

Scenario A

(version 2)

Iurii Bonchuk

Radiation Protection Institute
Kiev, Ukraine



bonchuk@rpi.kiev.ua

Dose coefficients

Effective dose from cloud immersion ($\text{Sv}\cdot\text{a}^{-1}$ per $\text{Bq}\cdot\text{m}^{-3}$)

Radionuclide	EMRAS II	FGR 12 * ("ICRP-26")	FGR 12 * ("ICRP-60")
Co-60	4.0E-06	3.98E-06	3.75E-06
Cs-137 (+0.946*Ba-137m)	8.7E-07	8.60E-07	8.06E-07
I-131	5.8E-07	5.74E-07	5.34E-07
Kr-85	3.3E-09	3.76E-09	7.58E-09
Cs-137		2.44E-10	2.93E-09
Ba-137m		9.09E-07	8.49E-07

Eckerman, K.F., Ryman, J.C. 1993. External Exposure to Radionuclides in Air, Water and Soil, Federal Guidance Report No.12, US Environmental Protection Agency, Washington, DC.

Dose coefficients

Effective dose from surface deposits ($\text{Sv}\cdot\text{a}^{-1}$ per $\text{Bq}\cdot\text{m}^{-2}$)

Radionuclide	EMRAS II	FGR 12 * ("ICRP-26")	FGR 12 * ("ICRP-60")
Co-60	9.44E-08	7.42E-08	7.25E-08
Cs-137 (+0.946*Ba-137m)	9.44E-11	1.75E-08	1.73E-08
I-131	1.15E-08	1.19E-08	1.15E-08
Cs-137		8.99E-12	9.44E-11
Ba-137m		1.85E-08	1.82E-08

Eckerman, K.F., Ryman, J.C. 1993. External Exposure to Radionuclides in Air, Water and Soil, Federal Guidance Report No.12, US Environmental Protection Agency, Washington, DC.

Atmospheric discharge (results, Sv·a⁻¹)

Pathway		Co-60	I-131	Cs-137	Kr-85
ground deposition		1.0E-03	5.1E-07	3.4E-04	
cloud immersion		9.3E-08	1.3E-08	2.0E-08	1.8E-10
inhalation		6.0E-06	1.4E-06	9.0E-07	
ingestion	cow milk	1.6E-05	1.5E-05	5.6E-05	
	beef	1.1E-05	1.5E-06	2.8E-05	
	sheep	9.4E-08	1.3E-08	1.5E-06	
	meat	1.1E-05	1.5E-06	3.0E-05	
	green vegetables	6.7E-08	4.9E-08	2.6E-06	
	root vegetables	4.2E-07	3.1E-07	1.6E-05	
	domestic fruits	5.8E-08	4.2E-08	2.2E-06	
	vegetables, fruits	5.5E-07	4.0E-07	2.1E-05	
	vegetables (SRS-19)	1.6E-05	8.9E-06	6.0E-05	
	total	2.7E-05	1.7E-05	1.1E-04	
Total		1.1E-03	1.9E-05	4.5E-04	1.8E-10

Marine discharge (results, $Sv \cdot a^{-1}$)

Pathway		Co-60	Cs-137	Sr-90
external exposure from sediment		2.0E-03	2.2E-05	1.5E-06
ingestion	marine fish	4.5E-05	5.0E-05	2.2E-06
	crustaceans	1.1E-04	7.3E-06	1.1E-06
	mollusca	4.9E-05	3.3E-06	4.8E-07
	sediments	2.9E-06	4.8E-07	3.5E-07
	total	2.1E-04	6.1E-05	4.1E-06
Total		2.2E-03	8.3E-05	5.6E-06

Thank you for your attention!