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	5.248E-01	5.248E-01	5.248E-01	5.248E-01	5.248E-01	5.248E-01	5.248E-01	5.248E-01
Cs-137	5.320E-10	5.420E-01	5.420E-01	5.420E-01	5.420E-01	5.420E-01	5.420E-01	5.420E-01	5.420E-01
Sr-90	4.820E-10	5.444E-01	5.444E-01	5.444E-01	5.444E-01	5.444E-01	5.444E-01	5.444E-01	5.444E-01
Y-90	1.910E-08	5.275E-01	5.275E-01	5.275E-01	5.275E-01	5.275E-01	5.275E-01	5.275E-01	5.275E-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	9.553E-04	4.176E+01	3.652E+00	1.192E+00	3.285E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.693E+01
Sr-90	5.445E-03	1.785E+03	3.603E+01	1.070E+01	1.872E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.834E+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	5.779E-07	0.1400	2.314E-12	0.0000	3.378E-08	0.0082	2.954E-09	0.0007	9.646E-10	0.0002	2.657E-10	0.0001
Sr-90	2.352E-08	0.0057	4.709E-11	0.0000	3.396E-06	0.8227	6.857E-08	0.0166	2.036E-08	0.0049	3.561E-09	0.0009
Total	6.014E-07	0.1457	4.941E-11	0.0000	3.429E-06	0.8309	7.152E-08	0.0173	2.132E-08	0.0052	3.827E-09	0.0009

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	6.158E-07	0.1492
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	3.512E-06	0.8508
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	4.127E-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	5.779E-07	0.1400	2.314E-12	0.0000	0.000E+00	0.0000	3.378E-08	0.0082	2.954E-09	0.0007	9.646E-10	0.0002	2.657E-10	0.0001
Sr-90	2.352E-08	0.0057	4.709E-11	0.0000	0.000E+00	0.0000	3.396E-06	0.8227	6.857E-08	0.0166	2.036E-08	0.0049	3.561E-09	0.0009
Total	6.014E-07	0.1457	4.941E-11	0.0000	0.000E+00	0.0000	3.429E-06	0.8309	7.152E-08	0.0173	2.132E-08	0.0052	3.827E-09	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= 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	6.158E-07	0.1492
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	3.512E-06	0.8508
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	4.127E-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	9.335E-04	4.081E+01	3.568E+00	1.165E+00	3.210E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.586E+01
Sr-90	5.288E-03	1.734E+03	3.502E+01	1.040E+01	1.818E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.781E+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	5.647E-07	0.1407	2.261E-12	0.0000	3.301E-08	0.0082	2.887E-09	0.0007	9.426E-10	0.0002	2.597E-10	0.0001
Sr-90	2.284E-08	0.0057	4.573E-11	0.0000	3.297E-06	0.8219	6.659E-08	0.0166	1.977E-08	0.0049	3.458E-09	0.0009
Total	5.875E-07	0.1464	4.799E-11	0.0000	3.330E-06	0.8301	6.948E-08	0.0173	2.071E-08	0.0052	3.718E-09	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+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	6.018E-07	0.1500
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	3.410E-06	0.8500
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	4.012E-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	5.647E-07	0.1407	2.261E-12	0.0000	0.000E+00	0.0000	3.301E-08	0.0082	2.887E-09	0.0007	9.426E-10	0.0002	2.597E-10	0.0001
Sr-90	2.284E-08	0.0057	4.573E-11	0.0000	0.000E+00	0.0000	3.297E-06	0.8219	6.659E-08	0.0166	1.977E-08	0.0049	3.458E-09	0.0009
Total	5.875E-07	0.1464	4.799E-11	0.0000	0.000E+00	0.0000	3.330E-06	0.8301	6.948E-08	0.0173	2.071E-08	0.0052	3.718E-09	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+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	6.018E-07	0.1500
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	3.410E-06	0.8500
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	4.012E-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	8.913E-04	3.896E+01	3.407E+00	1.112E+00	3.065E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.379E+01
Sr-90	4.987E-03	1.635E+03	3.302E+01	9.804E+00	1.715E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.680E+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	5.391E-07	0.1422	2.159E-12	0.0000	3.152E-08	0.0083	2.756E-09	0.0007	8.999E-10	0.0002	2.479E-10	0.0001
Sr-90	2.154E-08	0.0057	4.313E-11	0.0000	3.110E-06	0.8204	6.280E-08	0.0166	1.864E-08	0.0049	3.261E-09	0.0009
Total	5.606E-07	0.1479	4.529E-11	0.0000	3.141E-06	0.8287	6.556E-08	0.0173	1.954E-08	0.0052	3.509E-09	0.0009

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	5.745E-07	0.1516
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	3.216E-06	0.8484
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	3.790E-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	5.391E-07	0.1422	2.159E-12	0.0000	0.000E+00	0.0000	3.152E-08	0.0083	2.756E-09	0.0007	8.999E-10	0.0002	2.479E-10	0.0001
Sr-90	2.154E-08	0.0057	4.313E-11	0.0000	0.000E+00	0.0000	3.110E-06	0.8204	6.280E-08	0.0166	1.864E-08	0.0049	3.261E-09	0.0009
Total	5.606E-07	0.1479	4.529E-11	0.0000	0.000E+00	0.0000	3.141E-06	0.8287	6.556E-08	0.0173	1.954E-08	0.0052	3.509E-09	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= 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	5.745E-07	0.1516
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	3.216E-06	0.8484
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	3.790E-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	7.580E-04	3.313E+01	2.897E+00	9.461E-01	2.606E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.724E+01
Sr-90	4.062E-03	1.332E+03	2.690E+01	7.985E+00	1.397E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.368E+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	4.585E-07	0.1475	1.836E-12	0.0000	2.680E-08	0.0086	2.344E-09	0.0008	7.653E-10	0.0002	2.108E-10	0.0001
Sr-90	1.754E-08	0.0056	3.513E-11	0.0000	2.533E-06	0.8149	5.115E-08	0.0165	1.518E-08	0.0049	2.656E-09	0.0009
Total	4.760E-07	0.1532	3.696E-11	0.0000	2.559E-06	0.8236	5.349E-08	0.0172	1.595E-08	0.0051	2.867E-09	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+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	4.886E-07	0.1572
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	2.619E-06	0.8428
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	3.108E-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	4.585E-07	0.1475	1.836E-12	0.0000	0.000E+00	0.0000	2.680E-08	0.0086	2.344E-09	0.0008	7.653E-10	0.0002	2.108E-10	0.0001
Sr-90	1.754E-08	0.0056	3.513E-11	0.0000	0.000E+00	0.0000	2.533E-06	0.8149	5.115E-08	0.0165	1.518E-08	0.0049	2.656E-09	0.0009
Total	4.760E-07	0.1532	3.696E-11	0.0000	0.000E+00	0.0000	2.559E-06	0.8236	5.349E-08	0.0172	1.595E-08	0.0051	2.867E-09	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+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	4.886E-07	0.1572
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	2.619E-06	0.8428
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	3.108E-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	4.772E-04	2.086E+01	1.824E+00	5.956E-01	1.641E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.344E+01
Sr-90	2.260E-03	7.409E+02	1.496E+01	4.442E+00	7.770E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.611E+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= 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	2.886E-07	0.1635	1.156E-12	0.0000	1.687E-08	0.0096	1.475E-09	0.0008	4.818E-10	0.0003	1.327E-10	0.0001
Sr-90	9.758E-09	0.0055	1.954E-11	0.0000	1.409E-06	0.7984	2.846E-08	0.0161	8.447E-09	0.0048	1.478E-09	0.0008
Total	2.984E-07	0.1691	2.070E-11	0.0000	1.426E-06	0.8080	2.993E-08	0.0170	8.929E-09	0.0051	1.610E-09	0.0009

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	3.076E-07	0.1743
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	1.457E-06	0.8257
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	1.765E-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	2.886E-07	0.1635	1.156E-12	0.0000	0.000E+00	0.0000	1.687E-08	0.0096	1.475E-09	0.0008	4.818E-10	0.0003	1.327E-10	0.0001
Sr-90	9.758E-09	0.0055	1.954E-11	0.0000	0.000E+00	0.0000	1.409E-06	0.7984	2.846E-08	0.0161	8.447E-09	0.0048	1.478E-09	0.0008
Total	2.984E-07	0.1691	2.070E-11	0.0000	0.000E+00	0.0000	1.426E-06	0.8080	2.993E-08	0.0170	8.929E-09	0.0051	1.610E-09	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= 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	3.076E-07	0.1743
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	1.457E-06	0.8257
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	1.765E-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	9.444E-05	4.128E+00	3.610E-01	1.179E-01	3.247E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.640E+00
Sr-90	2.902E-04	9.516E+01	1.922E+00	5.705E-01	9.979E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.775E+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+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	5.712E-08	0.2303	2.288E-13	0.0000	3.340E-09	0.0135	2.920E-10	0.0012	9.536E-11	0.0004	2.627E-11	0.0001
Sr-90	1.253E-09	0.0051	2.510E-12	0.0000	1.810E-07	0.7296	3.655E-09	0.0147	1.085E-09	0.0044	1.898E-10	0.0008
Total	5.838E-08	0.2354	2.739E-12	0.0000	1.843E-07	0.7431	3.947E-09	0.0159	1.180E-09	0.0048	2.160E-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	6.088E-08	0.2454
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	1.871E-07	0.7546
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	2.480E-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	5.712E-08	0.2303	2.288E-13	0.0000	0.000E+00	0.0000	3.340E-09	0.0135	2.920E-10	0.0012	9.536E-11	0.0004	2.627E-11	0.0001
Sr-90	1.253E-09	0.0051	2.510E-12	0.0000	0.000E+00	0.0000	1.810E-07	0.7296	3.655E-09	0.0147	1.085E-09	0.0044	1.898E-10	0.0008
Total	5.838E-08	0.2354	2.739E-12	0.0000	0.000E+00	0.0000	1.843E-07	0.7431	3.947E-09	0.0159	1.180E-09	0.0048	2.160E-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	6.088E-08	0.2454
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	1.871E-07	0.7546
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	2.480E-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	9.229E-07	4.034E-02	3.528E-03	1.152E-03	3.173E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.534E-02
Sr-90	8.243E-07	2.703E-01	5.458E-03	1.620E-03	2.834E-04	1.255E-01	6.366E-05	6.240E-03	6.483E-04	3.539E-04	4.104E-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	5.582E-10	0.4111	2.236E-15	0.0000	3.263E-11	0.0240	2.854E-12	0.0021	9.318E-13	0.0007	2.567E-13	0.0002
Sr-90	3.559E-12	0.0026	7.128E-15	0.0000	5.140E-10	0.3785	1.038E-11	0.0076	3.081E-12	0.0023	5.390E-13	0.0004
Total	5.618E-10	0.4137	9.364E-15	0.0000	5.466E-10	0.4025	1.323E-11	0.0097	4.013E-12	0.0030	7.957E-13	0.0006

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	5.949E-10	0.4381
Sr-90	2.154E-10	0.1586	1.407E-13	0.0001	1.379E-11	0.0102	1.433E-12	0.0011	7.822E-13	0.0006	7.630E-10	0.5619
Total	2.154E-10	0.1586	1.407E-13	0.0001	1.379E-11	0.0102	1.433E-12	0.0011	7.822E-13	0.0006	1.358E-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	5.582E-10	0.4111	2.236E-15	0.0000	0.000E+00	0.0000	3.263E-11	0.0240	2.854E-12	0.0021	9.318E-13	0.0007	2.567E-13	0.0002
Sr-90	3.559E-12	0.0026	7.128E-15	0.0000	0.000E+00	0.0000	5.140E-10	0.3785	1.038E-11	0.0076	3.081E-12	0.0023	5.390E-13	0.0004
Total	5.618E-10	0.4137	9.364E-15	0.0000	0.000E+00	0.0000	5.466E-10	0.4025	1.323E-11	0.0097	4.013E-12	0.0030	7.957E-13	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= 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	5.949E-10	0.4381
Sr-90	2.154E-10	0.1586	1.407E-13	0.0001	0.000E+00	0.0000	1.379E-11	0.0102	1.433E-12	0.0011	7.822E-13	0.0006	7.630E-10	0.5619
Total	2.154E-10	0.1586	1.407E-13	0.0001	0.000E+00	0.0000	1.379E-11	0.0102	1.433E-12	0.0011	7.822E-13	0.0006	1.358E-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	8.513E-14	3.721E-09	3.254E-10	1.063E-10	2.927E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.182E-09
Sr-90	1.006E-15	3.300E-10	6.665E-12	1.979E-12	3.461E-13	2.057E-09	1.044E-12	1.023E-10	1.065E-11	5.806E-12	2.516E-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	5.149E-17	0.8761	2.062E-22	0.0000	3.010E-18	0.0512	2.632E-19	0.0045	8.596E-20	0.0015	2.368E-20	0.0004
Sr-90	4.346E-21	0.0001	8.704E-24	0.0000	6.276E-19	0.0107	1.267E-20	0.0002	3.763E-21	0.0001	6.581E-22	0.0000
Total	5.150E-17	0.8762	2.149E-22	0.0000	3.638E-18	0.0619	2.759E-19	0.0047	8.972E-20	0.0015	2.434E-20	0.0004

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	5.488E-17	0.9337
Sr-90	3.024E-18	0.0514	1.976E-21	0.0000	1.937E-19	0.0033	2.015E-20	0.0003	1.099E-20	0.0002	3.900E-18	0.0663
Total	3.024E-18	0.0514	1.976E-21	0.0000	1.937E-19	0.0033	2.015E-20	0.0003	1.099E-20	0.0002	5.878E-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	5.149E-17	0.8761	2.062E-22	0.0000	0.000E+00	0.0000	3.010E-18	0.0512	2.632E-19	0.0045	8.596E-20	0.0015	2.368E-20	0.0004
Sr-90	4.346E-21	0.0001	8.704E-24	0.0000	0.000E+00	0.0000	6.276E-19	0.0107	1.267E-20	0.0002	3.763E-21	0.0001	6.581E-22	0.0000
Total	5.150E-17	0.8762	2.149E-22	0.0000	0.000E+00	0.0000	3.638E-18	0.0619	2.759E-19	0.0047	8.972E-20	0.0015	2.434E-20	0.0004

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	5.488E-17	0.9337
Sr-90	3.024E-18	0.0514	1.976E-21	0.0000	0.000E+00	0.0000	1.937E-19	0.0033	2.015E-20	0.0003	1.099E-20	0.0002	3.900E-18	0.0663
Total	3.024E-18	0.0514	1.976E-21	0.0000	0.000E+00	0.0000	1.937E-19	0.0033	2.015E-20	0.0003	1.099E-20	0.0002	5.878E-17	1.0000

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