

Table 1. 12. Average radioactivity of Sr⁹⁰ in water (picocurie/kg)

Years	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Sr ⁹⁰	—	—	—	—	0.65	0.57	0.59	0.65	0.53	0.56

Using all these data, we calculated the median annual intake of Sr-90 and Cs-137 of the population of the Semipalatinsk region (table 1.13) and of the population of the maximal radiation risk zone (table 1.14).

Table 1. 13. The median annual intake (with diet) of Sr⁹⁰ and Cs¹³⁷ of the population of Semipalatinsk region (nanocurie)

Years	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Sr ⁹⁰										
Adults	2.94	2.81	2.44	2.44	2.31	4.01	2.30	2.57	3.21	2.57
Children	2.39	1.98	1.79	1.90	2.53	2.57	1.71	1.96	1.84	1.51
Cs ¹³⁷										
Adults	3.69	1.98	1.51	1.24	0.75	45.2*	20.2*	9.52	4.3	5.6
Children	3.59	1.52	1.21	1.10	0.72	53.3*	29.22*	2.9	17.3	14.5

Note: the increased levels in 1986-1987 could be explained by the fallout after the Chernobyl accident

Table 1. 14. The median annual intake of Sr⁹⁰ with diet of the population of exposed area (nanocurie)

Years	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Adults	3.91*	2.98*	2.53*	3.37*	4.03	5.90	7.44	6.10	6.43	6.51
Children	3.80*	2.95*	2.22*	3.77*	3.84	4.78	5.94	3.72	5.81	3.92

* - without water

It was calculated, that the year equivalent dose of the bone marrow would be 3 cSv, if the intake of Sr-90 through the digestive tract is 0.32 microCurie per year, and that if the intake of Cs-137 through the digestive tract is 12 millicurie per year, the year equivalent dose of the whole body would be 0.5 cSv (Committee on ..., 1980).

Using these data, the year equivalent doses of the populations of the severely exposed districts (Abaisky, Abralinsky, Jana-Semeisky and Beskaragaisky) and the whole Semipalatinsk region were calculated from the intake of Sr-90 and Cs-137 with the diet (table 1.15).

The level of Sr-90 in the bone tissues of children would be 5 times higher than in the adult bone tissues even if the intake of radionuclides is equal. In this case, the dose equivalent of the children would also be 5 times higher (table 1.15).

Table 1. 15. Doses equivalent of skeleton of the population of the Semipalatinsk region and exposed zones (extreme and maximal risk) from intake of Sr⁹⁰ and Cs¹³⁷ with diet

Years	Dose rate, millirem/year			
	Exposed districts		Semipalatinsk region (whole)	
	Adults	Children	Adults	Children
	Sr ⁹⁰			
1981	36.66	178.2	27.56	112.2
1982	27.94	138.3	26.34	92.8
1983	23.72	104.1	22.88	83.9
1984	31.59	176.7	22.88	89.1
1985	37.78	180.0	21.66	71.7
1986	55.31	224.1	37.59	120.5
1987	69.75	278.5	21.56	80.2