Table of Contents

Part III: Intake Quantities and Health Risk Factors

Cancer Risk Slope Factors 2
Risk Slope and ETFG for the Ground Pathway 3
Amount of Intake Quantities and Excess Cancer Risks
Time= 0.000E+00 4
Time= 1.000E+00 6
Time= 3.000E+00 8
Time= 1.000E+01 10
Time= 3.000E+01 12
Time= 1.000E+02 14
Time= 3.000E+02 16
Time= 1.000E+03 18

Cancer Risk Slope Factors Summary Table
Risk Library: FGR 13 Morbidity

Menu	Parameter	Current Value	Base Case*	Parameter Name
Sf-1	Ground external radiation slope factors, 1/yr per (pCi/g):			
Sf-1	Cs-137+D	2.55E-06	5.32E-10	SLPF(1,1)
Sf-1	Sr-90+D	1.96E-08	4.82E-10	SLPF(2,1)
Sf-2	Inhalation, slope factors, 1/(pCi):			
Sf-2	Cs-137+D	1.12E-10	1.12E-10	SLPF(1,2)
Sf-2	Sr-90+D	4.33E-10	4.25E-10	SLPF(2,2)
Sf-3	Food ingestion, slope factors, 1/(pCi):			
Sf-3	Cs-137+D	3.74E-11	3.74E-11	SLPF(1,3)
Sf-3	Sr-90+D	9.53E-11	6.88E-11	SLPF(2,3)
Sf-3	Water ingestion, slope factors, 1/(pCi):			
Sf-3	Cs-137+D	3.04E-11	3.04E-11	SLPF(1,4)
Sf-3	Sr-90+D	7.40E-11	5.59E-11	SLPF(2,4)
Sf-3	Soil ingestion, slope factors, 1/(pCi):			
Sf-3	Cs-137+D	3.74E-11	3.74E-11	SLPF(1,5)
Sf-3	Sr-90+D	9.53E-11	6.88E-11	SLPF(2,5)

*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	1.000E+02	3.000E+02	1.000E+03
Ba-137m	2.690E-06	5.298E-01	5.298E-01	5.298E-01	5.298E-01	5.298E-01	5.298E-01	5.298E-01	5.298E-01
Cs-137	5.320E-10	5.454E-01	5.454E-01	5.454E-01	5.454E-01	5.454E-01	5.454E-01	5.454E-01	5.454E-01
Sr-90	4.820E-10	5.475E-01	5.475E-01	5.475E-01	5.475E-01	5.475E-01	5.475E-01	5.475E-01	5.475E-01
Y-90	1.910E-08	5.331E-01	5.331E-01	5.331E-01	5.331E-01	5.331E-01	5.331E-01	5.331E-01	5.331E-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*
Cs-137	9.426E-04	5.686E+01	4.972E+00	1.624E+00	4.473E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.391E+01
Sr-90	5.358E-03	2.424E+03	4.892E+01	1.453E+01	2.543E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.490E+03

* 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.
Cs-137	5.542E-07	0.1033	2.284E-12	0.0000	4.600E-08	0.0086	4.023E-09	0.0007	1.313E-09	0.0002	3.619E-10	0.0001
Sr-90	2.251E-08	0.0042	4.634E-11	0.0000	4.611E-06	0.8594	9.311E-08	0.0174	2.764E-08	0.0052	4.835E-09	0.0009
Total	5.767E-07	0.1075	4.862E-11	0.0000	4.657E-06	0.8680	9.713E-08	0.0181	2.895E-08	0.0054	5.197E-09	0.0010

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.
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	6.059E-07	0.1129
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	4.759E-06	0.8871
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	5.365E-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.
Cs-137	5.542E-07	0.1033	2.284E-12	0.0000	0.000E+00	0.0000	4.600E-08	0.0086	4.023E-09	0.0007	1.313E-09	0.0002	3.619E-10	0.0001
Sr-90	2.251E-08	0.0042	4.634E-11	0.0000	0.000E+00	0.0000	4.611E-06	0.8594	9.311E-08	0.0174	2.764E-08	0.0052	4.835E-09	0.0009
Total	5.767E-07	0.1075	4.862E-11	0.0000	0.000E+00	0.0000	4.657E-06	0.8680	9.713E-08	0.0181	2.895E-08	0.0054	5.197E-09	0.0010

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.
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	6.059E-07	0.1129
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	4.759E-06	0.8871
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	5.365E-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*
Cs-137	9.210E-04	5.556E+01	4.859E+00	1.587E+00	4.371E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.245E+01
Sr-90	5.203E-03	2.355E+03	4.755E+01	1.412E+01	2.469E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.419E+03

* 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.
Cs-137	5.415E-07	0.1039	2.231E-12	0.0000	4.495E-08	0.0086	3.931E-09	0.0008	1.283E-09	0.0002	3.536E-10	0.0001
Sr-90	2.186E-08	0.0042	4.500E-11	0.0000	4.478E-06	0.8588	9.043E-08	0.0173	2.684E-08	0.0051	4.695E-09	0.0009
Total	5.634E-07	0.1081	4.723E-11	0.0000	4.523E-06	0.8675	9.436E-08	0.0181	2.813E-08	0.0054	5.049E-09	0.0010

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.
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	5.921E-07	0.1136
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	4.622E-06	0.8864
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	5.214E-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.
Cs-137	5.415E-07	0.1039	2.231E-12	0.0000	0.000E+00	0.0000	4.495E-08	0.0086	3.931E-09	0.0008	1.283E-09	0.0002	3.536E-10	0.0001
Sr-90	2.186E-08	0.0042	4.500E-11	0.0000	0.000E+00	0.0000	4.478E-06	0.8588	9.043E-08	0.0173	2.684E-08	0.0051	4.695E-09	0.0009
Total	5.634E-07	0.1081	4.723E-11	0.0000	0.000E+00	0.0000	4.523E-06	0.8675	9.436E-08	0.0181	2.813E-08	0.0054	5.049E-09	0.0010

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.
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	5.921E-07	0.1136
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	4.622E-06	0.8864
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	5.214E-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*
Cs-137	8.794E-04	5.305E+01	4.639E+00	1.515E+00	4.173E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.962E+01
Sr-90	4.907E-03	2.220E+03	4.484E+01	1.331E+01	2.329E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.281E+03

* 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.
Cs-137	5.171E-07	0.1050	2.130E-12	0.0000	4.292E-08	0.0087	3.753E-09	0.0008	1.225E-09	0.0002	3.376E-10	0.0001
Sr-90	2.062E-08	0.0042	4.244E-11	0.0000	4.223E-06	0.8576	8.528E-08	0.0173	2.532E-08	0.0051	4.428E-09	0.0009
Total	5.377E-07	0.1092	4.457E-11	0.0000	4.266E-06	0.8663	8.903E-08	0.0181	2.654E-08	0.0054	4.766E-09	0.0010

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.
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	5.653E-07	0.1148
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	4.358E-06	0.8852
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	4.924E-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.
Cs-137	5.171E-07	0.1050	2.130E-12	0.0000	0.000E+00	0.0000	4.292E-08	0.0087	3.753E-09	0.0008	1.225E-09	0.0002	3.376E-10	0.0001
Sr-90	2.062E-08	0.0042	4.244E-11	0.0000	0.000E+00	0.0000	4.223E-06	0.8576	8.528E-08	0.0173	2.532E-08	0.0051	4.428E-09	0.0009
Total	5.377E-07	0.1092	4.457E-11	0.0000	0.000E+00	0.0000	4.266E-06	0.8663	8.903E-08	0.0181	2.654E-08	0.0054	4.766E-09	0.0010

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.
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	5.653E-07	0.1148
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	4.358E-06	0.8852
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	4.924E-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*
Cs-137	7.479E-04	4.512E+01	3.945E+00	1.288E+00	3.549E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.071E+01
Sr-90	3.996E-03	1.808E+03	3.652E+01	1.084E+01	1.896E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.858E+03

* 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.
Cs-137	4.397E-07	0.1091	1.812E-12	0.0000	3.650E-08	0.0091	3.192E-09	0.0008	1.042E-09	0.0003	2.871E-10	0.0001
Sr-90	1.679E-08	0.0042	3.456E-11	0.0000	3.439E-06	0.8533	6.945E-08	0.0172	2.062E-08	0.0051	3.606E-09	0.0009
Total	4.565E-07	0.1133	3.637E-11	0.0000	3.476E-06	0.8624	7.264E-08	0.0180	2.166E-08	0.0054	3.894E-09	0.0010

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.
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	4.807E-07	0.1193
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	3.550E-06	0.8807
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	4.030E-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.
Cs-137	4.397E-07	0.1091	1.812E-12	0.0000	0.000E+00	0.0000	3.650E-08	0.0091	3.192E-09	0.0008	1.042E-09	0.0003	2.871E-10	0.0001
Sr-90	1.679E-08	0.0042	3.456E-11	0.0000	0.000E+00	0.0000	3.439E-06	0.8533	6.945E-08	0.0172	2.062E-08	0.0051	3.606E-09	0.0009
Total	4.565E-07	0.1133	3.637E-11	0.0000	0.000E+00	0.0000	3.476E-06	0.8624	7.264E-08	0.0180	2.166E-08	0.0054	3.894E-09	0.0010

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.
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	4.807E-07	0.1193
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	3.550E-06	0.8807
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	4.030E-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*
Cs-137	4.708E-04	2.840E+01	2.484E+00	8.110E-01	2.234E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.192E+01
Sr-90	2.223E-03	1.006E+03	2.032E+01	6.032E+00	1.055E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.034E+03

* 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.
Cs-137	2.768E-07	0.1215	1.141E-12	0.0000	2.298E-08	0.0101	2.009E-09	0.0009	6.560E-10	0.0003	1.807E-10	0.0001
Sr-90	9.342E-09	0.0041	1.923E-11	0.0000	1.913E-06	0.8401	3.864E-08	0.0170	1.147E-08	0.0050	2.006E-09	0.0009
Total	2.862E-07	0.1256	2.037E-11	0.0000	1.936E-06	0.8502	4.065E-08	0.0178	1.213E-08	0.0053	2.187E-09	0.0010

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.
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	3.026E-07	0.1329
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	1.975E-06	0.8671
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	2.277E-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.
Cs-137	2.768E-07	0.1215	1.141E-12	0.0000	0.000E+00	0.0000	2.298E-08	0.0101	2.009E-09	0.0009	6.560E-10	0.0003	1.807E-10	0.0001
Sr-90	9.342E-09	0.0041	1.923E-11	0.0000	0.000E+00	0.0000	1.913E-06	0.8401	3.864E-08	0.0170	1.147E-08	0.0050	2.006E-09	0.0009
Total	2.862E-07	0.1256	2.037E-11	0.0000	0.000E+00	0.0000	1.936E-06	0.8502	4.065E-08	0.0178	1.213E-08	0.0053	2.187E-09	0.0010

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.
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	3.026E-07	0.1329
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	1.975E-06	0.8671
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	2.277E-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*
Cs-137	9.318E-05	5.621E+00	4.916E-01	1.605E-01	4.422E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.318E+00
Sr-90	2.855E-04	1.292E+02	2.610E+00	7.747E-01	1.355E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.327E+02

* 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.
Cs-137	5.479E-08	0.1747	2.257E-13	0.0000	4.547E-09	0.0145	3.976E-10	0.0013	1.298E-10	0.0004	3.577E-11	0.0001
Sr-90	1.200E-09	0.0038	2.469E-12	0.0000	2.457E-07	0.7838	4.963E-09	0.0158	1.473E-09	0.0047	2.577E-10	0.0008
Total	5.599E-08	0.1786	2.695E-12	0.0000	2.503E-07	0.7983	5.360E-09	0.0171	1.603E-09	0.0051	2.935E-10	0.0009

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.
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	5.990E-08	0.1910
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	2.536E-07	0.8090
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	3.135E-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= 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.
Cs-137	5.479E-08	0.1747	2.257E-13	0.0000	0.000E+00	0.0000	4.547E-09	0.0145	3.976E-10	0.0013	1.298E-10	0.0004	3.577E-11	0.0001
Sr-90	1.200E-09	0.0038	2.469E-12	0.0000	0.000E+00	0.0000	2.457E-07	0.7838	4.963E-09	0.0158	1.473E-09	0.0047	2.577E-10	0.0008
Total	5.599E-08	0.1786	2.695E-12	0.0000	0.000E+00	0.0000	2.503E-07	0.7983	5.360E-09	0.0171	1.603E-09	0.0051	2.935E-10	0.0009

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.
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	5.990E-08	0.1910
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.536E-07	0.8090
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	3.135E-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= 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*
Cs-137	9.106E-07	5.493E-02	4.803E-03	1.568E-03	4.321E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.174E-02
Sr-90	8.110E-07	3.670E-01	7.412E-03	2.200E-03	3.849E-04	1.704E-01	8.645E-05	1.215E-02	1.262E-03	6.888E-04	5.616E-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= 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.
Cs-137	5.354E-10	0.3286	2.206E-15	0.0000	4.444E-11	0.0273	3.886E-12	0.0024	1.269E-12	0.0008	3.496E-13	0.0002
Sr-90	3.408E-12	0.0021	7.014E-15	0.0000	6.979E-10	0.4283	1.409E-11	0.0086	4.184E-12	0.0026	7.319E-13	0.0004
Total	5.388E-10	0.3307	9.220E-15	0.0000	7.424E-10	0.4556	1.798E-11	0.0110	5.453E-12	0.0033	1.081E-12	0.0007

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.
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	5.853E-10	0.3592
Sr-90	2.924E-10	0.1795	1.910E-13	0.0001	2.684E-11	0.0165	2.789E-12	0.0017	1.522E-12	0.0009	1.044E-09	0.6408
Total	2.924E-10	0.1795	1.910E-13	0.0001	2.684E-11	0.0165	2.789E-12	0.0017	1.522E-12	0.0009	1.629E-09	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.
Cs-137	5.354E-10	0.3286	2.206E-15	0.0000	0.000E+00	0.0000	4.444E-11	0.0273	3.886E-12	0.0024	1.269E-12	0.0008	3.496E-13	0.0002
Sr-90	3.408E-12	0.0021	7.014E-15	0.0000	0.000E+00	0.0000	6.979E-10	0.4283	1.409E-11	0.0086	4.184E-12	0.0026	7.319E-13	0.0004
Total	5.388E-10	0.3307	9.220E-15	0.0000	0.000E+00	0.0000	7.424E-10	0.4556	1.798E-11	0.0110	5.453E-12	0.0033	1.081E-12	0.0007

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.
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	5.853E-10	0.3592
Sr-90	2.924E-10	0.1795	1.910E-13	0.0001	0.000E+00	0.0000	2.684E-11	0.0165	2.789E-12	0.0017	1.522E-12	0.0009	1.044E-09	0.6408
Total	2.924E-10	0.1795	1.910E-13	0.0001	0.000E+00	0.0000	2.684E-11	0.0165	2.789E-12	0.0017	1.522E-12	0.0009	1.629E-09	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*
Cs-137	8.400E-14	5.067E-09	4.431E-10	1.447E-10	3.986E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.695E-09
Sr-90	9.903E-16	4.481E-10	9.050E-12	2.687E-12	4.699E-13	2.794E-09	1.418E-12	1.992E-10	2.073E-11	1.130E-11	3.487E-09

* 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.
Cs-137	4.939E-17	0.8312	2.035E-22	0.0000	4.099E-18	0.0690	3.585E-19	0.0060	1.170E-19	0.0020	3.225E-20	0.0005
Sr-90	4.161E-21	0.0001	8.564E-24	0.0000	8.522E-19	0.0143	1.721E-20	0.0003	5.109E-21	0.0001	8.937E-22	0.0000
Total	4.939E-17	0.8312	2.121E-22	0.0000	4.951E-18	0.0833	3.757E-19	0.0063	1.222E-19	0.0021	3.314E-20	0.0006

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.
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	5.399E-17	0.9087
Sr-90	4.106E-18	0.0691	2.683E-21	0.0000	3.770E-19	0.0063	3.923E-20	0.0007	2.139E-20	0.0004	5.426E-18	0.0913
Total	4.106E-18	0.0691	2.683E-21	0.0000	3.770E-19	0.0063	3.923E-20	0.0007	2.139E-20	0.0004	5.942E-17	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.
Cs-137	4.939E-17	0.8312	2.035E-22	0.0000	0.000E+00	0.0000	4.099E-18	0.0690	3.585E-19	0.0060	1.170E-19	0.0020	3.225E-20	0.0005
Sr-90	4.161E-21	0.0001	8.564E-24	0.0000	0.000E+00	0.0000	8.522E-19	0.0143	1.721E-20	0.0003	5.109E-21	0.0001	8.937E-22	0.0000
Total	4.939E-17	0.8312	2.121E-22	0.0000	0.000E+00	0.0000	4.951E-18	0.0833	3.757E-19	0.0063	1.222E-19	0.0021	3.314E-20	0.0006

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.
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	5.399E-17	0.9087
Sr-90	4.106E-18	0.0691	2.683E-21	0.0000	0.000E+00	0.0000	3.770E-19	0.0063	3.923E-20	0.0007	2.139E-20	0.0004	5.426E-18	0.0913
Total	4.106E-18	0.0691	2.683E-21	0.0000	0.000E+00	0.0000	3.770E-19	0.0063	3.923E-20	0.0007	2.139E-20	0.0004	5.942E-17	1.0000

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