ (age-adjusted strawberry ingestion factor) g | 336630 | 336630 |
| $IFTO_{res-adj}$ (age-adjusted tomato ingestion factor) g | 624470 | 624470 |
| $IRAP_{res-a}$ (apple ingestion rate - resident adult) g/day | 73.7 | 73.7 |
| $IRAP_{res-c}$ (apple ingestion rate - resident child) g/day | 72.2 | 72.2 |
| $IRAS_{res-a}$ (asparagus ingestion rate - resident adult) g/day | 39.3 | 39.3 |

# Site-Specific
# Resident Soil Inputs - Secular Equilibrium

*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| $IRAS_{res-c}$ (asparagus ingestion rate - resident child) g/day | 12.0 | 12.0 |
| $IRBE_{res-a}$ (berry ingestion rate - resident adult) g/day | 35.4 | 35.4 |
| $IRBE_{res-c}$ (berry ingestion rate - resident child) g/day | 23.9 | 23.9 |
| $IRBR_{res-a}$ (broccoli ingestion rate - resident adult) g/day | 32.0 | 32.0 |
| $IRBR_{res-c}$ (broccoli ingestion rate - resident child) g/day | 13.1 | 13.1 |
| $IRBT_{res-a}$ (beet ingestion rate - resident adult) g/day | 33.9 | 33.9 |
| $IRBT_{res-c}$ (beet ingestion rate - resident child) g/day | 3.9 | 3.9 |
| $IRCB_{res-a}$ (cabbage ingestion rate - resident adult) g/day | 92.1 | 92.1 |
| $IRCB_{res-c}$ (cabbage ingestion rate - resident child) g/day | 12.3 | 12.3 |
| $IRCG_{res-a}$ (cereal grain ingestion rate - resident adult) g/day | 76.0 | 76.0 |
| $IRCG_{res-c}$ (cereal grain ingestion rate - resident child) g/day | 38.0 | 38.0 |
| $IRCI_{res-a}$ (citrus ingestion rate - resident adult) g/day | 309.4 | 309.4 |
| $IRCI_{res-c}$ (citrus ingestion rate - resident child) g/day | 194.1 | 194.1 |
| $IRCO_{res-a}$ (corn ingestion rate - resident adult) g/day | 59.8 | 59.8 |
| $IRCO_{res-c}$ (corn ingestion rate - resident child) g/day | 23.8 | 23.8 |
| $IRCR_{res-a}$ (carrot ingestion rate - resident adult) g/day | 27.3 | 27.3 |
| $IRCR_{res-c}$ (carrot ingestion rate - resident child) g/day | 14.9 | 14.9 |
| $IRCU_{res-a}$ (cucumber ingestion rate - resident adult) g/day | 82.4 | 82.4 |
| $IRCU_{res-c}$ (cucumber ingestion rate - resident child) g/day | 25.4 | 25.4 |
| $IRLE_{res-a}$ (lettuce ingestion rate - resident adult) g/day | 37.5 | 37.5 |
| $IRLE_{res-c}$ (lettuce ingestion rate - resident child) g/day | 4.2 | 4.2 |
| $IRLI_{res-a}$ (lima bean ingestion rate - resident adult) g/day | 33.8 | 33.8 |
| $IRLI_{res-c}$ (lima bean ingestion rate - resident child) g/day | 6.5 | 6.5 |
| $IROK_{res-a}$ (okra ingestion rate - resident adult) g/day | 30.2 | 30.2 |
| $IROK_{res-c}$ (okra ingestion rate - resident child) g/day | 5.3 | 5.3 |
| $IRON_{res-a}$ (onion ingestion rate - resident adult) g/day | 21.8 | 21.8 |
| $IRON_{res-c}$ (onion ingestion rate - resident child) g/day | 5.8 | 5.8 |
| $IRPC_{res-a}$ (peach ingestion rate - resident adult) g/day | 115.7 | 115.7 |
| $IRPC_{res-c}$ (peach ingestion rate - resident child) g/day | 111.4 | 111.4 |
| $IRPE_{res-a}$ (pea ingestion rate - resident adult) g/day | 35.4 | 35.4 |

# Site-Specific
# Resident Soil Inputs - Secular Equilibrium

*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| $IRPE_{res-c}$ (pea ingestion rate - resident child) g/day | 32.1 | 32.1 |
| $IRPR_{res-a}$ (pear ingestion rate - resident adult) g/day | 51.9 | 51.9 |
| $IRPR_{res-c}$ (pear ingestion rate - resident child) g/day | 66.7 | 66.7 |
| $IRPT_{res-a}$ (potato ingestion rate - resident adult) g/day | 127.8 | 127.8 |
| $IRPT_{res-c}$ (potato ingestion rate - resident child) g/day | 51.7 | 51.7 |
| $IRPU_{res-a}$ (pumpkin ingestion rate - resident adult) g/day | 64.8 | 64.8 |
| $IRPU_{res-c}$ (pumpkin ingestion rate - resident child) g/day | 45.2 | 45.2 |
| $IRRI_{res-a}$ (rice ingestion rate - resident adult) g/day | 73.2 | 73.2 |
| $IRRI_{res-c}$ (rice ingestion rate - resident child) g/day | 28.8 | 28.8 |
| $IRSN_{res-a}$ (snap bean ingestion rate - resident adult) g/day | 53.9 | 53.9 |
| $IRSN_{res-c}$ (snap bean ingestion rate - resident child) g/day | 27.3 | 27.3 |
| $IRST_{res-a}$ (strawberry ingestion rate - resident adult) g/day | 40.5 | 40.5 |
| $IRST_{res-c}$ (strawberry ingestion rate - resident child) g/day | 25.3 | 25.3 |
| $IRTO_{res-a}$ (tomato ingestion rate - resident adult) g/day | 80.3 | 80.3 |
| $IRTO_{res-c}$ (tomato ingestion rate - resident child) g/day | 29.7 | 29.7 |
| $MLF_{apple}$ (apple mass loading factor) unitless | 0.000160 | 0.000160 |
| $MLF_{asparagus}$ (asparagus mass loading factor) unitless | 0.0000790 | 0.0000790 |
| $MLF_{berry}$ (berry mass loading factor) unitless | 0.000166 | 0.000166 |
| $MLF_{broccoli}$ (broccoli mass loading factor) unitless | 0.00101 | 0.00101 |
| $MLF_{beet}$ (beet mass loading factor) unitless | 0.000138 | 0.000138 |
| $MLF_{cabbage}$ (cabbage mass loading factor) unitless | 0.000105 | 0.000105 |
| $MLF_{cereal\ grain}$ (cereal grain mass loading factor) unitless | 0.250 | 0.250 |
| $MLF_{citrus}$ (citrus mass loading factor) unitless | 0.000157 | 0.000157 |
| $MLF_{corn}$ (corn mass loading factor) unitless | 0.000145 | 0.000145 |
| $MLF_{carrot}$ (carrot mass loading factor) unitless | 0.0000970 | 0.0000970 |
| $MLF_{cucumber}$ (cucumber mass loading factor) unitless | 0.0000400 | 0.0000400 |
| $MLF_{lettuce}$ (lettuce mass loading factor) unitless | 0.0135 | 0.0135 |
| $MLF_{lima\ bean}$ (lima bean mass loading factor) unitless | 0.00383 | 0.00383 |
| $MLF_{okra}$ (okra mass loading factor) unitless | 0.0000800 | 0.0000800 |
| $MLF_{onion}$ (onion mass loading factor) unitless | 0.0000970 | 0.0000970 |

# Site-Specific
# Resident Soil Inputs - Secular Equilibrium

*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| $MLF_{peach}$ (peach mass loading factor) unitless | 0.000150 | 0.000150 |
| $MLF_{pea}$ (pea mass loading factor) unitless | 0.000178 | 0.000178 |
| $MLF_{pear}$ (pear mass loading factor) unitless | 0.000160 | 0.000160 |
| $MLF_{potato}$ (potato mass loading factor) unitless | 0.000210 | 0.000210 |
| $MLF_{pumpkin}$ (pumpkin mass loading factor) unitless | 0.0000580 | 0.0000580 |
| $MLF_{rice}$ (rice mass loading factor) unitless | 0.250 | 0.250 |
| $MLF_{snap\ bean}$ (snap bean mass loading factor) unitless | 0.00500 | 0.00500 |
| $MLF_{strawberry}$ (strawberry mass loading factor) unitless | 0.0000800 | 0.0000800 |
| $MLF_{tomato}$ (tomato mass loading factor) unitless | 0.00159 | 0.00159 |
| TR (target cancer risk) unitless | 1.0E-06 | 1.0E-06 |
| F(x) (function dependent on $U_m/U_t$) unitless | 0.194 | 0.0391 |
| PEF (particulate emission factor) $m^3$/kg | 1359344438 | 4078965031.971621 |
| $Q/C_{wind}$ (g/m$^2$-s per kg/m$^3$) | 93.77 | 32.35983267992716 |
| $A_s$ (acres) | 0.5 | 420 |
| $ED_{res}$ (exposure duration - resident) yr | 26 | 26 |
| $ED_{res-a}$ (exposure duration - resident adult) yr | 20 | 20 |
| $ED_{res-c}$ (exposure duration - resident child) yr | 6 | 6 |
| $EF_{res}$ (exposure frequency - resident) day/yr | 350 | 350 |
| $EF_{res-a}$ (exposure frequency - resident adult) day/yr | 350 | 350 |
| $EF_{res-c}$ (exposure frequency - resident child) day/yr | 350 | 350 |
| $ET_{res}$ (exposure time - resident) hr/day | 24 | 24 |
| $ET_{res-a}$ (exposure time - resident adult) hr/day | 24 | 24 |
| $ET_{res-c}$ (exposure time - resident child) hr/day | 24 | 24 |
| $ET_{res-i}$ (exposure time - indoor resident) hr/day | 16.416 | 16.416 |
| $ET_{res-o}$ (exposure time - outdoor resident) hr/day | 1.752 | 1.752 |
| $GSF_i$ (gamma shielding factor - indoor) unitless | 0.4 | 0.4 |
| $IFA_{res-adj}$ (age-adjusted soil inhalation factor - resident) $m^3$ | 161000 | 161000 |
| $IFS_{res-adj}$ (age-adjusted soil ingestion factor - resident) mg | 1120000 | 1120000 |
| $IRA_{res-a}$ (inhalation rate - resident adult) $m^3$/day | 20 | 20 |
| $IRA_{res-c}$ (inhalation rate - resident child) $m^3$/day | 10 | 10 |

# Site-Specific
# Resident Soil Inputs - Secular Equilibrium

*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| $IRS_{res-a}$ (soil intake rate - resident adult) mg/day | 100 | 100 |
| $IRS_{res-c}$ (soil intake rate - resident child) mg/day | 200 | 200 |
| $t_{res}$ (time - resident) yr | 26 | 26 |
| TR (target cancer risk) unitless | 1.0E-06 | 1.0E-06 |
| $U_m$ (mean annual wind speed) m/s | 4.69 | 3.89 |
| $U_t$ (equivalent threshold value) | 11.32 | 11.32 |
| V (fraction of vegetative cover) unitless | 0.5 | 0.5 |

# Site-Specific
# Resident PRGs for Soil - Secular Equilibrium

| Isotope | Ingestion PRG TR=1E-06 (pCi/g) | Inhalation PRG TR=1E-06 (pCi/g) | External Exposure PRG TR=1E-06 (pCi/g) | Produce Consumption PRG TR=1E-06 (pCi/g) | Total PRG TR=1E-06 (pCi/g) |
|---|---|---|---|---|---|
| **Secular Equilibrium PRG for Am-241* | *5.60E-01* | *7.82E+01* | *5.73E-02* | - | ***5.19E-02*** |
| **Secular Equilibrium PRG for Co-60* | *2.34E+01* | *2.52E+05* | *9.35E-03* | - | ***9.35E-03*** |
| **Secular Equilibrium PRG for Cs-137* | *2.10E+01* | *2.25E+05* | *4.56E-02* | - | ***4.55E-02*** |
| **Secular Equilibrium PRG for Eu-152* | *1.48E+01* | *2.93E+03* | *2.14E-02* | - | ***2.14E-02*** |
| **Secular Equilibrium PRG for Eu-154* | *3.52E+01* | *1.23E+05* | *1.98E-02* | - | ***1.98E-02*** |
| **Secular Equilibrium PRG for H-3* | *9.93E+03* | *1.25E-01* | - | - | ***1.25E-01*** |
| **Secular Equilibrium PRG for Pu-239* | *5.26E-01* | *6.85E+01* | *4.96E-02* | - | ***4.53E-02*** |
| **Secular Equilibrium PRG for Ra-226* | *1.57E-01* | *4.28E+02* | *1.38E-02* | - | ***1.27E-02*** |
| **Secular Equilibrium PRG for Sr-90* | *6.59E+00* | *5.84E+04* | *5.94E+00* | - | ***3.13E+00*** |
| **Secular Equilibrium PRG for Th-232* | *3.08E-01* | *1.09E+02* | *1.02E-02* | - | ***9.85E-03*** |
| **Secular Equilibrium PRG for U-235* | *6.08E-01* | *8.06E+01* | *4.96E-02* | - | ***4.59E-02*** |

# Site-Specific
# Resident Individual Contribution PRGs for Soil - Secular Equilibrium

| Isotope | Parent | Fractional Contribution of Progeny | ICRP Lung Absorption Type | Inhalation Slope Factor (risk/pCi) | External Exposure Slope Factor (risk/yr per pCi/g) | Food Ingestion Slope Factor (risk/pCi) | Soil Ingestion Slope Factor (risk/pCi) | Particulate Emission Factor ($m^3$/kg) | Lambda (1/yr) | Halflife (yr) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Secular Equilibrium PRG for Am-241* | *Am-241* | - | | - | - | - | - | - | - | - |
| Ac-225 | Am-241 | 1.00E+00 | S | 2.86E-08 | 4.12E-08 | 2.72E-10 | 4.88E-10 | 4.08E+09 | 2.53E+01 | 2.74E-02 |
| Am-241 | Am-241 | 1.00E+00 | F | 3.77E-08 | 2.77E-08 | 1.34E-10 | 1.84E-10 | 4.08E+09 | 1.60E-03 | 4.32E+02 |
| At-217 | Am-241 | 1.00E+00 | - | 0.00E+00 | 9.36E-10 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 6.77E+08 | 1.02E-09 |
| Bi-213 | Am-241 | 1.00E+00 | S | 7.40E-11 | 5.43E-07 | 7.18E-13 | 1.19E-12 | 4.08E+09 | 7.99E+03 | 8.67E-05 |
| Fr-221 | Am-241 | 1.00E+00 | - | 0.00E+00 | 1.05E-07 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 7.43E+04 | 9.32E-06 |
| Np-237 | Am-241 | 1.00E+00 | S | 2.87E-08 | 5.17E-08 | 8.29E-11 | 1.25E-10 | 4.08E+09 | 3.23E-07 | 2.14E+06 |
| Pa-233 | Am-241 | 1.00E+00 | S | 1.53E-11 | 8.03E-07 | 8.95E-12 | 1.65E-11 | 4.08E+09 | 9.38E+00 | 7.39E-02 |
| Pb-209 | Am-241 | 1.00E+00 | S | 2.08E-13 | 5.37E-10 | 3.49E-13 | 6.25E-13 | 4.08E+09 | 1.87E+03 | 3.71E-04 |
| Po-213 | Am-241 | 9.79E-01 | - | 0.00E+00 | 1.73E-10 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 5.20E+12 | 1.33E-13 |
| Ra-225 | Am-241 | 1.00E+00 | S | 2.62E-08 | 6.11E-09 | 1.54E-10 | 2.42E-10 | 4.08E+09 | 1.70E+01 | 4.08E-02 |
| Th-229 | Am-241 | 1.00E+00 | S | 1.75E-07 | 2.24E-07 | 2.90E-10 | 3.85E-10 | 4.08E+09 | 9.44E-05 | 7.34E+03 |
| Tl-209 | Am-241 | 2.09E-02 | - | 0.00E+00 | 1.03E-05 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 1.69E+05 | 4.11E-06 |
| U-233 | Am-241 | 1.00E+00 | S | 2.83E-08 | 7.11E-10 | 9.69E-11 | 1.50E-10 | 4.08E+09 | 4.35E-06 | 1.59E+05 |
| **Secular Equilibrium PRG for Co-60* | *Co-60* | - | | - | - | - | - | - | - | - |
| Co-60 | Co-60 | 1.00E+00 | S | 1.01E-10 | 1.24E-05 | 2.23E-11 | 3.81E-11 | 4.08E+09 | 1.31E-01 | 5.27E+00 |
| **Secular Equilibrium PRG for Cs-137* | *Cs-137* | - | | - | - | - | - | - | - | - |
| Ba-137m | Cs-137 | 9.44E-01 | - | 0.00E+00 | 2.69E-06 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 1.43E+05 | 4.86E-06 |
| Cs-137 | Cs-137 | 1.00E+00 | S | 1.12E-10 | 5.52E-10 | 3.74E-11 | 4.26E-11 | 4.08E+09 | 2.30E-02 | 3.02E+01 |
| **Secular Equilibrium PRG for Eu-152* | *Eu-152* | - | | - | - | - | - | - | - | - |
| Eu-152 | Eu-152 | 1.00E+00 | F | 1.91E-10 | 5.41E-06 | 8.33E-12 | 1.46E-11 | 4.08E+09 | 5.12E-02 | 1.35E+01 |
| Gd-152 | Eu-152 | 2.79E-01 | F | 9.10E-09 | 0.00E+00 | 3.85E-11 | 5.48E-11 | 4.08E+09 | 6.42E-15 | 1.08E+14 |
| Nd-144 | Eu-152 | 2.79E-01 | F | 1.04E-08 | 0.00E+00 | 3.92E-11 | 5.37E-11 | 4.08E+09 | 3.03E-16 | 2.29E+15 |
| Sm-148 | Eu-152 | 2.79E-01 | F | 1.08E-08 | 0.00E+00 | 4.11E-11 | 5.59E-11 | 4.08E+09 | 9.90E-17 | 7.00E+15 |
| **Secular Equilibrium PRG for Eu-154* | *Eu-154* | - | | - | - | - | - | - | - | - |
| Eu-154 | Eu-154 | 1.00E+00 | F | 2.06E-10 | 5.85E-06 | 1.42E-11 | 2.54E-11 | 4.08E+09 | 8.06E-02 | 8.59E+00 |
| **Secular Equilibrium PRG for H-3* | *H-3* | - | | - | - | - | - | - | - | - |
| H-3 | H-3 | 1.00E+00 | S | 8.47E-13 | 0.00E+00 | 1.44E-13 | 8.99E-14 | 1.70E+01 | 5.63E-02 | 1.23E+01 |
| **Secular Equilibrium PRG for Pu-239* | *Pu-239* | - | | - | - | - | - | - | - | - |

# Site-Specific
# Resident Individual Contribution PRGs for Soil - Secular Equilibrium

| Isotope | 1000029 m² Soil Volume Area Correction Factor | 0 cm Soil Volume Gamma Shielding Factor | Total Indoor GSF Soil Volume | Ingestion PRG TR=1E-06 (pCi/g) | Inhalation PRG TR=1E-06 (pCi/g) | External Exposure PRG TR=1E-06 (pCi/g) | Produce Consumption PRG TR=1E-06 (pCi/g) | Total PRG TR=1E-06 (pCi/g) | Total PRG TR=1E-06 (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|
| **Secular Equilibrium PRG for Am-241* | - | - | - | *5.60E-01* | *7.82E+01* | *5.73E-02* | - | ***5.19E-02*** | - |
| Ac-225 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 1.83E+00 | 8.87E+02 | 2.81E+00 | - | **1.11E+00** | 1.56E-11 |
| Am-241 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 4.85E+00 | 6.71E+02 | 4.18E+00 | - | **2.24E+00** | 1.30E-07 |
| At-217 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 1.24E+02 | - | **1.24E+02** | 5.04E-21 |
| Bi-213 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 7.50E+02 | 3.42E+05 | 2.13E-01 | - | **2.13E-01** | 2.43E-13 |
| Fr-221 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 1.10E+00 | - | **1.10E+00** | 5.23E-15 |
| Np-237 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 7.16E+00 | 8.84E+02 | 2.24E+00 | - | **1.70E+00** | 8.36E-04 |
| Pa-233 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 5.42E+01 | 1.66E+06 | 1.44E-01 | - | **1.44E-01** | 3.35E-10 |
| Pb-209 | 9.00E-01 | 1.00E+00 | 4.00E-01 | 1.43E+03 | 1.22E+08 | 2.39E+02 | - | **2.05E+02** | 1.06E-15 |
| Po-213 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 6.84E+02 | - | **6.84E+02** | 1.16E-25 |
| Ra-225 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 3.68E+00 | 9.69E+02 | 1.90E+01 | - | **3.07E+00** | 8.36E-12 |
| Th-229 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 2.32E+00 | 1.45E+02 | 5.16E-01 | - | **4.21E-01** | 1.12E-05 |
| Tl-209 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 5.37E-01 | - | **5.37E-01** | 4.48E-15 |
| U-233 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 5.94E+00 | 8.95E+02 | 1.63E+02 | - | **5.70E+00** | 1.82E-05 |
| **Secular Equilibrium PRG for Co-60* | - | - | - | *2.34E+01* | *2.52E+05* | *9.35E-03* | - | ***9.35E-03*** | - |
| Co-60 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 2.34E+01 | 2.52E+05 | 9.35E-03 | - | **9.35E-03** | 9.48E-08 |
| **Secular Equilibrium PRG for Cs-137* | - | - | - | *2.10E+01* | *2.25E+05* | *4.56E-02* | - | ***4.55E-02*** | - |
| Ba-137m | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 4.56E-02 | - | **4.56E-02** | 4.08E-14 |
| Cs-137 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 2.10E+01 | 2.25E+05 | 2.10E+02 | - | **1.91E+01** | 6.07E-10 |
| **Secular Equilibrium PRG for Eu-152* | - | - | - | *1.48E+01* | *2.93E+03* | *2.14E-02* | - | ***2.14E-02*** | - |
| Eu-152 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 6.12E+01 | 1.32E+05 | 2.14E-02 | - | **2.14E-02** | 2.69E-07 |
| Gd-152 | 9.00E-01 | 1.00E+00 | 4.00E-01 | 5.84E+01 | 9.98E+03 | - | - | **5.81E+01** | 7.91E+02 |
| Nd-144 | 9.00E-01 | 1.00E+00 | 4.00E-01 | 5.96E+01 | 8.73E+03 | - | - | **5.92E+01** | 1.56E+04 |
| Sm-148 | 9.00E-01 | 1.00E+00 | 4.00E-01 | 5.73E+01 | 8.38E+03 | - | - | **5.69E+01** | 5.10E+04 |
| **Secular Equilibrium PRG for Eu-154* | - | - | - | *3.52E+01* | *1.23E+05* | *1.98E-02* | - | ***1.98E-02*** | - |
| Eu-154 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 3.52E+01 | 1.23E+05 | 1.98E-02 | - | **1.98E-02** | 1.87E-07 |
| **Secular Equilibrium PRG for H-3* | - | - | - | *9.93E+03* | *1.25E-01* | - | - | ***1.25E-01*** | - |
| H-3 | 9.00E-01 | 1.00E+00 | 4.00E-01 | 9.93E+03 | 1.25E-01 | - | - | **1.25E-01** | 8.30E-10 |
| **Secular Equilibrium PRG for Pu-239* | - | - | - | *5.26E-01* | *6.85E+01* | *4.96E-02* | - | ***4.53E-02*** | - |

# Site-Specific
# Resident Individual Contribution PRGs for Soil - Secular Equilibrium

| Isotope | Parent | Fractional Contribution of Progeny | ICRP Lung Absorption Type | Inhalation Slope Factor (risk/pCi) | External Exposure Slope Factor (risk/yr per pCi/g) | Food Ingestion Slope Factor (risk/pCi) | Soil Ingestion Slope Factor (risk/pCi) | Particulate Emission Factor ($m^3$/kg) | Lambda (1/yr) | Halflife (yr) |
|---|---|---|---|---|---|---|---|---|---|---|
| Ac-227 | Pu-239 | 1.00E+00 | S | 1.49E-07 | 1.98E-10 | 2.45E-10 | 2.90E-10 | 4.08E+09 | 3.18E-02 | 2.18E+01 |
| At-219 | Pu-239 | 8.28E-07 | - | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 3.90E+05 | 1.78E-06 |
| Bi-211 | Pu-239 | 1.00E+00 | - | 0.00E+00 | 1.90E-07 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 1.70E+05 | 4.07E-06 |
| Bi-215 | Pu-239 | 8.03E-07 | - | 0.00E+00 | 1.08E-06 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 4.79E+04 | 1.45E-05 |
| Fr-223 | Pu-239 | 1.38E-02 | S | 4.07E-11 | 1.35E-07 | 1.01E-11 | 1.69E-11 | 4.08E+09 | 1.66E+04 | 4.19E-05 |
| Pa-231 | Pu-239 | 1.00E+00 | F | 7.62E-08 | 1.27E-07 | 2.26E-10 | 2.98E-10 | 4.08E+09 | 2.12E-05 | 3.28E+04 |
| Pb-211 | Pu-239 | 1.00E+00 | S | 4.03E-11 | 2.91E-07 | 5.81E-13 | 9.55E-13 | 4.08E+09 | 1.01E+04 | 6.87E-05 |
| Po-211 | Pu-239 | 2.76E-03 | - | 0.00E+00 | 3.76E-08 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 4.24E+07 | 1.64E-08 |
| Po-215 | Pu-239 | 1.00E+00 | - | 0.00E+00 | 7.48E-10 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 1.23E+10 | 5.65E-11 |
| Pu-239 | Pu-239 | 1.00E+00 | F | 5.55E-08 | 2.09E-10 | 1.74E-10 | 2.28E-10 | 4.08E+09 | 2.87E-05 | 2.41E+04 |
| Ra-223 | Pu-239 | 1.00E+00 | S | 2.92E-08 | 4.55E-07 | 3.39E-10 | 5.99E-10 | 4.08E+09 | 2.21E+01 | 3.13E-02 |
| Rn-219 | Pu-239 | 1.00E+00 | - | 0.00E+00 | 2.35E-07 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 5.52E+06 | 1.26E-07 |
| Th-227 | Pu-239 | 9.86E-01 | S | 3.50E-08 | 4.45E-07 | 7.03E-11 | 1.29E-10 | 4.08E+09 | 1.35E+01 | 5.12E-02 |
| Th-231 | Pu-239 | 1.00E+00 | S | 1.50E-12 | 2.49E-08 | 3.22E-12 | 5.96E-12 | 4.08E+09 | 2.38E+02 | 2.91E-03 |
| Tl-207 | Pu-239 | 9.97E-01 | - | 0.00E+00 | 1.59E-08 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 7.64E+04 | 9.08E-06 |
| U-235 | Pu-239 | 1.00E+00 | S | 2.50E-08 | 5.51E-07 | 9.44E-11 | 1.48E-10 | 4.08E+09 | 9.84E-10 | 7.04E+08 |
| U-235m | Pu-239 | 9.99E-01 | M | 1.87E-18 | 0.00E+00 | 1.06E-17 | 1.65E-17 | 4.08E+09 | 1.40E+04 | 4.95E-05 |
| **Secular Equilibrium PRG for Ra-226* | *Ra-226* | - | | - | - | - | - | - | - | - |
| At-218 | Ra-226 | 2.00E-04 | - | 0.00E+00 | 2.74E-11 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 1.46E+07 | 4.76E-08 |
| Bi-210 | Ra-226 | 1.00E+00 | S | 4.55E-10 | 2.77E-09 | 1.30E-11 | 2.40E-11 | 4.08E+09 | 5.05E+01 | 1.37E-02 |
| Bi-214 | Ra-226 | 1.00E+00 | S | 6.18E-11 | 7.34E-06 | 2.65E-13 | 4.03E-13 | 4.08E+09 | 1.83E+04 | 3.79E-05 |
| Hg-206 | Ra-226 | 1.90E-08 | - | 0.00E+00 | 4.83E-07 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 4.47E+04 | 1.55E-05 |
| Pb-210 | Ra-226 | 1.00E+00 | S | 1.59E-08 | 1.48E-09 | 1.18E-09 | 1.72E-09 | 4.08E+09 | 3.12E-02 | 2.22E+01 |
| Pb-214 | Ra-226 | 1.00E+00 | S | 7.77E-11 | 9.94E-07 | 4.85E-13 | 7.92E-13 | 4.08E+09 | 1.36E+04 | 5.10E-05 |
| Po-210 | Ra-226 | 1.00E+00 | S | 1.45E-08 | 4.51E-11 | 2.25E-09 | 3.27E-09 | 4.08E+09 | 1.83E+00 | 3.79E-01 |
| Po-214 | Ra-226 | 1.00E+00 | - | 0.00E+00 | 3.85E-10 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 1.33E+11 | 5.21E-12 |
| Po-218 | Ra-226 | 1.00E+00 | - | 1.39E-11 | 6.84E-15 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 1.17E+05 | 5.90E-06 |
| Ra-226 | Ra-226 | 1.00E+00 | S | 2.82E-08 | 2.50E-08 | 5.14E-10 | 6.77E-10 | 4.08E+09 | 4.33E-04 | 1.60E+03 |
| Rn-218 | Ra-226 | 2.00E-07 | - | 0.00E+00 | 3.39E-09 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 6.24E+08 | 1.11E-09 |

# Site-Specific
# Resident Individual Contribution PRGs for Soil - Secular Equilibrium

| Isotope | 1000029 m² Soil Volume Area Correction Factor | 0 cm Soil Volume Gamma Shielding Factor | Total Indoor GSF Soil Volume | Ingestion PRG TR=1E-06 (pCi/g) | Inhalation PRG TR=1E-06 (pCi/g) | External Exposure PRG TR=1E-06 (pCi/g) | Produce Consumption PRG TR=1E-06 (pCi/g) | Total PRG TR=1E-06 (pCi/g) | Total PRG TR=1E-06 (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|
| Ac-227 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 3.08E+00 | 1.69E+02 | 5.83E+02 | - | **3.01E+00** | 4.60E-09 |
| At-219 | 9.00E-01 | 1.00E+00 | 4.00E-01 | - | - | - | - | **-** | - |
| Bi-211 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 6.08E-01 | - | **6.08E-01** | 3.96E-15 |
| Bi-215 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 1.33E+05 | - | **1.33E+05** | 6.55E-20 |
| Fr-223 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 3.83E+03 | 4.51E+07 | 6.19E+01 | - | **6.09E+01** | 4.29E-16 |
| Pa-231 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 3.00E+00 | 3.32E+02 | 9.09E-01 | - | **6.96E-01** | 3.04E-05 |
| Pb-211 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 9.35E+02 | 6.28E+05 | 3.98E-01 | - | **3.98E-01** | 1.02E-13 |
| Po-211 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 1.12E+03 | - | **1.12E+03** | 8.67E-21 |
| Po-215 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 1.55E+02 | - | **1.55E+02** | 2.20E-22 |
| Pu-239 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 3.92E+00 | 4.56E+02 | 5.54E+02 | - | **3.86E+00** | 4.18E-06 |
| Ra-223 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 1.49E+00 | 8.68E+02 | 2.54E-01 | - | **2.17E-01** | 9.01E-11 |
| Rn-219 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 4.93E-01 | - | **4.93E-01** | 1.56E-16 |
| Th-227 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 7.03E+00 | 7.34E+02 | 2.64E-01 | - | **2.54E-01** | 1.28E-10 |
| Th-231 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 1.50E+02 | 1.69E+07 | 4.65E+00 | - | **4.51E+00** | 4.18E-13 |
| Tl-207 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 7.31E+00 | - | **7.31E+00** | 7.20E-16 |
| U-235 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 6.05E+00 | 1.01E+03 | 2.10E-01 | - | **2.03E-01** | 2.28E+00 |
| U-235m | 1.00E+00 | 1.00E+00 | 4.00E-01 | 5.41E+07 | 1.36E+13 | - | - | **5.41E+07** | 6.01E-22 |
| **Secular Equilibrium PRG for Ra-226* | - | - | - | *1.57E-01* | *4.28E+02* | *1.38E-02* | - | ***1.27E-02*** | - |
| At-218 | 9.00E-01 | 1.00E+00 | 4.00E-01 | - | - | 2.34E+07 | - | **2.34E+07** | 1.24E-24 |
| Bi-210 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 3.72E+01 | 5.57E+04 | 4.18E+01 | - | **1.97E+01** | 4.10E-13 |
| Bi-214 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 2.21E+03 | 4.10E+05 | 1.58E-02 | - | **1.58E-02** | 1.44E-12 |
| Hg-206 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 1.26E+07 | - | **1.26E+07** | 7.10E-22 |
| Pb-210 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 5.20E-01 | 1.60E+03 | 7.80E+01 | - | **5.16E-01** | 2.53E-08 |
| Pb-214 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 1.13E+03 | 3.26E+05 | 1.16E-01 | - | **1.16E-01** | 2.62E-13 |
| Po-210 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 2.73E-01 | 1.75E+03 | 2.57E+03 | - | **2.73E-01** | 8.18E-10 |
| Po-214 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 3.00E+02 | - | **3.00E+02** | 1.04E-23 |
| Po-218 | 9.00E-01 | 1.00E+00 | 4.00E-01 | - | 1.82E+06 | 1.88E+07 | - | **1.66E+06** | 2.17E-21 |
| Ra-226 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 1.32E+00 | 9.00E+02 | 4.63E+00 | - | **1.03E+00** | 9.88E-07 |
| Rn-218 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 1.71E+08 | - | **1.71E+08** | 3.96E-27 |

# Site-Specific
# Resident Individual Contribution PRGs for Soil - Secular Equilibrium

| Isotope | Parent | Fractional Contribution of Progeny | ICRP Lung Absorption Type | Inhalation Slope Factor (risk/pCi) | External Exposure Slope Factor (risk/yr per pCi/g) | Food Ingestion Slope Factor (risk/pCi) | Soil Ingestion Slope Factor (risk/pCi) | Particulate Emission Factor ($m^3$/kg) | Lambda (1/yr) | Halflife (yr) |
|---|---|---|---|---|---|---|---|---|---|---|
| Rn-222 | Ra-226 | 1.00E+00 | - | 2.28E-12 | 1.69E-09 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 6.62E+01 | 1.05E-02 |
| Tl-206 | Ra-226 | 1.34E-06 | - | 0.00E+00 | 6.11E-09 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 8.67E+04 | 7.99E-06 |
| Tl-210 | Ra-226 | 2.10E-04 | - | 0.00E+00 | 1.34E-05 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 2.80E+05 | 2.47E-06 |
| **Secular Equilibrium PRG for Sr-90* | *Sr-90* | - | | - | - | - | - | - | - | - |
| Sr-90 | Sr-90 | 1.00E+00 | S | 4.26E-10 | 4.83E-10 | 6.88E-11 | 8.62E-11 | 4.08E+09 | 2.41E-02 | 2.88E+01 |
| Y-90 | Sr-90 | 1.00E+00 | S | 8.40E-12 | 1.90E-08 | 2.65E-11 | 4.92E-11 | 4.08E+09 | 9.47E+01 | 7.32E-03 |
| **Secular Equilibrium PRG for Th-232* | *Th-232* | - | | - | - | - | - | - | - | - |
| Ac-228 | Th-232 | 1.00E+00 | S | 4.92E-11 | 4.04E-06 | 2.73E-12 | 4.92E-12 | 4.08E+09 | 9.87E+02 | 7.02E-04 |
| Bi-212 | Th-232 | 1.00E+00 | S | 1.13E-10 | 4.96E-07 | 1.01E-12 | 1.68E-12 | 4.08E+09 | 6.02E+03 | 1.15E-04 |
| Pb-212 | Th-232 | 1.00E+00 | S | 6.29E-10 | 4.96E-07 | 3.57E-11 | 6.33E-11 | 4.08E+09 | 5.71E+02 | 1.21E-03 |
| Po-212 | Th-232 | 6.41E-01 | - | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 7.31E+13 | 9.48E-15 |
| Po-216 | Th-232 | 1.00E+00 | - | 0.00E+00 | 7.10E-11 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 1.51E+08 | 4.60E-09 |
| Ra-224 | Th-232 | 1.00E+00 | S | 1.13E-08 | 3.91E-08 | 2.38E-10 | 4.26E-10 | 4.08E+09 | 6.91E+01 | 1.00E-02 |
| Ra-228 | Th-232 | 1.00E+00 | S | 4.37E-08 | 3.43E-11 | 1.42E-09 | 1.98E-09 | 4.08E+09 | 1.21E-01 | 5.75E+00 |
| Rn-220 | Th-232 | 1.00E+00 | - | 1.15E-12 | 2.77E-09 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 3.93E+05 | 1.76E-06 |
| Th-228 | Th-232 | 1.00E+00 | S | 1.32E-07 | 5.64E-09 | 1.48E-10 | 2.43E-10 | 4.08E+09 | 3.63E-01 | 1.91E+00 |
| Th-232 | Th-232 | 1.00E+00 | S | 4.33E-08 | 3.58E-10 | 1.33E-10 | 1.84E-10 | 4.08E+09 | 4.93E-11 | 1.41E+10 |
| Tl-208 | Th-232 | 3.59E-01 | - | 0.00E+00 | 1.75E-05 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 1.19E+05 | 5.81E-06 |
| **Secular Equilibrium PRG for U-235* | *U-235* | - | | - | - | - | - | - | - | - |
| Ac-227 | U-235 | 1.00E+00 | S | 1.49E-07 | 1.98E-10 | 2.45E-10 | 2.90E-10 | 4.08E+09 | 3.18E-02 | 2.18E+01 |
| At-219 | U-235 | 8.28E-07 | - | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 3.90E+05 | 1.78E-06 |
| Bi-211 | U-235 | 1.00E+00 | - | 0.00E+00 | 1.90E-07 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 1.70E+05 | 4.07E-06 |
| Bi-215 | U-235 | 8.03E-07 | - | 0.00E+00 | 1.08E-06 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 4.79E+04 | 1.45E-05 |
| Fr-223 | U-235 | 1.38E-02 | S | 4.07E-11 | 1.35E-07 | 1.01E-11 | 1.69E-11 | 4.08E+09 | 1.66E+04 | 4.19E-05 |
| Pa-231 | U-235 | 1.00E+00 | F | 7.62E-08 | 1.27E-07 | 2.26E-10 | 2.98E-10 | 4.08E+09 | 2.12E-05 | 3.28E+04 |
| Pb-211 | U-235 | 1.00E+00 | S | 4.03E-11 | 2.91E-07 | 5.81E-13 | 9.55E-13 | 4.08E+09 | 1.01E+04 | 6.87E-05 |
| Po-211 | U-235 | 2.76E-03 | - | 0.00E+00 | 3.76E-08 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 4.24E+07 | 1.64E-08 |
| Po-215 | U-235 | 1.00E+00 | - | 0.00E+00 | 7.48E-10 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 1.23E+10 | 5.65E-11 |
| Ra-223 | U-235 | 1.00E+00 | S | 2.92E-08 | 4.55E-07 | 3.39E-10 | 5.99E-10 | 4.08E+09 | 2.21E+01 | 3.13E-02 |

# Site-Specific
# Resident Individual Contribution PRGs for Soil - Secular Equilibrium

| Isotope | 1000029 m² Soil Volume Area Correction Factor | 0 cm Soil Volume Gamma Shielding Factor | Total Indoor GSF Soil Volume | Ingestion PRG TR=1E-06 (pCi/g) | Inhalation PRG TR=1E-06 (pCi/g) | External Exposure PRG TR=1E-06 (pCi/g) | Produce Consumption PRG TR=1E-06 (pCi/g) | Total PRG TR=1E-06 (pCi/g) | Total PRG TR=1E-06 (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|
| Rn-222 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | 1.11E+07 | 6.84E+01 | - | **6.84E+01** | 9.53E-14 |
| Tl-206 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 1.42E+07 | - | **1.42E+07** | 3.26E-22 |
| Tl-210 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 4.10E+01 | - | **4.10E+01** | 3.54E-17 |
| **Secular Equilibrium PRG for Sr-90* | - | - | - | *6.59E+00* | *5.84E+04* | *5.94E+00* | - | ***3.13E+00*** | - |
| Sr-90 | 9.00E-01 | 1.00E+00 | 4.00E-01 | 1.04E+01 | 5.95E+04 | 2.66E+02 | - | **9.97E+00** | 7.28E-10 |
| Y-90 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 1.81E+01 | 3.02E+06 | 6.08E+00 | - | **4.55E+00** | 4.05E-13 |
| **Secular Equilibrium PRG for Th-232* | - | - | - | *3.08E-01* | *1.09E+02* | *1.02E-02* | - | ***9.85E-03*** | - |
| Ac-228 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 1.81E+02 | 5.15E+05 | 2.86E-02 | - | **2.86E-02** | 1.56E-11 |
| Bi-212 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 5.32E+02 | 2.24E+05 | 2.33E-01 | - | **2.33E-01** | 2.93E-13 |
| Pb-212 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 1.41E+01 | 4.03E+04 | 2.33E-01 | - | **2.29E-01** | 3.14E-12 |
| Po-212 | 9.00E-01 | 1.00E+00 | 4.00E-01 | - | - | - | - | **-** | - |
| Po-216 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 1.63E+03 | - | **1.63E+03** | 1.71E-21 |
| Ra-224 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 2.10E+00 | 2.24E+03 | 2.96E+00 | - | **1.23E+00** | 5.13E-12 |
| Ra-228 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 4.51E-01 | 5.80E+02 | 3.37E+03 | - | **4.51E-01** | 8.15E-09 |
| Rn-220 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | 2.20E+07 | 4.18E+01 | - | **4.18E+01** | 2.60E-17 |
| Th-228 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 3.67E+00 | 1.91E+02 | 2.05E+01 | - | **3.07E+00** | 3.98E-10 |
| Th-232 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 4.86E+00 | 5.85E+02 | 3.23E+02 | - | **4.74E+00** | 1.92E+00 |
| Tl-208 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 1.84E-02 | - | **1.84E-02** | 1.84E-13 |
| **Secular Equilibrium PRG for U-235* | - | - | - | *6.08E-01* | *8.06E+01* | *4.96E-02* | - | ***4.59E-02*** | - |
| Ac-227 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 3.08E+00 | 1.69E+02 | 5.83E+02 | - | **3.01E+00** | 4.60E-09 |
| At-219 | 9.00E-01 | 1.00E+00 | 4.00E-01 | - | - | - | - | **-** | - |
| Bi-211 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 6.08E-01 | - | **6.08E-01** | 3.96E-15 |
| Bi-215 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 1.33E+05 | - | **1.33E+05** | 6.55E-20 |
| Fr-223 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 3.83E+03 | 4.51E+07 | 6.19E+01 | - | **6.09E+01** | 4.29E-16 |
| Pa-231 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 3.00E+00 | 3.32E+02 | 9.09E-01 | - | **6.96E-01** | 3.04E-05 |
| Pb-211 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 9.35E+02 | 6.28E+05 | 3.98E-01 | - | **3.98E-01** | 1.02E-13 |
| Po-211 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 1.12E+03 | - | **1.12E+03** | 8.67E-21 |
| Po-215 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 1.55E+02 | - | **1.55E+02** | 2.20E-22 |
| Ra-223 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 1.49E+00 | 8.68E+02 | 2.54E-01 | - | **2.17E-01** | 9.01E-11 |

# Site-Specific
# Resident Individual Contribution PRGs for Soil - Secular Equilibrium

| Isotope | Parent | Fractional Contribution of Progeny | ICRP Lung Absorption Type | Inhalation Slope Factor (risk/pCi) | External Exposure Slope Factor (risk/yr per pCi/g) | Food Ingestion Slope Factor (risk/pCi) | Soil Ingestion Slope Factor (risk/pCi) | Particulate Emission Factor ($m^3$/kg) | Lambda (1/yr) | Halflife (yr) |
|---|---|---|---|---|---|---|---|---|---|---|
| Rn-219 | U-235 | 1.00E+00 | - | 0.00E+00 | 2.35E-07 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 5.52E+06 | 1.26E-07 |
| Th-227 | U-235 | 9.86E-01 | S | 3.50E-08 | 4.45E-07 | 7.03E-11 | 1.29E-10 | 4.08E+09 | 1.35E+01 | 5.12E-02 |
| Th-231 | U-235 | 1.00E+00 | S | 1.50E-12 | 2.49E-08 | 3.22E-12 | 5.96E-12 | 4.08E+09 | 2.38E+02 | 2.91E-03 |
| Tl-207 | U-235 | 9.97E-01 | - | 0.00E+00 | 1.59E-08 | 0.00E+00 | 0.00E+00 | 4.08E+09 | 7.64E+04 | 9.08E-06 |
| U-235 | U-235 | 1.00E+00 | S | 2.50E-08 | 5.51E-07 | 9.44E-11 | 1.48E-10 | 4.08E+09 | 9.84E-10 | 7.04E+08 |

# Site-Specific
# Resident Individual Contribution PRGs for Soil - Secular Equilibrium

| Isotope | 1000029 m² Soil Volume Area Correction Factor | 0 cm Soil Volume Gamma Shielding Factor | Total Indoor GSF Soil Volume | Ingestion PRG TR=1E-06 (pCi/g) | Inhalation PRG TR=1E-06 (pCi/g) | External Exposure PRG TR=1E-06 (pCi/g) | Produce Consumption PRG TR=1E-06 (pCi/g) | Total PRG TR=1E-06 (pCi/g) | Total PRG TR=1E-06 (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|
| Rn-219 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 4.93E-01 | - | **4.93E-01** | 1.56E-16 |
| Th-227 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 7.03E+00 | 7.34E+02 | 2.64E-01 | - | **2.54E-01** | 1.28E-10 |
| Th-231 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 1.50E+02 | 1.69E+07 | 4.65E+00 | - | **4.51E+00** | 4.18E-13 |
| Tl-207 | 1.00E+00 | 1.00E+00 | 4.00E-01 | - | - | 7.31E+00 | - | **7.31E+00** | 7.20E-16 |
| U-235 | 1.00E+00 | 1.00E+00 | 4.00E-01 | 6.05E+00 | 1.01E+03 | 2.10E-01 | - | **2.03E-01** | 2.28E+00 |

# Site-Specific
# Resident Risk for Soil - Secular Equilibrium

| Isotope | Ingestion Risk | Inhalation Risk | External Exposure Risk | Produce Consumption Risk | Total Risk |
|---|---|---|---|---|---|
| *Secular Equilibrium Risk for Am-241 | 2.43E-06 | 1.74E-08 | 2.37E-05 | - | **2.62E-05** |
| *Secular Equilibrium Risk for Co-60 | 1.54E-09 | 1.43E-13 | 3.86E-06 | - | **3.86E-06** |
| *Secular Equilibrium Risk for Cs-137 | 5.39E-09 | 5.02E-13 | 2.48E-06 | - | **2.48E-06** |
| *Secular Equilibrium Risk for Eu-152 | 8.80E-09 | 4.44E-11 | 6.07E-06 | - | **6.08E-06** |
| *Secular Equilibrium Risk for Eu-154 | 6.54E-09 | 1.87E-12 | 1.16E-05 | - | **1.16E-05** |
| *Secular Equilibrium Risk for H-3 | 2.30E-10 | 1.83E-05 | 0.00E+00 | - | **1.83E-05** |
| *Secular Equilibrium Risk for Pu-239 | 4.92E-06 | 3.78E-08 | 5.22E-05 | - | **5.72E-05** |
| *Secular Equilibrium Risk for Ra-226 | 6.38E-06 | 2.33E-09 | 7.23E-05 | - | **7.87E-05** |
| *Secular Equilibrium Risk for Sr-90 | 5.02E-08 | 5.67E-12 | 5.57E-08 | - | **1.06E-07** |
| *Secular Equilibrium Risk for Th-232 | 5.49E-06 | 1.54E-08 | 1.66E-04 | - | **1.72E-04** |
| *Secular Equilibrium Risk for U-235 | 3.21E-07 | 2.42E-09 | 3.93E-06 | - | **4.25E-06** |
| *Total Risk | 1.96E-05 | 1.84E-05 | 3.42E-04 | - | **3.80E-04** |

# Site-Specific
# Resident Individual Risk Contributions for Soil - Secular Equilibrium

| Isotope | ICRP Lung Absorption Type | Inhalation Slope Factor (risk/pCi) | External Exposure Slope Factor (risk/yr per pCi/g) | Food Ingestion Slope Factor (risk/pCi) | Soil Ingestion Slope Factor (risk/pCi) | Concentration (pCi/g) | Particulate Emission Factor ($m^3$/kg) | Lambda (1/yr) | Halflife (yr) | 1000029 $m^2$ Soil Volume Area Correction Factor |
|---|---|---|---|---|---|---|---|---|---|---|
| **Secular Equilibrium Risk for Am-241* | | - | - | - | - | - | - | - | - | - |
| Ac-225 | S | 2.86E-08 | 4.12E-08 | 2.72E-10 | 4.88E-10 | 1.36 | 4.08E+09 | 2.53E+01 | 2.74E-02 | 1.00E+00 |
| Am-241 | F | 3.77E-08 | 2.77E-08 | 1.34E-10 | 1.84E-10 | 1.36 | 4.08E+09 | 1.60E-03 | 4.32E+02 | 1.00E+00 |
| At-217 | - | 0.00E+00 | 9.36E-10 | 0.00E+00 | 0.00E+00 | 1.36 | 4.08E+09 | 6.77E+08 | 1.02E-09 | 1.00E+00 |
| Bi-213 | S | 7.40E-11 | 5.43E-07 | 7.18E-13 | 1.19E-12 | 1.36 | 4.08E+09 | 7.99E+03 | 8.67E-05 | 1.00E+00 |
| Fr-221 | - | 0.00E+00 | 1.05E-07 | 0.00E+00 | 0.00E+00 | 1.36 | 4.08E+09 | 7.43E+04 | 9.32E-06 | 1.00E+00 |
| Np-237 | S | 2.87E-08 | 5.17E-08 | 8.29E-11 | 1.25E-10 | 1.36 | 4.08E+09 | 3.23E-07 | 2.14E+06 | 1.00E+00 |
| Pa-233 | S | 1.53E-11 | 8.03E-07 | 8.95E-12 | 1.65E-11 | 1.36 | 4.08E+09 | 9.38E+00 | 7.39E-02 | 1.00E+00 |
| Pb-209 | S | 2.08E-13 | 5.37E-10 | 3.49E-13 | 6.25E-13 | 1.36 | 4.08E+09 | 1.87E+03 | 3.71E-04 | 9.00E-01 |
| Po-213 | - | 0.00E+00 | 1.73E-10 | 0.00E+00 | 0.00E+00 | 1.36 | 4.08E+09 | 5.20E+12 | 1.33E-13 | 1.00E+00 |
| Ra-225 | S | 2.62E-08 | 6.11E-09 | 1.54E-10 | 2.42E-10 | 1.36 | 4.08E+09 | 1.70E+01 | 4.08E-02 | 1.00E+00 |
| Th-229 | S | 1.75E-07 | 2.24E-07 | 2.90E-10 | 3.85E-10 | 1.36 | 4.08E+09 | 9.44E-05 | 7.34E+03 | 1.00E+00 |
| Tl-209 | - | 0.00E+00 | 1.03E-05 | 0.00E+00 | 0.00E+00 | 1.36 | 4.08E+09 | 1.69E+05 | 4.11E-06 | 1.00E+00 |
| U-233 | S | 2.83E-08 | 7.11E-10 | 9.69E-11 | 1.50E-10 | 1.36 | 4.08E+09 | 4.35E-06 | 1.59E+05 | 1.00E+00 |
| **Secular Equilibrium Risk for Co-60* | | - | - | - | - | - | - | - | - | - |
| Co-60 | S | 1.01E-10 | 1.24E-05 | 2.23E-11 | 3.81E-11 | 0.0361 | 4.08E+09 | 1.31E-01 | 5.27E+00 | 1.00E+00 |
| **Secular Equilibrium Risk for Cs-137* | | - | - | - | - | - | - | - | - | - |
| Ba-137m | - | 0.00E+00 | 2.69E-06 | 0.00E+00 | 0.00E+00 | 0.113 | 4.08E+09 | 1.43E+05 | 4.86E-06 | 1.00E+00 |
| Cs-137 | S | 1.12E-10 | 5.52E-10 | 3.74E-11 | 4.26E-11 | 0.113 | 4.08E+09 | 2.30E-02 | 3.02E+01 | 1.00E+00 |
| **Secular Equilibrium Risk for Eu-152* | | - | - | - | - | - | - | - | - | - |
| Eu-152 | F | 1.91E-10 | 5.41E-06 | 8.33E-12 | 1.46E-11 | 0.13 | 4.08E+09 | 5.12E-02 | 1.35E+01 | 1.00E+00 |
| Gd-152 | F | 9.10E-09 | 0.00E+00 | 3.85E-11 | 5.48E-11 | 0.13 | 4.08E+09 | 6.42E-15 | 1.08E+14 | 9.00E-01 |
| Nd-144 | F | 1.04E-08 | 0.00E+00 | 3.92E-11 | 5.37E-11 | 0.13 | 4.08E+09 | 3.03E-16 | 2.29E+15 | 9.00E-01 |
| Sm-148 | F | 1.08E-08 | 0.00E+00 | 4.11E-11 | 5.59E-11 | 0.13 | 4.08E+09 | 9.90E-17 | 7.00E+15 | 9.00E-01 |
| **Secular Equilibrium Risk for Eu-154* | | - | - | - | - | - | - | - | - | - |
| Eu-154 | F | 2.06E-10 | 5.85E-06 | 1.42E-11 | 2.54E-11 | 0.23 | 4.08E+09 | 8.06E-02 | 8.59E+00 | 1.00E+00 |
| **Secular Equilibrium Risk for H-3* | | - | - | - | - | - | - | - | - | - |
| H-3 | S | 8.47E-13 | 0.00E+00 | 1.44E-13 | 8.99E-14 | 2.28 | 1.70E+01 | 5.63E-02 | 1.23E+01 | 9.00E-01 |
| **Secular Equilibrium Risk for Pu-239* | | - | - | - | - | - | - | - | - | - |

# Site-Specific
# Resident Individual Risk Contributions for Soil - Secular Equilibrium

| 0 cm Soil Volume Gamma Shielding Factor | Total Indoor GSF Soil Volume | Ingestion CDI (pCi) | Inhalation CDI (pCi) | External Exposure CDI (pCi) | Produce Consumption CDI (pCi) | Ingestion Risk | Inhalation Risk | External Exposure Risk | Produce Consumption Risk | Total Risk |
|---|---|---|---|---|---|---|---|---|---|---|
| - | - | - | - | - | - | *2.43E-06* | *1.74E-08* | *2.37E-05* | - | ***2.62E-05*** |
| 1.00E+00 | 4.00E-01 | 1.52E+03 | 5.37E-02 | 1.18E+01 | - | 7.44E-07 | 1.53E-09 | 4.84E-07 | - | **1.23E-06** |
| 1.00E+00 | 4.00E-01 | 1.52E+03 | 5.37E-02 | 1.18E+01 | - | 2.81E-07 | 2.03E-09 | 3.25E-07 | - | **6.08E-07** |
| 1.00E+00 | 4.00E-01 | 1.52E+03 | 5.37E-02 | 1.18E+01 | - | 0.00E+00 | 0.00E+00 | 1.10E-08 | - | **1.10E-08** |
| 1.00E+00 | 4.00E-01 | 1.52E+03 | 5.37E-02 | 1.18E+01 | - | 1.81E-09 | 3.97E-12 | 6.38E-06 | - | **6.38E-06** |
| 1.00E+00 | 4.00E-01 | 1.52E+03 | 5.37E-02 | 1.18E+01 | - | 0.00E+00 | 0.00E+00 | 1.23E-06 | - | **1.23E-06** |
| 1.00E+00 | 4.00E-01 | 1.52E+03 | 5.37E-02 | 1.18E+01 | - | 1.90E-07 | 1.54E-09 | 6.08E-07 | - | **7.99E-07** |
| 1.00E+00 | 4.00E-01 | 1.52E+03 | 5.37E-02 | 1.18E+01 | - | 2.51E-08 | 8.20E-13 | 9.44E-06 | - | **9.47E-06** |
| 1.00E+00 | 4.00E-01 | 1.52E+03 | 5.37E-02 | 1.06E+01 | - | 9.52E-10 | 1.12E-14 | 5.68E-09 | - | **6.63E-09** |
| 1.00E+00 | 4.00E-01 | 1.52E+03 | 5.37E-02 | 1.18E+01 | - | 0.00E+00 | 0.00E+00 | 1.99E-09 | - | **1.99E-09** |
| 1.00E+00 | 4.00E-01 | 1.52E+03 | 5.37E-02 | 1.18E+01 | - | 3.69E-07 | 1.40E-09 | 7.18E-08 | - | **4.42E-07** |
| 1.00E+00 | 4.00E-01 | 1.52E+03 | 5.37E-02 | 1.18E+01 | - | 5.86E-07 | 9.37E-09 | 2.63E-06 | - | **3.23E-06** |
| 1.00E+00 | 4.00E-01 | 1.52E+03 | 5.37E-02 | 1.18E+01 | - | 0.00E+00 | 0.00E+00 | 2.53E-06 | - | **2.53E-06** |
| 1.00E+00 | 4.00E-01 | 1.52E+03 | 5.37E-02 | 1.18E+01 | - | 2.29E-07 | 1.52E-09 | 8.36E-09 | - | **2.39E-07** |
| - | - | - | - | - | - | *1.54E-09* | *1.43E-13* | *3.86E-06* | - | ***3.86E-06*** |
| 1.00E+00 | 4.00E-01 | 4.04E+01 | 1.42E-03 | 3.12E-01 | - | 1.54E-09 | 1.43E-13 | 3.86E-06 | - | **3.86E-06** |
| - | - | - | - | - | - | *5.39E-09* | *5.02E-13* | *2.48E-06* | - | ***2.48E-06*** |
| 1.00E+00 | 4.00E-01 | 1.27E+02 | 4.46E-03 | 9.76E-01 | - | 0.00E+00 | 0.00E+00 | 2.48E-06 | - | **2.48E-06** |
| 1.00E+00 | 4.00E-01 | 1.27E+02 | 4.46E-03 | 9.76E-01 | - | 5.39E-09 | 5.02E-13 | 5.39E-10 | - | **5.92E-09** |
| - | - | - | - | - | - | *8.80E-09* | *4.44E-11* | *6.07E-06* | - | ***6.08E-06*** |
| 1.00E+00 | 4.00E-01 | 1.46E+02 | 5.13E-03 | 1.12E+00 | - | 2.12E-09 | 9.82E-13 | 6.07E-06 | - | **6.08E-06** |
| 1.00E+00 | 4.00E-01 | 1.46E+02 | 5.13E-03 | 1.01E+00 | - | 2.22E-09 | 1.30E-11 | 0.00E+00 | - | **2.24E-09** |
| 1.00E+00 | 4.00E-01 | 1.46E+02 | 5.13E-03 | 1.01E+00 | - | 2.18E-09 | 1.49E-11 | 0.00E+00 | - | **2.19E-09** |
| 1.00E+00 | 4.00E-01 | 1.46E+02 | 5.13E-03 | 1.01E+00 | - | 2.27E-09 | 1.55E-11 | 0.00E+00 | - | **2.29E-09** |
| - | - | - | - | - | - | *6.54E-09* | *1.87E-12* | *1.16E-05* | - | ***1.16E-05*** |
| 1.00E+00 | 4.00E-01 | 2.58E+02 | 9.08E-03 | 1.99E+00 | - | 6.54E-09 | 1.87E-12 | 1.16E-05 | - | **1.16E-05** |
| - | - | - | - | - | - | *2.30E-10* | *1.83E-05* | *0.00E+00* | - | ***1.83E-05*** |
| 1.00E+00 | 4.00E-01 | 2.55E+03 | 2.16E+07 | 1.77E+01 | - | 2.30E-10 | 1.83E-05 | 0.00E+00 | - | **1.83E-05** |
| - | - | - | - | - | - | *4.92E-06* | *3.78E-08* | *5.22E-05* | - | ***5.72E-05*** |

# Site-Specific
# Resident Individual Risk Contributions for Soil - Secular Equilibrium

| Isotope | ICRP Lung Absorption Type | Inhalation Slope Factor (risk/pCi) | External Exposure Slope Factor (risk/yr per pCi/g) | Food Ingestion Slope Factor (risk/pCi) | Soil Ingestion Slope Factor (risk/pCi) | Concentration (pCi/g) | Particulate Emission Factor ($m^3$/kg) | Lambda (1/yr) | Halflife (yr) | 1000029 $m^2$ Soil Volume Area Correction Factor |
|---|---|---|---|---|---|---|---|---|---|---|
| Ac-227 | S | 1.49E-07 | 1.98E-10 | 2.45E-10 | 2.90E-10 | 2.59 | 4.08E+09 | 3.18E-02 | 2.18E+01 | 1.00E+00 |
| At-219 | - | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.59 | 4.08E+09 | 3.90E+05 | 1.78E-06 | 9.00E-01 |
| Bi-211 | - | 0.00E+00 | 1.90E-07 | 0.00E+00 | 0.00E+00 | 2.59 | 4.08E+09 | 1.70E+05 | 4.07E-06 | 1.00E+00 |
| Bi-215 | - | 0.00E+00 | 1.08E-06 | 0.00E+00 | 0.00E+00 | 2.59 | 4.08E+09 | 4.79E+04 | 1.45E-05 | 1.00E+00 |
| Fr-223 | S | 4.07E-11 | 1.35E-07 | 1.01E-11 | 1.69E-11 | 2.59 | 4.08E+09 | 1.66E+04 | 4.19E-05 | 1.00E+00 |
| Pa-231 | F | 7.62E-08 | 1.27E-07 | 2.26E-10 | 2.98E-10 | 2.59 | 4.08E+09 | 2.12E-05 | 3.28E+04 | 1.00E+00 |
| Pb-211 | S | 4.03E-11 | 2.91E-07 | 5.81E-13 | 9.55E-13 | 2.59 | 4.08E+09 | 1.01E+04 | 6.87E-05 | 1.00E+00 |
| Po-211 | - | 0.00E+00 | 3.76E-08 | 0.00E+00 | 0.00E+00 | 2.59 | 4.08E+09 | 4.24E+07 | 1.64E-08 | 1.00E+00 |
| Po-215 | - | 0.00E+00 | 7.48E-10 | 0.00E+00 | 0.00E+00 | 2.59 | 4.08E+09 | 1.23E+10 | 5.65E-11 | 1.00E+00 |
| Pu-239 | F | 5.55E-08 | 2.09E-10 | 1.74E-10 | 2.28E-10 | 2.59 | 4.08E+09 | 2.87E-05 | 2.41E+04 | 1.00E+00 |
| Ra-223 | S | 2.92E-08 | 4.55E-07 | 3.39E-10 | 5.99E-10 | 2.59 | 4.08E+09 | 2.21E+01 | 3.13E-02 | 1.00E+00 |
| Rn-219 | - | 0.00E+00 | 2.35E-07 | 0.00E+00 | 0.00E+00 | 2.59 | 4.08E+09 | 5.52E+06 | 1.26E-07 | 1.00E+00 |
| Th-227 | S | 3.50E-08 | 4.45E-07 | 7.03E-11 | 1.29E-10 | 2.59 | 4.08E+09 | 1.35E+01 | 5.12E-02 | 1.00E+00 |
| Th-231 | S | 1.50E-12 | 2.49E-08 | 3.22E-12 | 5.96E-12 | 2.59 | 4.08E+09 | 2.38E+02 | 2.91E-03 | 1.00E+00 |
| Tl-207 | - | 0.00E+00 | 1.59E-08 | 0.00E+00 | 0.00E+00 | 2.59 | 4.08E+09 | 7.64E+04 | 9.08E-06 | 1.00E+00 |
| U-235 | S | 2.50E-08 | 5.51E-07 | 9.44E-11 | 1.48E-10 | 2.59 | 4.08E+09 | 9.84E-10 | 7.04E+08 | 1.00E+00 |
| U-235m | M | 1.87E-18 | 0.00E+00 | 1.06E-17 | 1.65E-17 | 2.59 | 4.08E+09 | 1.40E+04 | 4.95E-05 | 1.00E+00 |
| **Secular Equilibrium Risk for Ra-226* | | - | - | - | - | - | - | - | - | - |
| At-218 | - | 0.00E+00 | 2.74E-11 | 0.00E+00 | 0.00E+00 | 1 | 4.08E+09 | 1.46E+07 | 4.76E-08 | 9.00E-01 |
| Bi-210 | S | 4.55E-10 | 2.77E-09 | 1.30E-11 | 2.40E-11 | 1 | 4.08E+09 | 5.05E+01 | 1.37E-02 | 1.00E+00 |
| Bi-214 | S | 6.18E-11 | 7.34E-06 | 2.65E-13 | 4.03E-13 | 1 | 4.08E+09 | 1.83E+04 | 3.79E-05 | 1.00E+00 |
| Hg-206 | - | 0.00E+00 | 4.83E-07 | 0.00E+00 | 0.00E+00 | 1 | 4.08E+09 | 4.47E+04 | 1.55E-05 | 1.00E+00 |
| Pb-210 | S | 1.59E-08 | 1.48E-09 | 1.18E-09 | 1.72E-09 | 1 | 4.08E+09 | 3.12E-02 | 2.22E+01 | 1.00E+00 |
| Pb-214 | S | 7.77E-11 | 9.94E-07 | 4.85E-13 | 7.92E-13 | 1 | 4.08E+09 | 1.36E+04 | 5.10E-05 | 1.00E+00 |
| Po-210 | S | 1.45E-08 | 4.51E-11 | 2.25E-09 | 3.27E-09 | 1 | 4.08E+09 | 1.83E+00 | 3.79E-01 | 1.00E+00 |
| Po-214 | - | 0.00E+00 | 3.85E-10 | 0.00E+00 | 0.00E+00 | 1 | 4.08E+09 | 1.33E+11 | 5.21E-12 | 1.00E+00 |
| Po-218 | - | 1.39E-11 | 6.84E-15 | 0.00E+00 | 0.00E+00 | 1 | 4.08E+09 | 1.17E+05 | 5.90E-06 | 9.00E-01 |
| Ra-226 | S | 2.82E-08 | 2.50E-08 | 5.14E-10 | 6.77E-10 | 1 | 4.08E+09 | 4.33E-04 | 1.60E+03 | 1.00E+00 |
| Rn-218 | - | 0.00E+00 | 3.39E-09 | 0.00E+00 | 0.00E+00 | 1 | 4.08E+09 | 6.24E+08 | 1.11E-09 | 1.00E+00 |

# Site-Specific
# Resident Individual Risk Contributions for Soil - Secular Equilibrium

| 0 cm Soil Volume Gamma Shielding Factor | Total Indoor GSF Soil Volume | Ingestion CDI (pCi) | Inhalation CDI (pCi) | External Exposure CDI (pCi) | Produce Consumption CDI (pCi) | Ingestion Risk | Inhalation Risk | External Exposure Risk | Produce Consumption Risk | Total Risk |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 8.41E-07 | 1.53E-08 | 4.44E-09 | - | **8.61E-07** |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.01E+01 | - | 0.00E+00 | 0.00E+00 | 0.00E+00 | - | **0.00E+00** |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 0.00E+00 | 0.00E+00 | 4.26E-06 | - | **4.26E-06** |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 0.00E+00 | 0.00E+00 | 1.95E-11 | - | **1.95E-11** |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 6.77E-10 | 5.74E-14 | 4.18E-08 | - | **4.25E-08** |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 8.64E-07 | 7.79E-09 | 2.85E-06 | - | **3.72E-06** |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 2.77E-09 | 4.12E-12 | 6.51E-06 | - | **6.51E-06** |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 0.00E+00 | 0.00E+00 | 2.32E-09 | - | **2.32E-09** |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 0.00E+00 | 0.00E+00 | 1.68E-08 | - | **1.68E-08** |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 6.61E-07 | 5.67E-09 | 4.68E-09 | - | **6.72E-07** |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 1.74E-06 | 2.98E-09 | 1.02E-05 | - | **1.19E-05** |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 0.00E+00 | 0.00E+00 | 5.25E-06 | - | **5.25E-06** |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 3.68E-07 | 3.53E-09 | 9.82E-06 | - | **1.02E-05** |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 1.73E-08 | 1.54E-13 | 5.57E-07 | - | **5.74E-07** |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 0.00E+00 | 0.00E+00 | 3.54E-07 | - | **3.54E-07** |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 4.28E-07 | 2.56E-09 | 1.23E-05 | - | **1.28E-05** |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 4.78E-14 | 1.91E-19 | 0.00E+00 | - | **4.78E-14** |
| - | - | - | - | - | - | *6.38E-06* | *2.33E-09* | *7.23E-05* | - | ***7.87E-05*** |
| 1.00E+00 | 4.00E-01 | 1.12E+03 | 3.95E-02 | 7.78E+00 | - | 0.00E+00 | 0.00E+00 | 4.27E-14 | - | **4.27E-14** |
| 1.00E+00 | 4.00E-01 | 1.12E+03 | 3.95E-02 | 8.64E+00 | - | 2.69E-08 | 1.80E-11 | 2.39E-08 | - | **5.08E-08** |
| 1.00E+00 | 4.00E-01 | 1.12E+03 | 3.95E-02 | 8.64E+00 | - | 4.52E-10 | 2.44E-12 | 6.35E-05 | - | **6.35E-05** |
| 1.00E+00 | 4.00E-01 | 1.12E+03 | 3.95E-02 | 8.64E+00 | - | 0.00E+00 | 0.00E+00 | 7.94E-14 | - | **7.94E-14** |
| 1.00E+00 | 4.00E-01 | 1.12E+03 | 3.95E-02 | 8.64E+00 | - | 1.92E-06 | 6.27E-10 | 1.28E-08 | - | **1.94E-06** |
| 1.00E+00 | 4.00E-01 | 1.12E+03 | 3.95E-02 | 8.64E+00 | - | 8.87E-10 | 3.07E-12 | 8.58E-06 | - | **8.59E-06** |
| 1.00E+00 | 4.00E-01 | 1.12E+03 | 3.95E-02 | 8.64E+00 | - | 3.67E-06 | 5.72E-10 | 3.89E-10 | - | **3.67E-06** |
| 1.00E+00 | 4.00E-01 | 1.12E+03 | 3.95E-02 | 8.64E+00 | - | 0.00E+00 | 0.00E+00 | 3.33E-09 | - | **3.33E-09** |
| 1.00E+00 | 4.00E-01 | 1.12E+03 | 3.95E-02 | 7.78E+00 | - | 0.00E+00 | 5.49E-13 | 5.32E-14 | - | **6.02E-13** |
| 1.00E+00 | 4.00E-01 | 1.12E+03 | 3.95E-02 | 8.64E+00 | - | 7.58E-07 | 1.11E-09 | 2.16E-07 | - | **9.75E-07** |
| 1.00E+00 | 4.00E-01 | 1.12E+03 | 3.95E-02 | 8.64E+00 | - | 0.00E+00 | 0.00E+00 | 5.85E-15 | - | **5.85E-15** |

# Site-Specific
# Resident Individual Risk Contributions for Soil - Secular Equilibrium

| Isotope | ICRP Lung Absorption Type | Inhalation Slope Factor (risk/pCi) | External Exposure Slope Factor (risk/yr per pCi/g) | Food Ingestion Slope Factor (risk/pCi) | Soil Ingestion Slope Factor (risk/pCi) | Concentration (pCi/g) | Particulate Emission Factor ($m^3$/kg) | Lambda (1/yr) | Halflife (yr) | 1000029 $m^2$ Soil Volume Area Correction Factor |
|---|---|---|---|---|---|---|---|---|---|---|
| Rn-222 | - | 2.28E-12 | 1.69E-09 | 0.00E+00 | 0.00E+00 | 1 | 4.08E+09 | 6.62E+01 | 1.05E-02 | 1.00E+00 |
| Tl-206 | - | 0.00E+00 | 6.11E-09 | 0.00E+00 | 0.00E+00 | 1 | 4.08E+09 | 8.67E+04 | 7.99E-06 | 1.00E+00 |
| Tl-210 | - | 0.00E+00 | 1.34E-05 | 0.00E+00 | 0.00E+00 | 1 | 4.08E+09 | 2.80E+05 | 2.47E-06 | 1.00E+00 |
| **Secular Equilibrium Risk for Sr-90* | | - | - | - | - | - | - | - | - | - |
| Sr-90 | S | 4.26E-10 | 4.83E-10 | 6.88E-11 | 8.62E-11 | 0.331 | 4.08E+09 | 2.41E-02 | 2.88E+01 | 9.00E-01 |
| Y-90 | S | 8.40E-12 | 1.90E-08 | 2.65E-11 | 4.92E-11 | 0.331 | 4.08E+09 | 9.47E+01 | 7.32E-03 | 1.00E+00 |
| **Secular Equilibrium Risk for Th-232* | | - | - | - | - | - | - | - | - | - |
| Ac-228 | S | 4.92E-11 | 4.04E-06 | 2.73E-12 | 4.92E-12 | 1.69 | 4.08E+09 | 9.87E+02 | 7.02E-04 | 1.00E+00 |
| Bi-212 | S | 1.13E-10 | 4.96E-07 | 1.01E-12 | 1.68E-12 | 1.69 | 4.08E+09 | 6.02E+03 | 1.15E-04 | 1.00E+00 |
| Pb-212 | S | 6.29E-10 | 4.96E-07 | 3.57E-11 | 6.33E-11 | 1.69 | 4.08E+09 | 5.71E+02 | 1.21E-03 | 1.00E+00 |
| Po-212 | - | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.69 | 4.08E+09 | 7.31E+13 | 9.48E-15 | 9.00E-01 |
| Po-216 | - | 0.00E+00 | 7.10E-11 | 0.00E+00 | 0.00E+00 | 1.69 | 4.08E+09 | 1.51E+08 | 4.60E-09 | 1.00E+00 |
| Ra-224 | S | 1.13E-08 | 3.91E-08 | 2.38E-10 | 4.26E-10 | 1.69 | 4.08E+09 | 6.91E+01 | 1.00E-02 | 1.00E+00 |
| Ra-228 | S | 4.37E-08 | 3.43E-11 | 1.42E-09 | 1.98E-09 | 1.69 | 4.08E+09 | 1.21E-01 | 5.75E+00 | 1.00E+00 |
| Rn-220 | - | 1.15E-12 | 2.77E-09 | 0.00E+00 | 0.00E+00 | 1.69 | 4.08E+09 | 3.93E+05 | 1.76E-06 | 1.00E+00 |
| Th-228 | S | 1.32E-07 | 5.64E-09 | 1.48E-10 | 2.43E-10 | 1.69 | 4.08E+09 | 3.63E-01 | 1.91E+00 | 1.00E+00 |
| Th-232 | S | 4.33E-08 | 3.58E-10 | 1.33E-10 | 1.84E-10 | 1.69 | 4.08E+09 | 4.93E-11 | 1.41E+10 | 1.00E+00 |
| Tl-208 | - | 0.00E+00 | 1.75E-05 | 0.00E+00 | 0.00E+00 | 1.69 | 4.08E+09 | 1.19E+05 | 5.81E-06 | 1.00E+00 |
| **Secular Equilibrium Risk for U-235* | | - | - | - | - | - | - | - | - | - |
| Ac-227 | S | 1.49E-07 | 1.98E-10 | 2.45E-10 | 2.90E-10 | 0.195 | 4.08E+09 | 3.18E-02 | 2.18E+01 | 1.00E+00 |
| At-219 | - | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.195 | 4.08E+09 | 3.90E+05 | 1.78E-06 | 9.00E-01 |
| Bi-211 | - | 0.00E+00 | 1.90E-07 | 0.00E+00 | 0.00E+00 | 0.195 | 4.08E+09 | 1.70E+05 | 4.07E-06 | 1.00E+00 |
| Bi-215 | - | 0.00E+00 | 1.08E-06 | 0.00E+00 | 0.00E+00 | 0.195 | 4.08E+09 | 4.79E+04 | 1.45E-05 | 1.00E+00 |
| Fr-223 | S | 4.07E-11 | 1.35E-07 | 1.01E-11 | 1.69E-11 | 0.195 | 4.08E+09 | 1.66E+04 | 4.19E-05 | 1.00E+00 |
| Pa-231 | F | 7.62E-08 | 1.27E-07 | 2.26E-10 | 2.98E-10 | 0.195 | 4.08E+09 | 2.12E-05 | 3.28E+04 | 1.00E+00 |
| Pb-211 | S | 4.03E-11 | 2.91E-07 | 5.81E-13 | 9.55E-13 | 0.195 | 4.08E+09 | 1.01E+04 | 6.87E-05 | 1.00E+00 |
| Po-211 | - | 0.00E+00 | 3.76E-08 | 0.00E+00 | 0.00E+00 | 0.195 | 4.08E+09 | 4.24E+07 | 1.64E-08 | 1.00E+00 |
| Po-215 | - | 0.00E+00 | 7.48E-10 | 0.00E+00 | 0.00E+00 | 0.195 | 4.08E+09 | 1.23E+10 | 5.65E-11 | 1.00E+00 |
| Ra-223 | S | 2.92E-08 | 4.55E-07 | 3.39E-10 | 5.99E-10 | 0.195 | 4.08E+09 | 2.21E+01 | 3.13E-02 | 1.00E+00 |

# Site-Specific
# Resident Individual Risk Contributions for Soil - Secular Equilibrium

| 0 cm Soil Volume Gamma Shielding Factor | Total Indoor GSF Soil Volume | Ingestion CDI (pCi) | Inhalation CDI (pCi) | External Exposure CDI (pCi) | Produce Consumption CDI (pCi) | Ingestion Risk | Inhalation Risk | External Exposure Risk | Produce Consumption Risk | Total Risk |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.00E+00 | 4.00E-01 | 1.12E+03 | 3.95E-02 | 8.64E+00 | - | 0.00E+00 | 9.00E-14 | 1.46E-08 | - | **1.46E-08** |
| 1.00E+00 | 4.00E-01 | 1.12E+03 | 3.95E-02 | 8.64E+00 | - | 0.00E+00 | 0.00E+00 | 7.07E-14 | - | **7.07E-14** |
| 1.00E+00 | 4.00E-01 | 1.12E+03 | 3.95E-02 | 8.64E+00 | - | 0.00E+00 | 0.00E+00 | 2.44E-08 | - | **2.44E-08** |
| - | - | - | - | - | - | *5.02E-08* | *5.67E-12* | *5.57E-08* | - | ***1.06E-07*** |
| 1.00E+00 | 4.00E-01 | 3.71E+02 | 1.31E-02 | 2.57E+00 | - | 3.20E-08 | 5.56E-12 | 1.24E-09 | - | **3.32E-08** |
| 1.00E+00 | 4.00E-01 | 3.71E+02 | 1.31E-02 | 2.86E+00 | - | 1.82E-08 | 1.10E-13 | 5.44E-08 | - | **7.27E-08** |
| - | - | - | - | - | - | *5.49E-06* | *1.54E-08* | *1.66E-04* | - | ***1.72E-04*** |
| 1.00E+00 | 4.00E-01 | 1.89E+03 | 6.67E-02 | 1.46E+01 | - | 9.31E-09 | 3.28E-12 | 5.90E-05 | - | **5.90E-05** |
| 1.00E+00 | 4.00E-01 | 1.89E+03 | 6.67E-02 | 1.46E+01 | - | 3.18E-09 | 7.54E-12 | 7.25E-06 | - | **7.25E-06** |
| 1.00E+00 | 4.00E-01 | 1.89E+03 | 6.67E-02 | 1.46E+01 | - | 1.20E-07 | 4.20E-11 | 7.25E-06 | - | **7.37E-06** |
| 1.00E+00 | 4.00E-01 | 1.89E+03 | 6.67E-02 | 1.31E+01 | - | 0.00E+00 | 0.00E+00 | 0.00E+00 | - | **0.00E+00** |
| 1.00E+00 | 4.00E-01 | 1.89E+03 | 6.67E-02 | 1.46E+01 | - | 0.00E+00 | 0.00E+00 | 1.04E-09 | - | **1.04E-09** |
| 1.00E+00 | 4.00E-01 | 1.89E+03 | 6.67E-02 | 1.46E+01 | - | 8.05E-07 | 7.55E-10 | 5.71E-07 | - | **1.38E-06** |
| 1.00E+00 | 4.00E-01 | 1.89E+03 | 6.67E-02 | 1.46E+01 | - | 3.75E-06 | 2.91E-09 | 5.01E-10 | - | **3.75E-06** |
| 1.00E+00 | 4.00E-01 | 1.89E+03 | 6.67E-02 | 1.46E+01 | - | 0.00E+00 | 7.67E-14 | 4.04E-08 | - | **4.04E-08** |
| 1.00E+00 | 4.00E-01 | 1.89E+03 | 6.67E-02 | 1.46E+01 | - | 4.60E-07 | 8.84E-09 | 8.24E-08 | - | **5.51E-07** |
| 1.00E+00 | 4.00E-01 | 1.89E+03 | 6.67E-02 | 1.46E+01 | - | 3.48E-07 | 2.89E-09 | 5.23E-09 | - | **3.56E-07** |
| 1.00E+00 | 4.00E-01 | 1.89E+03 | 6.67E-02 | 1.46E+01 | - | 0.00E+00 | 0.00E+00 | 9.19E-05 | - | **9.19E-05** |
| - | - | - | - | - | - | *3.21E-07* | *2.42E-09* | *3.93E-06* | - | ***4.25E-06*** |
| 1.00E+00 | 4.00E-01 | 2.18E+02 | 7.70E-03 | 1.69E+00 | - | 6.34E-08 | 1.15E-09 | 3.34E-10 | - | **6.48E-08** |
| 1.00E+00 | 4.00E-01 | 2.18E+02 | 7.70E-03 | 1.52E+00 | - | 0.00E+00 | 0.00E+00 | 0.00E+00 | - | **0.00E+00** |
| 1.00E+00 | 4.00E-01 | 2.18E+02 | 7.70E-03 | 1.69E+00 | - | 0.00E+00 | 0.00E+00 | 3.21E-07 | - | **3.21E-07** |
| 1.00E+00 | 4.00E-01 | 2.18E+02 | 7.70E-03 | 1.69E+00 | - | 0.00E+00 | 0.00E+00 | 1.47E-12 | - | **1.47E-12** |
| 1.00E+00 | 4.00E-01 | 2.18E+02 | 7.70E-03 | 1.69E+00 | - | 5.10E-11 | 4.32E-15 | 3.15E-09 | - | **3.20E-09** |
| 1.00E+00 | 4.00E-01 | 2.18E+02 | 7.70E-03 | 1.69E+00 | - | 6.51E-08 | 5.87E-10 | 2.14E-07 | - | **2.80E-07** |
| 1.00E+00 | 4.00E-01 | 2.18E+02 | 7.70E-03 | 1.69E+00 | - | 2.08E-10 | 3.10E-13 | 4.90E-07 | - | **4.90E-07** |
| 1.00E+00 | 4.00E-01 | 2.18E+02 | 7.70E-03 | 1.69E+00 | - | 0.00E+00 | 0.00E+00 | 1.75E-10 | - | **1.75E-10** |
| 1.00E+00 | 4.00E-01 | 2.18E+02 | 7.70E-03 | 1.69E+00 | - | 0.00E+00 | 0.00E+00 | 1.26E-09 | - | **1.26E-09** |
| 1.00E+00 | 4.00E-01 | 2.18E+02 | 7.70E-03 | 1.69E+00 | - | 1.31E-07 | 2.25E-10 | 7.67E-07 | - | **8.98E-07** |

# Site-Specific
# Resident Individual Risk Contributions for Soil - Secular Equilibrium

| Isotope | ICRP Lung Absorption Type | Inhalation Slope Factor (risk/pCi) | External Exposure Slope Factor (risk/yr per pCi/g) | Food Ingestion Slope Factor (risk/pCi) | Soil Ingestion Slope Factor (risk/pCi) | Concentration (pCi/g) | Particulate Emission Factor ($m^3$/kg) | Lambda (1/yr) | Halflife (yr) | 1000029 $m^2$ Soil Volume Area Correction Factor |
|---|---|---|---|---|---|---|---|---|---|---|
| Rn-219 | - | 0.00E+00 | 2.35E-07 | 0.00E+00 | 0.00E+00 | 0.195 | 4.08E+09 | 5.52E+06 | 1.26E-07 | 1.00E+00 |
| Th-227 | S | 3.50E-08 | 4.45E-07 | 7.03E-11 | 1.29E-10 | 0.195 | 4.08E+09 | 1.35E+01 | 5.12E-02 | 1.00E+00 |
| Th-231 | S | 1.50E-12 | 2.49E-08 | 3.22E-12 | 5.96E-12 | 0.195 | 4.08E+09 | 2.38E+02 | 2.91E-03 | 1.00E+00 |
| Tl-207 | - | 0.00E+00 | 1.59E-08 | 0.00E+00 | 0.00E+00 | 0.195 | 4.08E+09 | 7.64E+04 | 9.08E-06 | 1.00E+00 |
| U-235 | S | 2.50E-08 | 5.51E-07 | 9.44E-11 | 1.48E-10 | 0.195 | 4.08E+09 | 9.84E-10 | 7.04E+08 | 1.00E+00 |

# Site-Specific
# Resident Individual Risk Contributions for Soil - Secular Equilibrium

| 0 cm Soil Volume Gamma Shielding Factor | Total Indoor GSF Soil Volume | Ingestion CDI (pCi) | Inhalation CDI (pCi) | External Exposure CDI (pCi) | Produce Consumption CDI (pCi) | Ingestion Risk | Inhalation Risk | External Exposure Risk | Produce Consumption Risk | Total Risk |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.00E+00 | 4.00E-01 | 2.18E+02 | 7.70E-03 | 1.69E+00 | - | 0.00E+00 | 0.00E+00 | 3.95E-07 | - | **3.95E-07** |
| 1.00E+00 | 4.00E-01 | 2.18E+02 | 7.70E-03 | 1.69E+00 | - | 2.77E-08 | 2.66E-10 | 7.39E-07 | - | **7.67E-07** |
| 1.00E+00 | 4.00E-01 | 2.18E+02 | 7.70E-03 | 1.69E+00 | - | 1.30E-09 | 1.16E-14 | 4.19E-08 | - | **4.32E-08** |
| 1.00E+00 | 4.00E-01 | 2.18E+02 | 7.70E-03 | 1.69E+00 | - | 0.00E+00 | 0.00E+00 | 2.67E-08 | - | **2.67E-08** |
| 1.00E+00 | 4.00E-01 | 2.18E+02 | 7.70E-03 | 1.69E+00 | - | 3.22E-08 | 1.93E-10 | 9.29E-07 | - | **9.61E-07** |

# Site-Specific
# Resident Soil Inputs - No secular equilibrium, no progeny (with decay)



*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| A (PEF Dispersion Constant) | 16.2302 | 13.8139 |
| B (PEF Dispersion Constant) | 18.7762 | 20.1624 |
| City (Climate Zone) | Default | San Francisco, CA (2) |
| C (PEF Dispersion Constant) | 216.108 | 234.2869 |
| $CF_{res\text{-}produce}$ (contaminated plant fraction) unitless | 1 | 1 |
| $CF_{res\text{-}apple}$ (contaminated apple fraction) unitless | 1 | 1 |
| $CF_{res\text{-}asparagus}$ (contaminated asparagus fraction) unitless | 1 | 1 |
| $CF_{res\text{-}berry}$ (contaminated berry fraction) unitless | 1 | 1 |
| $CF_{res\text{-}broccoli}$ (contaminated broccoli fraction) unitless | 1 | 1 |
| $CF_{res\text{-}beet}$ (contaminated beet fraction) unitless | 1 | 1 |
| $CF_{res\text{-}cabbage}$ (contaminated cabbage fraction) unitless | 1 | 1 |
| $CF_{res\text{-}cereal\ grain}$ (contaminated cereal grain fraction) unitless | 1 | 1 |
| $CF_{res\text{-}citrus}$ (contaminated citrus fraction) unitless | 1 | 1 |
| $CF_{res\text{-}corn}$ (contaminated corn fraction) unitless | 1 | 1 |
| $CF_{res\text{-}carrot}$ (contaminated carrot fraction) unitless | 1 | 1 |
| $CF_{res\text{-}cucumber}$ (contaminated cucumber fraction) unitless | 1 | 1 |
| $CF_{res\text{-}lettuce}$ (contaminated lettuce fraction) unitless | 1 | 1 |
| $CF_{res\text{-}lima\ bean}$ (contaminated lima bean fraction) unitless | 1 | 1 |
| $CF_{res\text{-}okra}$ (contaminated okra fraction) unitless | 1 | 1 |
| $CF_{res\text{-}onion}$ (contaminated onion fraction) unitless | 1 | 1 |
| $CF_{res\text{-}peach}$ (contaminated peach fraction) unitless | 1 | 1 |
| $CF_{res\text{-}pea}$ (contaminated pea fraction) unitless | 1 | 1 |
| $CF_{res\text{-}pear}$ (contaminated pear fraction) unitless | 1 | 1 |
| $CF_{res\text{-}potato}$ (contaminated potato fraction) unitless | 1 | 1 |
| $CF_{res\text{-}pumpkin}$ (contaminated pumpkin fraction) unitless | 1 | 1 |
| $CF_{res\text{-}rice}$ (contaminated rice fraction) unitless | 1 | 1 |
| $CF_{res\text{-}snap\ bean}$ (contaminated snap bean fraction) unitless | 1 | 1 |
| $CF_{res\text{-}strawberry}$ (contaminated strawberry fraction) unitless | 1 | 1 |
| $CF_{res\text{-}tomato}$ (contaminated tomato fraction) unitless | 1 | 1 |
| $ED_{res\text{-}a}$ (exposure duration - resident adult) yr | 20 | 20 |

Output generated 15MAY2019:17:51:04

# Site-Specific
# Resident Soil Inputs - No secular equilibrium, no progeny (with decay)



*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| $ED_{res-c}$ (exposure duration - resident child) yr | 6 | 6 |
| $EF_{res-a}$ (exposure frequency - resident adult) day/yr | 350 | 350 |
| $EF_{res-c}$ (exposure frequency - resident child) day/yr | 350 | 350 |
| $IFAP_{res-adj}$ (age-adjusted apple ingestion factor) g | 667520 | 667520 |
| $IFAS_{res-adj}$ (age-adjusted asparagus ingestion factor) g | 300300 | 300300 |
| $IFBE_{res-adj}$ (age-adjusted berry ingestion factor) g | 297990 | 297990 |
| $IFBR_{res-adj}$ (age-adjusted broccoli ingestion factor) g | 251510 | 251510 |
| $IFBT_{res-adj}$ (age-adjusted beet ingestion factor) g | 245490 | 245490 |
| $IFCB_{res-adj}$ (age-adjusted cabbage ingestion factor) g | 670530 | 670530 |
| $IFCG_{res-adj}$ (age-adjusted cereal grain ingestion factor) g | 611800 | 611800 |
| $IFCI_{res-adj}$ (age-adjusted citrus ingestion factor) g | 2573410 | 2573410 |
| $IFCO_{res-adj}$ (age-adjusted corn ingestion factor) g | 468580 | 468580 |
| $IFCR_{res-adj}$ (age-adjusted carrot ingestion factor) g | 222390 | 222390 |
| $IFCU_{res-adj}$ (age-adjusted cucumber ingestion factor) g | 630140 | 630140 |
| $IFLE_{res-adj}$ (age-adjusted lettuce ingestion factor) g | 271320 | 271320 |
| $IFLI_{res-adj}$ (age-adjusted lima bean ingestion factor) g | 250250 | 250250 |
| $IFOK_{res-adj}$ (age-adjusted okra ingestion factor) g | 222530 | 222530 |
| $IFON_{res-adj}$ (age-adjusted onion ingestion factor) g | 164780 | 164780 |
| $IFPC_{res-adj}$ (age-adjusted peach ingestion factor) g | 1043840 | 1043840 |
| $IFPE_{res-adj}$ (age-adjusted pea ingestion factor) g | 315210 | 315210 |
| $IFPR_{res-adj}$ (age-adjusted pear ingestion factor) g | 503370 | 503370 |
| $IFPT_{res-adj}$ (age-adjusted potato ingestion factor) g | 1003170 | 1003170 |
| $IFPU_{res-adj}$ (age-adjusted pumpkin ingestion factor) g | 548520 | 548520 |
| $IFRI_{res-adj}$ (age-adjusted rice ingestion factor) g | 572880 | 572880 |
| $IFSN_{res-adj}$ (age-adjusted snap bean ingestion factor) g | 434630 | 434630 |
| $IFST_{res-adj}$ (age-adjusted strawberry ingestion factor) g | 336630 | 336630 |
| $IFTO_{res-adj}$ (age-adjusted tomato ingestion factor) g | 624470 | 624470 |
| $IRAP_{res-a}$ (apple ingestion rate - resident adult) g/day | 73.7 | 73.7 |
| $IRAP_{res-c}$ (apple ingestion rate - resident child) g/day | 72.2 | 72.2 |
| $IRAS_{res-a}$ (asparagus ingestion rate - resident adult) g/day | 39.3 | 39.3 |

# Site-Specific
# Resident Soil Inputs - No secular equilibrium, no progeny (with decay)

*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| $IRAS_{res-c}$ (asparagus ingestion rate - resident child) g/day | 12.0 | 12.0 |
| $IRBE_{res-a}$ (berry ingestion rate - resident adult) g/day | 35.4 | 35.4 |
| $IRBE_{res-c}$ (berry ingestion rate - resident child) g/day | 23.9 | 23.9 |
| $IRBR_{res-a}$ (broccoli ingestion rate - resident adult) g/day | 32.0 | 32.0 |
| $IRBR_{res-c}$ (broccoli ingestion rate - resident child) g/day | 13.1 | 13.1 |
| $IRBT_{res-a}$ (beet ingestion rate - resident adult) g/day | 33.9 | 33.9 |
| $IRBT_{res-c}$ (beet ingestion rate - resident child) g/day | 3.9 | 3.9 |
| $IRCB_{res-a}$ (cabbage ingestion rate - resident adult) g/day | 92.1 | 92.1 |
| $IRCB_{res-c}$ (cabbage ingestion rate - resident child) g/day | 12.3 | 12.3 |
| $IRCG_{res-a}$ (cereal grain ingestion rate - resident adult) g/day | 76.0 | 76.0 |
| $IRCG_{res-c}$ (cereal grain ingestion rate - resident child) g/day | 38.0 | 38.0 |
| $IRCI_{res-a}$ (citrus ingestion rate - resident adult) g/day | 309.4 | 309.4 |
| $IRCI_{res-c}$ (citrus ingestion rate - resident child) g/day | 194.1 | 194.1 |
| $IRCO_{res-a}$ (corn ingestion rate - resident adult) g/day | 59.8 | 59.8 |
| $IRCO_{res-c}$ (corn ingestion rate - resident child) g/day | 23.8 | 23.8 |
| $IRCR_{res-a}$ (carrot ingestion rate - resident adult) g/day | 27.3 | 27.3 |
| $IRCR_{res-c}$ (carrot ingestion rate - resident child) g/day | 14.9 | 14.9 |
| $IRCU_{res-a}$ (cucumber ingestion rate - resident adult) g/day | 82.4 | 82.4 |
| $IRCU_{res-c}$ (cucumber ingestion rate - resident child) g/day | 25.4 | 25.4 |
| $IRLE_{res-a}$ (lettuce ingestion rate - resident adult) g/day | 37.5 | 37.5 |
| $IRLE_{res-c}$ (lettuce ingestion rate - resident child) g/day | 4.2 | 4.2 |
| $IRLI_{res-a}$ (lima bean ingestion rate - resident adult) g/day | 33.8 | 33.8 |
| $IRLI_{res-c}$ (lima bean ingestion rate - resident child) g/day | 6.5 | 6.5 |
| $IROK_{res-a}$ (okra ingestion rate - resident adult) g/day | 30.2 | 30.2 |
| $IROK_{res-c}$ (okra ingestion rate - resident child) g/day | 5.3 | 5.3 |
| $IRON_{res-a}$ (onion ingestion rate - resident adult) g/day | 21.8 | 21.8 |
| $IRON_{res-c}$ (onion ingestion rate - resident child) g/day | 5.8 | 5.8 |
| $IRPC_{res-a}$ (peach ingestion rate - resident adult) g/day | 115.7 | 115.7 |
| $IRPC_{res-c}$ (peach ingestion rate - resident child) g/day | 111.4 | 111.4 |
| $IRPE_{res-a}$ (pea ingestion rate - resident adult) g/day | 35.4 | 35.4 |

# Site-Specific
# Resident Soil Inputs - No secular equilibrium, no progeny (with decay)

*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| $IRPE_{resc}$ (pea ingestion rate - resident child) g/day | 32.1 | 32.1 |
| $IRPR_{resa}$ (pear ingestion rate - resident adult) g/day | 51.9 | 51.9 |
| $IRPR_{resc}$ (pear ingestion rate - resident child) g/day | 66.7 | 66.7 |
| $IRPT_{resa}$ (potato ingestion rate - resident adult) g/day | 127.8 | 127.8 |
| $IRPT_{resc}$ (potato ingestion rate - resident child) g/day | 51.7 | 51.7 |
| $IRPU_{resa}$ (pumpkin ingestion rate - resident adult) g/day | 64.8 | 64.8 |
| $IRPU_{resc}$ (pumpkin ingestion rate - resident child) g/day | 45.2 | 45.2 |
| $IRRI_{resa}$ (rice ingestion rate - resident adult) g/day | 73.2 | 73.2 |
| $IRRI_{resc}$ (rice ingestion rate - resident child) g/day | 28.8 | 28.8 |
| $IRSN_{resa}$ (snap bean ingestion rate - resident adult) g/day | 53.9 | 53.9 |
| $IRSN_{resc}$ (snap bean ingestion rate - resident child) g/day | 27.3 | 27.3 |
| $IRST_{resa}$ (strawberry ingestion rate - resident adult) g/day | 40.5 | 40.5 |
| $IRST_{resc}$ (strawberry ingestion rate - resident child) g/day | 25.3 | 25.3 |
| $IRTO_{resa}$ (tomato ingestion rate - resident adult) g/day | 80.3 | 80.3 |
| $IRTO_{resc}$ (tomato ingestion rate - resident child) g/day | 29.7 | 29.7 |
| $MLF_{apple}$ (apple mass loading factor) unitless | 0.000160 | 0.000160 |
| $MLF_{asparagus}$ (asparagus mass loading factor) unitless | 0.0000790 | 0.0000790 |
| $MLF_{berry}$ (berry mass loading factor) unitless | 0.000166 | 0.000166 |
| $MLF_{broccoli}$ (broccoli mass loading factor) unitless | 0.00101 | 0.00101 |
| $MLF_{beet}$ (beet mass loading factor) unitless | 0.000138 | 0.000138 |
| $MLF_{cabbage}$ (cabbage mass loading factor) unitless | 0.000105 | 0.000105 |
| $MLF_{cereal\ grain}$ (cereal grain mass loading factor) unitless | 0.250 | 0.250 |
| $MLF_{citrus}$ (citrus mass loading factor) unitless | 0.000157 | 0.000157 |
| $MLF_{corn}$ (corn mass loading factor) unitless | 0.000145 | 0.000145 |
| $MLF_{carrot}$ (carrot mass loading factor) unitless | 0.0000970 | 0.0000970 |
| $MLF_{cucumber}$ (cucumber mass loading factor) unitless | 0.0000400 | 0.0000400 |
| $MLF_{lettuce}$ (lettuce mass loading factor) unitless | 0.0135 | 0.0135 |
| $MLF_{lima\ bean}$ (lima bean mass loading factor) unitless | 0.00383 | 0.00383 |
| $MLF_{okra}$ (okra mass loading factor) unitless | 0.0000800 | 0.0000800 |
| $MLF_{onion}$ (onion mass loading factor) unitless | 0.0000970 | 0.0000970 |

# Site-Specific
# Resident Soil Inputs - No secular equilibrium, no progeny (with decay)

*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| $MLF_{peach}$ (peach mass loading factor) unitless | 0.000150 | 0.000150 |
| $MLF_{pea}$ (pea mass loading factor) unitless | 0.000178 | 0.000178 |
| $MLF_{pear}$ (pear mass loading factor) unitless | 0.000160 | 0.000160 |
| $MLF_{potato}$ (potato mass loading factor) unitless | 0.000210 | 0.000210 |
| $MLF_{pumpkin}$ (pumpkin mass loading factor) unitless | 0.0000580 | 0.0000580 |
| $MLF_{rice}$ (rice mass loading factor) unitless | 0.250 | 0.250 |
| $MLF_{snap\ bean}$ (snap bean mass loading factor) unitless | 0.00500 | 0.00500 |
| $MLF_{strawberry}$ (strawberry mass loading factor) unitless | 0.0000800 | 0.0000800 |
| $MLF_{tomato}$ (tomato mass loading factor) unitless | 0.00159 | 0.00159 |
| TR (target cancer risk) unitless | 1.0E-06 | 1.0E-06 |
| F(x) (function dependent on $U_m/U_t$) unitless | 0.194 | 0.0391 |
| PEF (particulate emission factor) $m^3$/kg | 1359344438 | 4078965031.971621 |
| $Q/C_{wind}$ (g/m$^2$-s per kg/m$^3$) | 93.77 | 32.35983267992716 |
| $A_s$ (acres) | 0.5 | 420 |
| $ED_{res}$ (exposure duration - resident) yr | 26 | 26 |
| $ED_{res-a}$ (exposure duration - resident adult) yr | 20 | 20 |
| $ED_{res-c}$ (exposure duration - resident child) yr | 6 | 6 |
| $EF_{res}$ (exposure frequency - resident) day/yr | 350 | 350 |
| $EF_{res-a}$ (exposure frequency - resident adult) day/yr | 350 | 350 |
| $EF_{res-c}$ (exposure frequency - resident child) day/yr | 350 | 350 |
| $ET_{res}$ (exposure time - resident) hr/day | 24 | 24 |
| $ET_{res-a}$ (exposure time - resident adult) hr/day | 24 | 24 |
| $ET_{res-c}$ (exposure time - resident child) hr/day | 24 | 24 |
| $ET_{res-i}$ (exposure time - indoor resident) hr/day | 16.416 | 16.416 |
| $ET_{res-o}$ (exposure time - outdoor resident) hr/day | 1.752 | 1.752 |
| $GSF_i$ (gamma shielding factor - indoor) unitless | 0.4 | 0.4 |
| $IFA_{res-adj}$ (age-adjusted soil inhalation factor - resident) $m^3$ | 161000 | 161000 |
| $IFS_{res-adj}$ (age-adjusted soil ingestion factor - resident) mg | 1120000 | 1120000 |
| $IRA_{res-a}$ (inhalation rate - resident adult) $m^3$/day | 20 | 20 |
| $IRA_{res-c}$ (inhalation rate - resident child) $m^3$/day | 10 | 10 |

# Site-Specific
# Resident Soil Inputs - No secular equilibrium, no progeny (with decay)

*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| $IRS_{res-a}$ (soil intake rate - resident adult) mg/day | 100 | 100 |
| $IRS_{res-c}$ (soil intake rate - resident child) mg/day | 200 | 200 |
| $t_{res}$ (time - resident) yr | 26 | 26 |
| TR (target cancer risk) unitless | 1.0E-06 | 1.0E-06 |
| $U_m$ (mean annual wind speed) m/s | 4.69 | 3.89 |
| $U_t$ (equivalent threshold value) | 11.32 | 11.32 |
| V (fraction of vegetative cover) unitless | 0.5 | 0.5 |

# Site-Specific
# Resident PRGs for Soil - No secular equilibrium, no progeny (with decay)

| Isotope | ICRP Lung Absorption Type | Inhalation Slope Factor (risk/pCi) | External Exposure Slope Factor (risk/yr per pCi/g) | Food Ingestion Slope Factor (risk/pCi) | Soil Ingestion Slope Factor (risk/pCi) | Particulate Emission Factor ($m^3$/kg) | Lambda (1/yr) | Halflife (yr) | 1000029 $m^2$ Soil Volume Area Correction Factor | 0 cm Soil Volume Gamma Shielding Factor | Total Indoor GSF Soil Volume |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Am-241 | F | 3.77E-08 | 2.77E-08 | 1.34E-10 | 1.84E-10 | 4.08E+09 | 1.60E-03 | 4.32E+02 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Co-60 | S | 1.01E-10 | 1.24E-05 | 2.23E-11 | 3.81E-11 | 4.08E+09 | 1.31E-01 | 5.27E+00 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Eu-152 | F | 1.91E-10 | 5.41E-06 | 8.33E-12 | 1.46E-11 | 4.08E+09 | 5.12E-02 | 1.35E+01 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Eu-154 | F | 2.06E-10 | 5.85E-06 | 1.42E-11 | 2.54E-11 | 4.08E+09 | 8.06E-02 | 8.59E+00 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| H-3 | S | 8.47E-13 | 0.00E+00 | 1.44E-13 | 8.99E-14 | 1.70E+01 | 5.63E-02 | 1.23E+01 | 9.00E-01 | 1.00E+00 | 4.00E-01 |

| Isotope | Ingestion PRG TR=1E-06 (pCi/g) | Inhalation PRG TR=1E-06 (pCi/g) | External Exposure PRG TR=1E-06 (pCi/g) | Produce Consumption PRG TR=1E-06 (pCi/g) | Total PRG TR=1E-06 (pCi/g) | Total PRG TR=1E-06 (mg/kg) |
|---|---|---|---|---|---|---|
| Am-241 | 4.95E+00 | 6.85E+02 | 4.27E+00 | - | **2.28E+00** | 6.66E-07 |
| Co-60 | 8.28E+01 | 8.90E+05 | 3.30E-02 | - | **3.30E-02** | 2.92E-11 |
| Eu-152 | 1.11E+02 | 2.40E+05 | 3.87E-02 | - | **3.87E-02** | 2.23E-10 |
| Eu-154 | 8.41E+01 | 2.94E+05 | 4.73E-02 | - | **4.73E-02** | 1.75E-10 |
| H-3 | 1.89E+04 | 2.37E-01 | - | - | **2.37E-01** | 2.45E-11 |

# Site-Specific
# Resident Risk for Soil - No secular equilibrium, no progeny (with decay)

| Isotope | ICRP Lung Absorption Type | Inhalation Slope Factor (risk/pCi) | External Exposure Slope Factor (risk/yr per pCi/g) | Food Ingestion Slope Factor (risk/pCi) | Soil Ingestion Slope Factor (risk/pCi) | Concentration (pCi/g) | Particulate Emission Factor ($m^3$/kg) | Lambda (1/yr) | Halflife (yr) | 1000029 $m^2$ Soil Volume Area Correction Factor |
|---|---|---|---|---|---|---|---|---|---|---|
| Am-241 | F | 3.77E-08 | 2.77E-08 | 1.34E-10 | 1.84E-10 | 1.36 | 4.08E+09 | 1.60E-03 | 4.32E+02 | 1.00E+00 |
| Co-60 | S | 1.01E-10 | 1.24E-05 | 2.23E-11 | 3.81E-11 | 0.0361 | 4.08E+09 | 1.31E-01 | 5.27E+00 | 1.00E+00 |
| Eu-152 | F | 1.91E-10 | 5.41E-06 | 8.33E-12 | 1.46E-11 | 0.13 | 4.08E+09 | 5.12E-02 | 1.35E+01 | 1.00E+00 |
| Eu-154 | F | 2.06E-10 | 5.85E-06 | 1.42E-11 | 2.54E-11 | 0.23 | 4.08E+09 | 8.06E-02 | 8.59E+00 | 1.00E+00 |
| H-3 | S | 8.47E-13 | 0.00E+00 | 1.44E-13 | 8.99E-14 | 2.28 | 1.70E+01 | 5.63E-02 | 1.23E+01 | 9.00E-01 |
| **Total Risk* | | - | - | - | - | - | - | - | - | - |

| 0 cm Soil Volume Gamma Shielding Factor | Total Indoor GSF Soil Volume | Ingestion CDI (pCi) | Inhalation CDI (pCi) | External Exposure CDI (pCi) | Produce Consumption CDI (pCi) | Ingestion Risk | Inhalation Risk | External Exposure Risk | Produce Consumption Risk | Total Risk |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.00E+00 | 4.00E-01 | 1.49E+03 | 5.26E-02 | 1.15E+01 | - | 2.75E-07 | 1.98E-09 | 3.19E-07 | - | **5.95E-07** |
| 1.00E+00 | 4.00E-01 | 1.14E+01 | 4.03E-04 | 8.83E-02 | - | 4.36E-10 | 4.06E-14 | 1.09E-06 | - | **1.09E-06** |
| 1.00E+00 | 4.00E-01 | 8.05E+01 | 2.84E-03 | 6.21E-01 | - | 1.17E-09 | 5.43E-13 | 3.36E-06 | - | **3.36E-06** |
| 1.00E+00 | 4.00E-01 | 1.08E+02 | 3.80E-03 | 8.31E-01 | - | 2.74E-09 | 7.83E-13 | 4.86E-06 | - | **4.87E-06** |
| 1.00E+00 | 4.00E-01 | 1.34E+03 | 1.13E+07 | 9.32E+00 | - | 1.21E-10 | 9.61E-06 | 0.00E+00 | - | **9.61E-06** |
| - | - | - | - | - | - | *2.79E-07* | *9.61E-06* | *9.63E-06* | - | ***1.95E-05*** |

# Site-Specific
# Resident Soil Inputs - No secular equilibrium, progeny included (with decay)



*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| A (PEF Dispersion Constant) | 16.2302 | 13.8139 |
| B (PEF Dispersion Constant) | 18.7762 | 20.1624 |
| City (Climate Zone) | Default | San Francisco, CA (2) |
| C (PEF Dispersion Constant) | 216.108 | 234.2869 |
| $CF_{res\text{-}produce}$ (contaminated plant fraction) unitless | 1 | 1 |
| $CF_{res\text{-}apple}$ (contaminated apple fraction) unitless | 1 | 1 |
| $CF_{res\text{-}asparagus}$ (contaminated asparagus fraction) unitless | 1 | 1 |
| $CF_{res\text{-}berry}$ (contaminated berry fraction) unitless | 1 | 1 |
| $CF_{res\text{-}broccoli}$ (contaminated broccoli fraction) unitless | 1 | 1 |
| $CF_{res\text{-}beet}$ (contaminated beet fraction) unitless | 1 | 1 |
| $CF_{res\text{-}cabbage}$ (contaminated cabbage fraction) unitless | 1 | 1 |
| $CF_{res\text{-}cereal\ grain}$ (contaminated cereal grain fraction) unitless | 1 | 1 |
| $CF_{res\text{-}citrus}$ (contaminated citrus fraction) unitless | 1 | 1 |
| $CF_{res\text{-}corn}$ (contaminated corn fraction) unitless | 1 | 1 |
| $CF_{res\text{-}carrot}$ (contaminated carrot fraction) unitless | 1 | 1 |
| $CF_{res\text{-}cucumber}$ (contaminated cucumber fraction) unitless | 1 | 1 |
| $CF_{res\text{-}lettuce}$ (contaminated lettuce fraction) unitless | 1 | 1 |
| $CF_{res\text{-}lima\ bean}$ (contaminated lima bean fraction) unitless | 1 | 1 |
| $CF_{res\text{-}okra}$ (contaminated okra fraction) unitless | 1 | 1 |
| $CF_{res\text{-}onion}$ (contaminated onion fraction) unitless | 1 | 1 |
| $CF_{res\text{-}peach}$ (contaminated peach fraction) unitless | 1 | 1 |
| $CF_{res\text{-}pea}$ (contaminated pea fraction) unitless | 1 | 1 |
| $CF_{res\text{-}pear}$ (contaminated pear fraction) unitless | 1 | 1 |
| $CF_{res\text{-}potato}$ (contaminated potato fraction) unitless | 1 | 1 |
| $CF_{res\text{-}pumpkin}$ (contaminated pumpkin fraction) unitless | 1 | 1 |
| $CF_{res\text{-}rice}$ (contaminated rice fraction) unitless | 1 | 1 |
| $CF_{res\text{-}snap\ bean}$ (contaminated snap bean fraction) unitless | 1 | 1 |
| $CF_{res\text{-}strawberry}$ (contaminated strawberry fraction) unitless | 1 | 1 |
| $CF_{res\text{-}tomato}$ (contaminated tomato fraction) unitless | 1 | 1 |
| $ED_{res\text{-}a}$ (exposure duration - resident adult) yr | 20 | 20 |

Output generated 15MAY2019:17:15:14

# Site-Specific
# Resident Soil Inputs - No secular equilibrium, progeny included (with decay)

*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| $ED_{res-c}$ (exposure duration - resident child) yr | 6 | 6 |
| $EF_{res-a}$ (exposure frequency - resident adult) day/yr | 350 | 350 |
| $EF_{res-c}$ (exposure frequency - resident child) day/yr | 350 | 350 |
| $IFAP_{res-adj}$ (age-adjusted apple ingestion factor) g | 667520 | 667520 |
| $IFAS_{res-adj}$ (age-adjusted asparagus ingestion factor) g | 300300 | 300300 |
| $IFBE_{res-adj}$ (age-adjusted berry ingestion factor) g | 297990 | 297990 |
| $IFBR_{res-adj}$ (age-adjusted broccoli ingestion factor) g | 251510 | 251510 |
| $IFBT_{res-adj}$ (age-adjusted beet ingestion factor) g | 245490 | 245490 |
| $IFCB_{res-adj}$ (age-adjusted cabbage ingestion factor) g | 670530 | 670530 |
| $IFCG_{res-adj}$ (age-adjusted cereal grain ingestion factor) g | 611800 | 611800 |
| $IFCI_{res-adj}$ (age-adjusted citrus ingestion factor) g | 2573410 | 2573410 |
| $IFCO_{res-adj}$ (age-adjusted corn ingestion factor) g | 468580 | 468580 |
| $IFCR_{res-adj}$ (age-adjusted carrot ingestion factor) g | 222390 | 222390 |
| $IFCU_{res-adj}$ (age-adjusted cucumber ingestion factor) g | 630140 | 630140 |
| $IFLE_{res-adj}$ (age-adjusted lettuce ingestion factor) g | 271320 | 271320 |
| $IFLI_{res-adj}$ (age-adjusted lima bean ingestion factor) g | 250250 | 250250 |
| $IFOK_{res-adj}$ (age-adjusted okra ingestion factor) g | 222530 | 222530 |
| $IFON_{res-adj}$ (age-adjusted onion ingestion factor) g | 164780 | 164780 |
| $IFPC_{res-adj}$ (age-adjusted peach ingestion factor) g | 1043840 | 1043840 |
| $IFPE_{res-adj}$ (age-adjusted pea ingestion factor) g | 315210 | 315210 |
| $IFPR_{res-adj}$ (age-adjusted pear ingestion factor) g | 503370 | 503370 |
| $IFPT_{res-adj}$ (age-adjusted potato ingestion factor) g | 1003170 | 1003170 |
| $IFPU_{res-adj}$ (age-adjusted pumpkin ingestion factor) g | 548520 | 548520 |
| $IFRI_{res-adj}$ (age-adjusted rice ingestion factor) g | 572880 | 572880 |
| $IFSN_{res-adj}$ (age-adjusted snap bean ingestion factor) g | 434630 | 434630 |
| $IFST_{res-adj}$ (age-adjusted strawberry ingestion factor) g | 336630 | 336630 |
| $IFTO_{res-adj}$ (age-adjusted tomato ingestion factor) g | 624470 | 624470 |
| $IRAP_{res-a}$ (apple ingestion rate - resident adult) g/day | 73.7 | 73.7 |
| $IRAP_{res-c}$ (apple ingestion rate - resident child) g/day | 72.2 | 72.2 |
| $IRAS_{res-a}$ (asparagus ingestion rate - resident adult) g/day | 39.3 | 39.3 |

# Site-Specific
# Resident Soil Inputs - No secular equilibrium, progeny included (with decay)



*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| $IRAS_{res-c}$ (asparagus ingestion rate - resident child) g/day | 12.0 | 12.0 |
| $IRBE_{res-a}$ (berry ingestion rate - resident adult) g/day | 35.4 | 35.4 |
| $IRBE_{res-c}$ (berry ingestion rate - resident child) g/day | 23.9 | 23.9 |
| $IRBR_{res-a}$ (broccoli ingestion rate - resident adult) g/day | 32.0 | 32.0 |
| $IRBR_{res-c}$ (broccoli ingestion rate - resident child) g/day | 13.1 | 13.1 |
| $IRBT_{res-a}$ (beet ingestion rate - resident adult) g/day | 33.9 | 33.9 |
| $IRBT_{res-c}$ (beet ingestion rate - resident child) g/day | 3.9 | 3.9 |
| $IRCB_{res-a}$ (cabbage ingestion rate - resident adult) g/day | 92.1 | 92.1 |
| $IRCB_{res-c}$ (cabbage ingestion rate - resident child) g/day | 12.3 | 12.3 |
| $IRCG_{res-a}$ (cereal grain ingestion rate - resident adult) g/day | 76.0 | 76.0 |
| $IRCG_{res-c}$ (cereal grain ingestion rate - resident child) g/day | 38.0 | 38.0 |
| $IRCI_{res-a}$ (citrus ingestion rate - resident adult) g/day | 309.4 | 309.4 |
| $IRCI_{res-c}$ (citrus ingestion rate - resident child) g/day | 194.1 | 194.1 |
| $IRCO_{res-a}$ (corn ingestion rate - resident adult) g/day | 59.8 | 59.8 |
| $IRCO_{res-c}$ (corn ingestion rate - resident child) g/day | 23.8 | 23.8 |
| $IRCR_{res-a}$ (carrot ingestion rate - resident adult) g/day | 27.3 | 27.3 |
| $IRCR_{res-c}$ (carrot ingestion rate - resident child) g/day | 14.9 | 14.9 |
| $IRCU_{res-a}$ (cucumber ingestion rate - resident adult) g/day | 82.4 | 82.4 |
| $IRCU_{res-c}$ (cucumber ingestion rate - resident child) g/day | 25.4 | 25.4 |
| $IRLE_{res-a}$ (lettuce ingestion rate - resident adult) g/day | 37.5 | 37.5 |
| $IRLE_{res-c}$ (lettuce ingestion rate - resident child) g/day | 4.2 | 4.2 |
| $IRLI_{res-a}$ (lima bean ingestion rate - resident adult) g/day | 33.8 | 33.8 |
| $IRLI_{res-c}$ (lima bean ingestion rate - resident child) g/day | 6.5 | 6.5 |
| $IROK_{res-a}$ (okra ingestion rate - resident adult) g/day | 30.2 | 30.2 |
| $IROK_{res-c}$ (okra ingestion rate - resident child) g/day | 5.3 | 5.3 |
| $IRON_{res-a}$ (onion ingestion rate - resident adult) g/day | 21.8 | 21.8 |
| $IRON_{res-c}$ (onion ingestion rate - resident child) g/day | 5.8 | 5.8 |
| $IRPC_{res-a}$ (peach ingestion rate - resident adult) g/day | 115.7 | 115.7 |
| $IRPC_{res-c}$ (peach ingestion rate - resident child) g/day | 111.4 | 111.4 |
| $IRPE_{res-a}$ (pea ingestion rate - resident adult) g/day | 35.4 | 35.4 |

# Site-Specific
# Resident Soil Inputs - No secular equilibrium, progeny included (with decay)

*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| $IRPE_{res-c}$ (pea ingestion rate - resident child) g/day | 32.1 | 32.1 |
| $IRPR_{res-a}$ (pear ingestion rate - resident adult) g/day | 51.9 | 51.9 |
| $IRPR_{res-c}$ (pear ingestion rate - resident child) g/day | 66.7 | 66.7 |
| $IRPT_{res-a}$ (potato ingestion rate - resident adult) g/day | 127.8 | 127.8 |
| $IRPT_{res-c}$ (potato ingestion rate - resident child) g/day | 51.7 | 51.7 |
| $IRPU_{res-a}$ (pumpkin ingestion rate - resident adult) g/day | 64.8 | 64.8 |
| $IRPU_{res-c}$ (pumpkin ingestion rate - resident child) g/day | 45.2 | 45.2 |
| $IRRI_{res-a}$ (rice ingestion rate - resident adult) g/day | 73.2 | 73.2 |
| $IRRI_{res-c}$ (rice ingestion rate - resident child) g/day | 28.8 | 28.8 |
| $IRSN_{res-a}$ (snap bean ingestion rate - resident adult) g/day | 53.9 | 53.9 |
| $IRSN_{res-c}$ (snap bean ingestion rate - resident child) g/day | 27.3 | 27.3 |
| $IRST_{res-a}$ (strawberry ingestion rate - resident adult) g/day | 40.5 | 40.5 |
| $IRST_{res-c}$ (strawberry ingestion rate - resident child) g/day | 25.3 | 25.3 |
| $IRTO_{res-a}$ (tomato ingestion rate - resident adult) g/day | 80.3 | 80.3 |
| $IRTO_{res-c}$ (tomato ingestion rate - resident child) g/day | 29.7 | 29.7 |
| $MLF_{apple}$ (apple mass loading factor) unitless | 0.000160 | 0.000160 |
| $MLF_{asparagus}$ (asparagus mass loading factor) unitless | 0.0000790 | 0.0000790 |
| $MLF_{berry}$ (berry mass loading factor) unitless | 0.000166 | 0.000166 |
| $MLF_{broccoli}$ (broccoli mass loading factor) unitless | 0.00101 | 0.00101 |
| $MLF_{beet}$ (beet mass loading factor) unitless | 0.000138 | 0.000138 |
| $MLF_{cabbage}$ (cabbage mass loading factor) unitless | 0.000105 | 0.000105 |
| $MLF_{cereal\ grain}$ (cereal grain mass loading factor) unitless | 0.250 | 0.250 |
| $MLF_{citrus}$ (citrus mass loading factor) unitless | 0.000157 | 0.000157 |
| $MLF_{corn}$ (corn mass loading factor) unitless | 0.000145 | 0.000145 |
| $MLF_{carrot}$ (carrot mass loading factor) unitless | 0.0000970 | 0.0000970 |
| $MLF_{cucumber}$ (cucumber mass loading factor) unitless | 0.0000400 | 0.0000400 |
| $MLF_{lettuce}$ (lettuce mass loading factor) unitless | 0.0135 | 0.0135 |
| $MLF_{lima\ bean}$ (lima bean mass loading factor) unitless | 0.00383 | 0.00383 |
| $MLF_{okra}$ (okra mass loading factor) unitless | 0.0000800 | 0.0000800 |
| $MLF_{onion}$ (onion mass loading factor) unitless | 0.0000970 | 0.0000970 |

# Site-Specific
# Resident Soil Inputs - No secular equilibrium, progeny included (with decay)

*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| $MLF_{peach}$ (peach mass loading factor) unitless | 0.000150 | 0.000150 |
| $MLF_{pea}$ (pea mass loading factor) unitless | 0.000178 | 0.000178 |
| $MLF_{pear}$ (pear mass loading factor) unitless | 0.000160 | 0.000160 |
| $MLF_{potato}$ (potato mass loading factor) unitless | 0.000210 | 0.000210 |
| $MLF_{pumpkin}$ (pumpkin mass loading factor) unitless | 0.0000580 | 0.0000580 |
| $MLF_{rice}$ (rice mass loading factor) unitless | 0.250 | 0.250 |
| $MLF_{snap\ bean}$ (snap bean mass loading factor) unitless | 0.00500 | 0.00500 |
| $MLF_{strawberry}$ (strawberry mass loading factor) unitless | 0.0000800 | 0.0000800 |
| $MLF_{tomato}$ (tomato mass loading factor) unitless | 0.00159 | 0.00159 |
| TR (target cancer risk) unitless | 1.0E-06 | 1.0E-06 |
| F(x) (function dependent on $U_m/U_t$) unitless | 0.194 | 0.0391 |
| PEF (particulate emission factor) $m^3$/kg | 1359344438 | 4078965031.971621 |
| $Q/C_{wind}$ (g/m$^2$-s per kg/m$^3$) | 93.77 | 32.35983267992716 |
| $A_s$ (acres) | 0.5 | 420 |
| $ED_{res}$ (exposure duration - resident) yr | 26 | 26 |
| $ED_{res-a}$ (exposure duration - resident adult) yr | 20 | 20 |
| $ED_{res-c}$ (exposure duration - resident child) yr | 6 | 6 |
| $EF_{res}$ (exposure frequency - resident) day/yr | 350 | 350 |
| $EF_{res-a}$ (exposure frequency - resident adult) day/yr | 350 | 350 |
| $EF_{res-c}$ (exposure frequency - resident child) day/yr | 350 | 350 |
| $ET_{res}$ (exposure time - resident) hr/day | 24 | 24 |
| $ET_{res-a}$ (exposure time - resident adult) hr/day | 24 | 24 |
| $ET_{res-c}$ (exposure time - resident child) hr/day | 24 | 24 |
| $ET_{res-i}$ (exposure time - indoor resident) hr/day | 16.416 | 16.416 |
| $ET_{res-o}$ (exposure time - outdoor resident) hr/day | 1.752 | 1.752 |
| $GSF_i$ (gamma shielding factor - indoor) unitless | 0.4 | 0.4 |
| $IFA_{res-adj}$ (age-adjusted soil inhalation factor - resident) $m^3$ | 161000 | 161000 |
| $IFS_{res-adj}$ (age-adjusted soil ingestion factor - resident) mg | 1120000 | 1120000 |
| $IRA_{res-a}$ (inhalation rate - resident adult) $m^3$/day | 20 | 20 |
| $IRA_{res-c}$ (inhalation rate - resident child) $m^3$/day | 10 | 10 |

# Site-Specific
# Resident Soil Inputs - No secular equilibrium, progeny included (with decay)

*** Inputted values different from Resident defaults are highlighted.**

| Variable | Resident Soil Default Value | Form-input Value |
|---|---|---|
| $IRS_{res-a}$ (soil intake rate - resident adult) mg/day | 100 | 100 |
| $IRS_{res-c}$ (soil intake rate - resident child) mg/day | 200 | 200 |
| $t_{res}$ (time - resident) yr | 26 | 26 |
| TR (target cancer risk) unitless | 1.0E-06 | 1.0E-06 |
| $U_m$ (mean annual wind speed) m/s | 4.69 | 3.89 |
| $U_t$ (equivalent threshold value) | 11.32 | 11.32 |
| V (fraction of vegetative cover) unitless | 0.5 | 0.5 |

# Site-Specific
# Resident PRGs for Soil - No secular equilibrium, progeny included (with decay)

| Isotope | ICRP Lung Absorption Type | Inhalation Slope Factor (risk/pCi) | External Exposure Slope Factor (risk/yr per pCi/g) | Food Ingestion Slope Factor (risk/pCi) | Soil Ingestion Slope Factor (risk/pCi) | Particulate Emission Factor ($m^3$/kg) | Lambda (1/yr) | Halflife (yr) | 1000029 $m^2$ Soil Volume Area Correction Factor | 0 cm Soil Volume Gamma Shielding Factor | Total Indoor GSF Soil Volume |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ac-227 | S | 1.49E-07 | 1.98E-10 | 2.45E-10 | 2.90E-10 | 4.08E+09 | 3.18E-02 | 2.18E+01 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| At-219 | - | - | - | - | - | 4.08E+09 | 3.89E+05 | 1.78E-06 | 9.00E-01 | 1.00E+00 | 4.00E-01 |
| Ba-137m | - | - | 2.69E-06 | - | - | 4.08E+09 | 2.29E-02 | 3.02E+01 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Bi-211 | - | - | 1.90E-07 | - | - | 4.08E+09 | 1.70E+05 | 4.07E-06 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Bi-215 | - | - | 1.08E-06 | - | - | 4.08E+09 | 4.78E+04 | 1.45E-05 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Cs-137 | S | 1.12E-10 | 5.52E-10 | 3.74E-11 | 4.25E-11 | 4.08E+09 | 2.29E-02 | 3.02E+01 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Fr-223 | S | 4.07E-11 | 1.35E-07 | 1.01E-11 | 1.69E-11 | 4.08E+09 | 1.65E+04 | 4.19E-05 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Pa-231 | F | 7.62E-08 | 1.27E-07 | 2.26E-10 | 2.98E-10 | 4.08E+09 | 2.11E-05 | 3.28E+04 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Pb-211 | S | 4.03E-11 | 2.91E-07 | 5.81E-13 | 9.55E-13 | 4.08E+09 | 1.01E+04 | 6.87E-05 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Po-211 | - | - | 3.76E-08 | - | - | 4.08E+09 | 4.23E+07 | 1.64E-08 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Po-215 | - | - | 7.48E-10 | - | - | 4.08E+09 | 1.23E+10 | 5.65E-11 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Pu-239 | F | 5.55E-08 | 2.09E-10 | 1.74E-10 | 2.28E-10 | 4.08E+09 | 2.88E-05 | 2.41E+04 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Ra-223 | S | 2.92E-08 | 4.55E-07 | 3.39E-10 | 5.99E-10 | 4.08E+09 | 2.21E+01 | 3.13E-02 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Rn-219 | - | - | 2.35E-07 | - | - | 4.08E+09 | 5.50E+06 | 1.26E-07 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Sr-90 | S | 4.25E-10 | 4.83E-10 | 6.88E-11 | 8.62E-11 | 4.08E+09 | 2.41E-02 | 2.88E+01 | 9.00E-01 | 1.00E+00 | 4.00E-01 |
| Th-227 | S | 3.50E-08 | 4.45E-07 | 7.03E-11 | 1.29E-10 | 4.08E+09 | 1.35E+01 | 5.12E-02 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Th-231 | S | 1.50E-12 | 2.49E-08 | 3.22E-12 | 5.96E-12 | 4.08E+09 | 9.84E-10 | 7.04E+08 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Tl-207 | - | - | 1.59E-08 | - | - | 4.08E+09 | 7.63E+04 | 9.08E-06 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| U-235 | S | 2.50E-08 | 5.51E-07 | 9.44E-11 | 1.48E-10 | 4.08E+09 | 9.84E-10 | 7.04E+08 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| U-235m | M | 1.87E-18 | - | 1.06E-17 | 1.65E-17 | 4.08E+09 | 2.88E-05 | 2.41E+04 | 1.00E+00 | 1.00E+00 | 4.00E-01 |
| Y-90 | S | 8.40E-12 | 1.90E-08 | 2.65E-11 | 4.92E-11 | 4.08E+09 | 2.41E-02 | 2.88E+01 | 1.00E+00 | 1.00E+00 | 4.00E-01 |

# Site-Specific
# Resident PRGs for Soil - No secular equilibrium, progeny included (with decay)

| Isotope | Ingestion PRG TR=1E-06 (pCi/g) | Inhalation PRG TR=1E-06 (pCi/g) | External Exposure PRG TR=1E-06 (pCi/g) | Produce Consumption PRG TR=1E-06 (pCi/g) | Total PRG TR=1E-06 (pCi/g) | Total PRG TR=1E-06 (mg/kg) |
|---|---|---|---|---|---|---|
| Ac-227 | 4.52E+00 | 2.50E+02 | 8.59E+02 | - | **4.42E+00** | 6.13E-08 |
| At-219 | - | - | - | - | **-** | - |
| Ba-137m | - | - | 5.71E-02 | - | **5.71E-02** | 6.62E-10 |
| Bi-211 | - | - | 2.70E+06 | - | **2.70E+06** | 6.48E-09 |
| Bi-215 | - | - | 1.33E+05 | - | **1.33E+05** | 1.16E-09 |
| Cs-137 | 2.79E+01 | 3.00E+05 | 2.78E+02 | - | **2.54E+01** | 2.94E-07 |
| Fr-223 | 2.27E+07 | 2.68E+11 | 3.69E+05 | - | **3.63E+05** | 9.49E-09 |
| Pa-231 | 3.00E+00 | 3.33E+02 | 9.11E-01 | - | **6.97E-01** | 1.48E-05 |
| Pb-211 | 2.45E+08 | 1.65E+11 | 1.04E+05 | - | **1.04E+05** | 4.23E-09 |
| Po-211 | - | - | 3.38E+09 | - | **3.38E+09** | 3.28E-08 |
| Po-215 | - | - | 4.93E+13 | - | **4.93E+13** | 1.68E-06 |
| Pu-239 | 3.92E+00 | 4.57E+02 | 5.54E+02 | - | **3.86E+00** | 6.22E-05 |
| Ra-223 | 8.58E+02 | 4.99E+05 | 1.46E+02 | - | **1.25E+02** | 2.44E-09 |
| Rn-219 | - | - | 7.04E+07 | - | **7.04E+07** | 5.44E-09 |
| Sr-90 | 1.39E+01 | 8.02E+04 | 3.58E+02 | - | **1.34E+01** | 9.73E-08 |
| Th-227 | 2.44E+03 | 2.55E+05 | 9.15E+01 | - | **8.82E+01** | 2.87E-09 |
| Th-231 | 1.50E+02 | 1.69E+07 | 4.65E+00 | - | **4.51E+00** | 2.05E+00 |
| Tl-207 | - | - | 1.44E+07 | - | **1.44E+07** | 7.60E-08 |
| U-235 | 6.03E+00 | 1.01E+03 | 2.10E-01 | - | **2.03E-01** | 9.40E-02 |
| U-235m | 5.41E+07 | 1.36E+13 | - | - | **5.41E+07** | 8.58E+02 |
| Y-90 | 2.44E+01 | 4.06E+06 | 8.19E+00 | - | **6.13E+00** | 4.45E-08 |

# Site-Specific
# Resident Risk for Soil - No secular equilibrium, progeny included (with decay)

| Isotope | ICRP Lung Absorption Type | Inhalation Slope Factor (risk/pCi) | External Exposure Slope Factor (risk/yr per pCi/g) | Food Ingestion Slope Factor (risk/pCi) | Soil Ingestion Slope Factor (risk/pCi) | Concentration (pCi/g) | Particulate Emission Factor ($m^3$/kg) | Lambda (1/yr) | Halflife (yr) | 1000029 $m^2$ Soil Volume Area Correction Factor |
|---|---|---|---|---|---|---|---|---|---|---|
| Ac-227 | S | 1.49E-07 | 1.98E-10 | 2.45E-10 | 2.90E-10 | - | 4.08E+09 | 3.18E-02 | 2.18E+01 | 1.00E+00 |
| At-219 | - | - | - | - | - | - | 4.08E+09 | 3.89E+05 | 1.78E-06 | 9.00E-01 |
| Ba-137m | - | - | 2.69E-06 | - | - | 1.13E-01 | 4.08E+09 | 2.29E-02 | 3.02E+01 | 1.00E+00 |
| Bi-211 | - | - | 1.90E-07 | - | - | - | 4.08E+09 | 1.70E+05 | 4.07E-06 | 1.00E+00 |
| Bi-215 | - | - | 1.08E-06 | - | - | - | 4.08E+09 | 4.78E+04 | 1.45E-05 | 1.00E+00 |
| Cs-137 | S | 1.12E-10 | 5.52E-10 | 3.74E-11 | 4.25E-11 | 1.13E-01 | 4.08E+09 | 2.29E-02 | 3.02E+01 | 1.00E+00 |
| Fr-223 | S | 4.07E-11 | 1.35E-07 | 1.01E-11 | 1.69E-11 | - | 4.08E+09 | 1.65E+04 | 4.19E-05 | 1.00E+00 |
| Pa-231 | F | 7.62E-08 | 1.27E-07 | 2.26E-10 | 2.98E-10 | - | 4.08E+09 | 2.11E-05 | 3.28E+04 | 1.00E+00 |
| Pb-211 | S | 4.03E-11 | 2.91E-07 | 5.81E-13 | 9.55E-13 | - | 4.08E+09 | 1.01E+04 | 6.87E-05 | 1.00E+00 |
| Po-211 | - | - | 3.76E-08 | - | - | - | 4.08E+09 | 4.23E+07 | 1.64E-08 | 1.00E+00 |
| Po-215 | - | - | 7.48E-10 | - | - | - | 4.08E+09 | 1.23E+10 | 5.65E-11 | 1.00E+00 |
| Pu-239 | F | 5.55E-08 | 2.09E-10 | 1.74E-10 | 2.28E-10 | 2.59E+00 | 4.08E+09 | 2.88E-05 | 2.41E+04 | 1.00E+00 |
| Ra-223 | S | 2.92E-08 | 4.55E-07 | 3.39E-10 | 5.99E-10 | - | 4.08E+09 | 2.21E+01 | 3.13E-02 | 1.00E+00 |
| Rn-219 | - | - | 2.35E-07 | - | - | - | 4.08E+09 | 5.50E+06 | 1.26E-07 | 1.00E+00 |
| Sr-90 | S | 4.25E-10 | 4.83E-10 | 6.88E-11 | 8.62E-11 | 3.31E-01 | 4.08E+09 | 2.41E-02 | 2.88E+01 | 9.00E-01 |
| Th-227 | S | 3.50E-08 | 4.45E-07 | 7.03E-11 | 1.29E-10 | - | 4.08E+09 | 1.35E+01 | 5.12E-02 | 1.00E+00 |
| Th-231 | S | 1.50E-12 | 2.49E-08 | 3.22E-12 | 5.96E-12 | 1.95E-01 | 4.08E+09 | 9.84E-10 | 7.04E+08 | 1.00E+00 |
| Tl-207 | - | - | 1.59E-08 | - | - | - | 4.08E+09 | 7.63E+04 | 9.08E-06 | 1.00E+00 |
| U-235 | S | 2.50E-08 | 5.51E-07 | 9.44E-11 | 1.48E-10 | 1.95E-01 | 4.08E+09 | 9.84E-10 | 7.04E+08 | 1.00E+00 |
| U-235m | M | 1.87E-18 | - | 1.06E-17 | 1.65E-17 | 2.59E+00 | 4.08E+09 | 2.88E-05 | 2.41E+04 | 1.00E+00 |
| Y-90 | S | 8.40E-12 | 1.90E-08 | 2.65E-11 | 4.92E-11 | 3.31E-01 | 4.08E+09 | 2.41E-02 | 2.88E+01 | 1.00E+00 |
| **Total Risk* | | - | - | - | - | - | - | - | - | - |

# Site-Specific
# Resident Risk for Soil - No secular equilibrium, progeny included (with decay)

| 0 cm Soil Volume Gamma Shielding Factor | Total Indoor GSF Soil Volume | Ingestion CDI (pCi) | Inhalation CDI (pCi) | External Exposure CDI (pCi) | Produce Consumption CDI (pCi) | Ingestion Risk | Inhalation Risk | External Exposure Risk | Produce Consumption Risk | Total Risk |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.00E+00 | 4.00E-01 | - | - | - | - | - | - | - | - | - |
| 1.00E+00 | 4.00E-01 | - | - | - | - | - | - | - | - | - |
| 1.00E+00 | 4.00E-01 | 9.53E+01 | 3.36E-03 | 7.35E-01 | - | - | - | 1.98E-06 | - | **1.98E-06** |
| 1.00E+00 | 4.00E-01 | - | - | - | - | - | - | - | - | - |
| 1.00E+00 | 4.00E-01 | - | - | - | - | - | - | - | - | - |
| 1.00E+00 | 4.00E-01 | 9.53E+01 | 3.36E-03 | 7.35E-01 | - | 4.05E-09 | 3.76E-13 | 4.06E-10 | - | **4.46E-09** |
| 1.00E+00 | 4.00E-01 | - | - | - | - | - | - | - | - | - |
| 1.00E+00 | 4.00E-01 | - | - | - | - | - | - | - | - | - |
| 1.00E+00 | 4.00E-01 | - | - | - | - | - | - | - | - | - |
| 1.00E+00 | 4.00E-01 | - | - | - | - | - | - | - | - | - |
| 1.00E+00 | 4.00E-01 | - | - | - | - | - | - | - | - | - |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 6.61E-07 | 5.67E-09 | 4.68E-09 | - | **6.71E-07** |
| 1.00E+00 | 4.00E-01 | - | - | - | - | - | - | - | - | - |
| 1.00E+00 | 4.00E-01 | - | - | - | - | - | - | - | - | - |
| 1.00E+00 | 4.00E-01 | 2.76E+02 | 9.71E-03 | 1.91E+00 | - | 2.38E-08 | 4.13E-12 | 9.24E-10 | - | **2.47E-08** |
| 1.00E+00 | 4.00E-01 | - | - | - | - | - | - | - | - | - |
| 1.00E+00 | 4.00E-01 | 2.18E+02 | 7.70E-03 | 1.69E+00 | - | 1.30E-09 | 1.15E-14 | 4.20E-08 | - | **4.33E-08** |
| 1.00E+00 | 4.00E-01 | - | - | - | - | - | - | - | - | - |
| 1.00E+00 | 4.00E-01 | 2.18E+02 | 7.70E-03 | 1.69E+00 | - | 3.23E-08 | 1.92E-10 | 9.28E-07 | - | **9.61E-07** |
| 1.00E+00 | 4.00E-01 | 2.90E+03 | 1.02E-01 | 2.24E+01 | - | 4.78E-14 | 1.91E-19 | - | - | **4.78E-14** |
| 1.00E+00 | 4.00E-01 | 2.76E+02 | 9.71E-03 | 2.13E+00 | - | 1.36E-08 | 8.16E-14 | 4.04E-08 | - | **5.40E-08** |
| - | - | - | - | - | - | *7.36E-07* | *5.87E-09* | *3.00E-06* | - | ***3.74E-06*** |