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	5.307E-01	5.307E-01	5.307E-01	5.307E-01	5.307E-01	5.307E-01	5.307E-01	5.307E-01
Cs-137	5.320E-10	5.459E-01	5.459E-01	5.459E-01	5.459E-01	5.459E-01	5.459E-01	5.459E-01	5.459E-01
Sr-90	4.820E-10	5.481E-01	5.481E-01	5.481E-01	5.481E-01	5.481E-01	5.481E-01	5.481E-01	5.481E-01
Y-90	1.910E-08	5.341E-01	5.341E-01	5.341E-01	5.341E-01	5.341E-01	5.341E-01	5.341E-01	5.341E-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	1.148E-03	7.284E+01	6.369E+00	2.080E+00	5.730E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.186E+01
Sr-90	6.238E-03	2.969E+03	5.991E+01	1.779E+01	3.114E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.050E+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	6.720E-07	0.1024	2.781E-12	0.0000	5.892E-08	0.0090	5.153E-09	0.0008	1.682E-09	0.0003	4.635E-10	0.0001
Sr-90	2.610E-08	0.0040	5.395E-11	0.0000	5.647E-06	0.8601	1.140E-07	0.0174	3.385E-08	0.0052	5.922E-09	0.0009
Total	6.981E-07	0.1063	5.673E-11	0.0000	5.706E-06	0.8691	1.192E-07	0.0182	3.553E-08	0.0054	6.385E-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	7.382E-07	0.1124
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	5.827E-06	0.8875
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	6.565E-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	6.720E-07	0.1024	2.781E-12	0.0000	0.000E+00	0.0000	5.892E-08	0.0090	5.153E-09	0.0008	1.682E-09	0.0003	4.635E-10	0.0001
Sr-90	2.610E-08	0.0040	5.395E-11	0.0000	0.000E+00	0.0000	5.647E-06	0.8601	1.140E-07	0.0174	3.385E-08	0.0052	5.922E-09	0.0009
Total	6.981E-07	0.1063	5.673E-11	0.0000	0.000E+00	0.0000	5.706E-06	0.8691	1.192E-07	0.0182	3.553E-08	0.0054	6.385E-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	7.382E-07	0.1124
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	5.827E-06	0.8875
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	6.565E-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	1.122E-03	7.117E+01	6.224E+00	2.032E+00	5.599E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.999E+01
Sr-90	6.058E-03	2.884E+03	5.824E+01	1.729E+01	3.024E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.962E+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	6.566E-07	0.1029	2.717E-12	0.0000	5.758E-08	0.0090	5.035E-09	0.0008	1.644E-09	0.0003	4.529E-10	0.0001
Sr-90	2.535E-08	0.0040	5.239E-11	0.0000	5.484E-06	0.8595	1.107E-07	0.0174	3.288E-08	0.0052	5.750E-09	0.0009
Total	6.820E-07	0.1069	5.511E-11	0.0000	5.541E-06	0.8686	1.158E-07	0.0181	3.452E-08	0.0054	6.203E-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	7.213E-07	0.1131
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	5.659E-06	0.8869
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	6.380E-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	6.566E-07	0.1029	2.717E-12	0.0000	0.000E+00	0.0000	5.758E-08	0.0090	5.035E-09	0.0008	1.644E-09	0.0003	4.529E-10	0.0001
Sr-90	2.535E-08	0.0040	5.239E-11	0.0000	0.000E+00	0.0000	5.484E-06	0.8595	1.107E-07	0.0174	3.288E-08	0.0052	5.750E-09	0.0009
Total	6.820E-07	0.1069	5.511E-11	0.0000	0.000E+00	0.0000	5.541E-06	0.8686	1.158E-07	0.0181	3.452E-08	0.0054	6.203E-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	7.213E-07	0.1131
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	5.659E-06	0.8869
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	6.380E-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	1.071E-03	6.795E+01	5.942E+00	1.940E+00	5.345E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.637E+01
Sr-90	5.713E-03	2.719E+03	5.492E+01	1.630E+01	2.852E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.794E+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	6.269E-07	0.1041	2.594E-12	0.0000	5.497E-08	0.0091	4.807E-09	0.0008	1.570E-09	0.0003	4.324E-10	0.0001
Sr-90	2.391E-08	0.0040	4.941E-11	0.0000	5.171E-06	0.8583	1.044E-07	0.0173	3.100E-08	0.0051	5.423E-09	0.0009
Total	6.508E-07	0.1080	5.200E-11	0.0000	5.226E-06	0.8675	1.092E-07	0.0181	3.257E-08	0.0054	5.855E-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	6.887E-07	0.1143
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	5.336E-06	0.8857
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	6.025E-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	6.269E-07	0.1041	2.594E-12	0.0000	0.000E+00	0.0000	5.497E-08	0.0091	4.807E-09	0.0008	1.570E-09	0.0003	4.324E-10	0.0001
Sr-90	2.391E-08	0.0040	4.941E-11	0.0000	0.000E+00	0.0000	5.171E-06	0.8583	1.044E-07	0.0173	3.100E-08	0.0051	5.423E-09	0.0009
Total	6.508E-07	0.1080	5.200E-11	0.0000	0.000E+00	0.0000	5.226E-06	0.8675	1.092E-07	0.0181	3.257E-08	0.0054	5.855E-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	6.887E-07	0.1143
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	5.336E-06	0.8857
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	6.025E-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	9.107E-04	5.779E+01	5.054E+00	1.650E+00	4.546E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.495E+01
Sr-90	4.653E-03	2.215E+03	4.473E+01	1.328E+01	2.323E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.275E+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	5.332E-07	0.1081	2.206E-12	0.0000	4.675E-08	0.0095	4.088E-09	0.0008	1.335E-09	0.0003	3.678E-10	0.0001
Sr-90	1.947E-08	0.0039	4.024E-11	0.0000	4.212E-06	0.8540	8.506E-08	0.0172	2.525E-08	0.0051	4.417E-09	0.0009
Total	5.526E-07	0.1121	4.245E-11	0.0000	4.259E-06	0.8635	8.915E-08	0.0181	2.659E-08	0.0054	4.785E-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	5.857E-07	0.1188
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	4.346E-06	0.8812
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	4.932E-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	5.332E-07	0.1081	2.206E-12	0.0000	0.000E+00	0.0000	4.675E-08	0.0095	4.088E-09	0.0008	1.335E-09	0.0003	3.678E-10	0.0001
Sr-90	1.947E-08	0.0039	4.024E-11	0.0000	0.000E+00	0.0000	4.212E-06	0.8540	8.506E-08	0.0172	2.525E-08	0.0051	4.417E-09	0.0009
Total	5.526E-07	0.1121	4.245E-11	0.0000	0.000E+00	0.0000	4.259E-06	0.8635	8.915E-08	0.0181	2.659E-08	0.0054	4.785E-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	5.857E-07	0.1188
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	4.346E-06	0.8812
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	4.932E-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	5.733E-04	3.638E+01	3.181E+00	1.039E+00	2.862E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.089E+01
Sr-90	2.589E-03	1.232E+03	2.488E+01	7.387E+00	1.292E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.266E+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	3.356E-07	0.1204	1.389E-12	0.0000	2.943E-08	0.0106	2.573E-09	0.0009	8.403E-10	0.0003	2.315E-10	0.0001
Sr-90	1.083E-08	0.0039	2.239E-11	0.0000	2.343E-06	0.8409	4.732E-08	0.0170	1.405E-08	0.0050	2.457E-09	0.0009
Total	3.465E-07	0.1243	2.378E-11	0.0000	2.373E-06	0.8514	4.989E-08	0.0179	1.489E-08	0.0053	2.689E-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	3.687E-07	0.1323
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	2.418E-06	0.8677
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	2.787E-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	3.356E-07	0.1204	1.389E-12	0.0000	0.000E+00	0.0000	2.943E-08	0.0106	2.573E-09	0.0009	8.403E-10	0.0003	2.315E-10	0.0001
Sr-90	1.083E-08	0.0039	2.239E-11	0.0000	0.000E+00	0.0000	2.343E-06	0.8409	4.732E-08	0.0170	1.405E-08	0.0050	2.457E-09	0.0009
Total	3.465E-07	0.1243	2.378E-11	0.0000	0.000E+00	0.0000	2.373E-06	0.8514	4.989E-08	0.0179	1.489E-08	0.0053	2.689E-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	3.687E-07	0.1323
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	2.418E-06	0.8677
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	2.787E-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	1.135E-04	7.200E+00	6.296E-01	2.056E-01	5.664E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.092E+00
Sr-90	3.325E-04	1.583E+02	3.196E+00	9.488E-01	1.660E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.626E+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	6.643E-08	0.1732	2.749E-13	0.0000	5.825E-09	0.0152	5.094E-10	0.0013	1.663E-10	0.0004	4.582E-11	0.0001
Sr-90	1.391E-09	0.0036	2.875E-12	0.0000	3.009E-07	0.7847	6.078E-09	0.0158	1.804E-09	0.0047	3.156E-10	0.0008
Total	6.782E-08	0.1768	3.150E-12	0.0000	3.068E-07	0.7999	6.587E-09	0.0172	1.971E-09	0.0051	3.614E-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	7.298E-08	0.1903
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	3.105E-07	0.8097
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	3.835E-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	6.643E-08	0.1732	2.749E-13	0.0000	0.000E+00	0.0000	5.825E-09	0.0152	5.094E-10	0.0013	1.663E-10	0.0004	4.582E-11	0.0001
Sr-90	1.391E-09	0.0036	2.875E-12	0.0000	0.000E+00	0.0000	3.009E-07	0.7847	6.078E-09	0.0158	1.804E-09	0.0047	3.156E-10	0.0008
Total	6.782E-08	0.1768	3.150E-12	0.0000	0.000E+00	0.0000	3.068E-07	0.7999	6.587E-09	0.0172	1.971E-09	0.0051	3.614E-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	7.298E-08	0.1903
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	3.105E-07	0.8097
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	3.835E-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	1.109E-06	7.036E-02	6.153E-03	2.009E-03	5.535E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.908E-02
Sr-90	9.443E-07	4.495E-01	9.077E-03	2.695E-03	4.713E-04	2.087E-01	1.059E-04	1.574E-02	1.635E-03	8.926E-04	6.888E-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	6.492E-10	0.3256	2.686E-15	0.0000	5.692E-11	0.0285	4.977E-12	0.0025	1.625E-12	0.0008	4.477E-13	0.0002
Sr-90	3.951E-12	0.0020	8.166E-15	0.0000	8.548E-10	0.4287	1.726E-11	0.0087	5.124E-12	0.0026	8.963E-13	0.0004
Total	6.531E-10	0.3276	1.085E-14	0.0000	9.117E-10	0.4572	2.224E-11	0.0112	6.750E-12	0.0034	1.344E-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	7.131E-10	0.3577
Sr-90	3.581E-10	0.1796	2.340E-13	0.0001	3.478E-11	0.0174	3.614E-12	0.0018	1.973E-12	0.0010	1.281E-09	0.6423
Total	3.581E-10	0.1796	2.340E-13	0.0001	3.478E-11	0.0174	3.614E-12	0.0018	1.973E-12	0.0010	1.994E-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	6.492E-10	0.3256	2.686E-15	0.0000	0.000E+00	0.0000	5.692E-11	0.0285	4.977E-12	0.0025	1.625E-12	0.0008	4.477E-13	0.0002
Sr-90	3.951E-12	0.0020	8.166E-15	0.0000	0.000E+00	0.0000	8.548E-10	0.4287	1.726E-11	0.0087	5.124E-12	0.0026	8.963E-13	0.0004
Total	6.531E-10	0.3276	1.085E-14	0.0000	0.000E+00	0.0000	9.117E-10	0.4572	2.224E-11	0.0112	6.750E-12	0.0034	1.344E-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	7.131E-10	0.3577
Sr-90	3.581E-10	0.1796	2.340E-13	0.0001	0.000E+00	0.0000	3.478E-11	0.0174	3.614E-12	0.0018	1.973E-12	0.0010	1.281E-09	0.6423
Total	3.581E-10	0.1796	2.340E-13	0.0001	0.000E+00	0.0000	3.478E-11	0.0174	3.614E-12	0.0018	1.973E-12	0.0010	1.994E-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	1.023E-13	6.491E-09	5.676E-10	1.853E-10	5.106E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.295E-09
Sr-90	1.153E-15	5.488E-10	1.108E-11	3.290E-12	5.755E-13	3.422E-09	1.736E-12	2.581E-10	2.686E-11	1.464E-11	4.287E-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	5.988E-17	0.8264	2.478E-22	0.0000	5.251E-18	0.0725	4.592E-19	0.0063	1.499E-19	0.0021	4.130E-20	0.0006
Sr-90	4.825E-21	0.0001	9.972E-24	0.0000	1.044E-18	0.0144	2.108E-20	0.0003	6.257E-21	0.0001	1.094E-21	0.0000
Total	5.989E-17	0.8265	2.578E-22	0.0000	6.294E-18	0.0869	4.802E-19	0.0066	1.562E-19	0.0022	4.240E-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	6.578E-17	0.9079
Sr-90	5.028E-18	0.0694	3.286E-21	0.0000	4.886E-19	0.0067	5.084E-20	0.0007	2.772E-20	0.0004	6.676E-18	0.0921
Total	5.028E-18	0.0694	3.286E-21	0.0000	4.886E-19	0.0067	5.084E-20	0.0007	2.772E-20	0.0004	7.246E-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	5.988E-17	0.8264	2.478E-22	0.0000	0.000E+00	0.0000	5.251E-18	0.0725	4.592E-19	0.0063	1.499E-19	0.0021	4.130E-20	0.0006
Sr-90	4.825E-21	0.0001	9.972E-24	0.0000	0.000E+00	0.0000	1.044E-18	0.0144	2.108E-20	0.0003	6.257E-21	0.0001	1.094E-21	0.0000
Total	5.989E-17	0.8265	2.578E-22	0.0000	0.000E+00	0.0000	6.294E-18	0.0869	4.802E-19	0.0066	1.562E-19	0.0022	4.240E-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	6.578E-17	0.9079
Sr-90	5.028E-18	0.0694	3.286E-21	0.0000	0.000E+00	0.0000	4.886E-19	0.0067	5.084E-20	0.0007	2.772E-20	0.0004	6.676E-18	0.0921
Total	5.028E-18	0.0694	3.286E-21	0.0000	0.000E+00	0.0000	4.886E-19	0.0067	5.084E-20	0.0007	2.772E-20	0.0004	7.246E-17	1.0000

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