

	Operating mode	Assigned Protection Factors
Facepiece, loose-fitting.	Powered air-purifying respirators.	25
II. Atmosphere supplying respirators [particulate, gases and vapors ]:		
1. Air-line respirator:		
Facepiece, half	Demand .....	10
Facepiece, half	Continuous Flow .....	50
Facepiece, half	Pressure Demand .....	50
Facepiece, full	Demand .....	100
Facepiece, full	Continuous Flow .....	1000
Facepiece, full	Pressure Demand .....	1000
Helmet/hood ....	Continuous Flow .....	1000
Facepiece, loose-fitting.	Continuous Flow .....	25
Suit .....	Continuous Flow .....	(e)
2. Self-contained breathing Apparatus (SCBA):		
Facepiece, full	Demand .....	<sup>h</sup> 100
Facepiece, full	Pressure Demand .....	<sup>i</sup> 10,000
Facepiece, full	Demand, Recirculating.	<sup>h</sup> 100
Facepiece, full	Positive Pressure Recirculating.	<sup>i</sup> 10,000
III. Combination Respirators:		
Any combination of air-purifying and atmosphere-supplying respirators.	Assigned protection factor for type and mode of operation as listed above.	

<sup>a</sup>These assigned protection factors apply only in a respiratory protection program that meets the requirements of this Part. They are applicable only to airborne radiological hazards and may not be appropriate to circumstances when chemical or other respiratory hazards exist instead of, or in addition to, radioactive hazards. Selection and use of respirators for such circumstances must also comply with Department of Labor regulations.

Radioactive contaminants for which the concentration values in Table 1, Column 3 of Appendix B to Part 20 are based on internal dose due to inhalation may, in addition, present external exposure hazards at higher concentrations. Under these circumstances, limitations on occupancy may have to be governed by external dose limits.

<sup>b</sup>Air purifying respirators with APF <100 must be equipped with particulate filters that are at least 95 percent efficient. Air purifying respirators with APF = 100 must be equipped with particulate filters that are at least 99 percent efficient. Air purifying respirators with APFs >100 must be equipped with particulate filters that are at least 99.97 percent efficient.

<sup>c</sup>The licensee may apply to the Commission for the use of an APF greater than 1 for sorbent cartridges as protection against airborne radioactive gases and vapors (e.g., radiiodine).

<sup>d</sup>Licensees may permit individuals to use this type of respirator who have not been medically screened or fit tested on the device provided that no credit be taken for their use in estimating intake or dose. It is also recognized that it is difficult to perform an effective positive or negative pressure pre-use user seal check on this type of device. All other respiratory protection program requirements listed in § 20.1703 apply. An assigned protection factor has not been assigned for these devices. However, an APF equal to 10 may be used if the licensee can demonstrate a fit factor of at least 100 by use of a validated or evaluated, qualitative or quantitative fit test.

<sup>e</sup>Under-chin type only. No distinction is made in this Appendix between elastomeric half-masks with replaceable cartridges and those designed with the filter medium as an integral part of the facepiece (e.g., disposable or reusable disposable). Both types are acceptable so long as the seal area of the latter contains some substantial type of seal-enhancing material such as rubber or plastic, the two or more suspension straps are adjustable, the filter medium is at least 95 percent efficient and all other requirements of this Part are met.

<sup>f</sup>The assigned protection factors for gases and vapors are not applicable to radioactive contaminants that present an absorption or submersion hazard. For tritium oxide vapor, approximately one-third of the intake occurs by absorption through the skin so that an overall protection factor of 3 is appropriate when atmosphere-supplying respirators are used to protect against tritium oxide. Exposure to radioactive noble gases is not considered a significant respiratory hazard, and protective actions for these contaminants should be based on external (submersion) dose considerations.

<sup>g</sup>No NIOSH approval schedule is currently available for atmosphere supplying suits. This equipment may be used in an acceptable respiratory protection program as long as all the other minimum program requirements, with the exception of fit testing, are met (i.e., § 20.1703).

<sup>h</sup>The licensee should implement institutional controls to assure that these devices are not used in areas immediately dangerous to life or health (IDLH).

<sup>i</sup>This type of respirator may be used as an emergency device in unknown concentrations for protection against inhalation hazards. External radiation hazards and other limitations to permitted exposure such as skin absorption shall be taken into account in these circumstances. This device may not be used by any individual who experiences perceptible outward leakage of breathing gas while wearing the device.

[64 FR 54558, Oct. 7, 1999; 64 FR 55524, Oct. 13, 1999]

APPENDIX B TO PART 20—ANNUAL LIMITS ON INTAKE (ALIs) AND DERIVED AIR CONCENTRATIONS (DACs) OF RADIONUCLIDES FOR OCCUPATIONAL EXPOSURE; EFFLUENT CONCENTRATIONS; CONCENTRATIONS FOR RELEASE TO SEWERAGE

INTRODUCTION

For each radionuclide table 1 indicates the chemical form which is to be used for selecting the appropriate ALI or DAC value. The ALIs and DACs for inhalation are given for an aerosol with an activity median aerodynamic diameter (AMAD) of 1 µm and for three classes (D,W,Y) of radioactive material, which refer to their retention (approximately days, weeks or years) in the pulmonary region of the lung. This classification applies to a range of clearance half-times of less than 10 days for D, for W from 10 to 100 days, and for Y greater than 100 days. The class (D, W, or Y) given in the column headed "Class" applies only to the inhalation ALIs and DACs given in table 1, columns 2 and 3. Table 2 provides concentration limits for airborne and liquid effluents released to the general environment. Table 3 provides concentration limits for discharges to sanitary sewer systems.

NOTATION

The values in tables 1, 2, and 3 are presented in the computer "E" notation. In this notation a value of 6E-02 represents a value of 6x10<sup>-2</sup> or 0.06, 6E+2 represents 6x10<sup>2</sup> or 600, and 6E+0 represents 6x10<sup>0</sup> or 6.

TABLE 1 "OCCUPATIONAL"

Note that the columns in table 1, of this appendix captioned "Oral Ingestion ALI," "Inhalation ALI," and "DAC," are applicable

to occupational exposure to radioactive material.

The ALIs in this appendix are the annual intakes of a given radionuclide by "Reference Man" which would result in either (1) a committed effective dose equivalent of 5 rems (stochastic ALI) or (2) a committed dose equivalent of 50 rems to an organ or tissue (non-stochastic ALI). The stochastic ALIs were derived to result in a risk, due to irradiation of organs and tissues, comparable to the risk associated with deep dose equivalent to the whole body of 5 rems. The derivation includes multiplying the committed dose equivalent to an organ or tissue by a weighting factor,  $w_T$ . This weighting factor is the proportion of the risk of stochastic effects resulting from irradiation of the organ or tissue,  $T$ , to the total risk of stochastic effects when the whole body is irradiated uniformly. The values of  $w_T$  are listed under the definition of weighting factor in §20.1003. The non-stochastic ALIs were derived to avoid non-stochastic effects, such as prompt damage to tissue or reduction in organ function.

A value of  $w_T=0.06$  is applicable to each of the five organs or tissues in the "remainder" category receiving the highest dose equivalents, and the dose equivalents of all other remaining tissues may be disregarded. The following parts of the GI tract—stomach, small intestine, upper large intestine, and lower large intestine—are to be treated as four separate organs.

Note that the dose equivalents for extremities (hands and forearms, feet and lower legs), skin, and lens of the eye are not considered in computing the committed effective dose equivalent, but are subject to limits that must be met separately.

When an ALI is defined by the stochastic dose limit, this value alone, is given. When an ALI is determined by the non-stochastic dose limit to an organ, the organ or tissue to which the limit applies is shown, and the ALI for the stochastic limit is shown in parentheses. (Abbreviated organ or tissue designations are used: LLI wall = lower large intestine wall; St. wall = stomach wall; Blad wall = bladder wall; and Bone surf = bone surface.)

The use of the ALIs listed first, the more limiting of the stochastic and non-stochastic ALIs, will ensure that non-stochastic effects are avoided and that the risk of stochastic effects is limited to an acceptably low value. If, in a particular situation involving a radionuclide for which the non-stochastic ALI is limiting, use of that non-stochastic ALI is considered unduly conservative, the licensee may use the stochastic ALI to determine the committed effective dose equivalent. However, the licensee shall also ensure that the 50-rem dose equivalent limit for any organ or tissue is not exceeded by the sum of the external deep dose equivalent plus the

internal committed dose to that organ (not the effective dose). For the case where there is no external dose contribution, this would be demonstrated if the sum of the fractions of the nonstochastic ALIs ( $ALI_{ns}$ ) that contribute to the committed dose equivalent to the organ receiving the highest dose does not exceed unity (*i.e.*,  $\Sigma$  (intake (in  $\mu\text{Ci}$ ) of each radionuclide/ $ALI_{ns}$ )  $< 1.0$ ). If there is an external deep dose equivalent contribution of  $H_d$  then this sum must be less than  $1-(H_d/50)$  instead of being  $< 1.0$ .

The derived air concentration (DAC) values are derived limits intended to control chronic occupational exposures. The relationship between the DAC and the ALI is given by:  $DAC=ALI(\text{in } \mu\text{Ci})/(2000 \text{ hours per working year} \times 60 \text{ minutes/hour} \times 2 \times 10^4 \text{ ml per minute}) = [ALI/2.4 \times 10^9] \mu\text{Ci/ml}$ , where  $2 \times 10^4$  ml is the volume of air breathed per minute at work by "Reference Man" under working conditions of "light work."

The DAC values relate to one of two modes of exposure: either external submersion or the internal committed dose equivalents resulting from inhalation of radioactive materials. Derived air concentrations based upon submersion are for immersion in a semi-infinite cloud of uniform concentration and apply to each radionuclide separately.

The ALI and DAC values relate to exposure to the single radionuclide named, but also include contributions from the in-growth of any daughter radionuclide produced in the body by the decay of the parent. However, intakes that include both the parent and daughter radionuclides should be treated by the general method appropriate for mixtures.

The value of ALI and DAC do not apply directly when the individual both ingests and inhales a radionuclide, when the individual is exposed to a mixture of radionuclides by either inhalation or ingestion or both, or when the individual is exposed to both internal and external radiation (see §20.1202). When an individual is exposed to radioactive materials which fall under several of the translocation classifications (*i.e.*, Class D, Class W, or Class Y) of the same radionuclide, the exposure may be evaluated as if it were a mixture of different radionuclides.

It should be noted that the classification of a compound as Class D, W, or Y is based on the chemical form of the compound and does not take into account the radiological half-life of different radioisotopes. For this reason, values are given for Class D, W, and Y compounds, even for very short-lived radionuclides.

TABLE 2

The columns in table 2 of this appendix captioned "Effluents," "Air," and "Water," are applicable to the assessment and control of dose to the public, particularly in the implementation of the provisions of §20.1302. The concentration values given in columns 1 and

2 of table 2 are equivalent to the radionuclide concentrations which, if inhaled or ingested continuously over the course of a year, would produce a total effective dose equivalent of 0.05 rem (50 millirem or 0.5 millisieverts).

Consideration of non-stochastic limits has not been included in deriving the air and water effluent concentration limits because non-stochastic effects are presumed not to occur at the dose levels established for individual members of the public. For radionuclides, where the non-stochastic limit was governing in deriving the occupational DAC, the stochastic ALI was used in deriving the corresponding airborne effluent limit in table 2. For this reason, the DAC and airborne effluent limits are not always proportional as was the case in appendix B to §§20.1-20.601.

The air concentration values listed in table 2, column 1, were derived by one of two methods. For those radionuclides for which the stochastic limit is governing, the occupational stochastic inhalation ALI was divided by  $2.4 \times 10^9$  ml, relating the inhalation ALI to the DAC, as explained above, and then divided by a factor of 300. The factor of 300 includes the following components: a factor of 50 to relate the 5-rem annual occupational dose limit to the 0.1-rem limit for members of the public, a factor of 3 to adjust for the difference in exposure time and the inhalation rate for a worker and that for members of the public; and a factor of 2 to adjust the occupational values (derived for adults) so that they are applicable to other age groups.

For those radionuclides for which submersion (external dose) is limiting, the occupational DAC in table 1, column 3, was divided by 219. The factor of 219 is composed of a factor of 50, as described above, and a factor of 4.38 relating occupational exposure for 2,000 hours per year to full-time exposure (8,760 hours per year). Note that an additional factor of 2 for age considerations is not warranted in the submersion case.

The water concentrations were derived by taking the most restrictive occupational stochastic oral ingestion ALI and dividing by  $7.3 \times 10^7$ . The factor of  $7.3 \times 10^7$  (ml) includes the following components: the factors of 50 and 2 described above and a factor of  $7.3 \times 10^5$  (ml) which is the annual water intake of "Reference Man."

Note 2 of this appendix provides groupings of radionuclides which are applicable to unknown mixtures of radionuclides. These groupings (including occupational inhalation ALIs and DACs, air and water effluent concentrations and sewerage) require demonstrating that the most limiting radionuclides in successive classes are absent. The limit for the unknown mixture is defined when the presence of one of the listed radionuclides cannot be definitely excluded either

from knowledge of the radionuclide composition of the source or from actual measurements.

TABLE 3 "SEWER DISPOSAL"

The monthly average concentrations for release to sanitary sewers are applicable to the provisions in §20.2003. The concentration values were derived by taking the most restrictive occupational stochastic oral ingestion ALI and dividing by  $7.3 \times 10^6$  (ml). The factor of  $7.3 \times 10^6$  (ml) is composed of a factor of  $7.3 \times 10^5$  (ml), the annual water intake by "Reference Man," and a factor of 10, such that the concentrations, if the sewage released by the licensee were the only source of water ingested by a reference man during a year, would result in a committed effective dose equivalent of 0.5 rem.

LIST OF ELEMENTS

Name	Atomic	
	Symbol	No.
Actinium .....	Ac	89
Aluminum .....	Al	13
Americium .....	Am	95
Antimony .....	Sb	51
Argon .....	Ar	18
Arsenic .....	As	33
Astatine .....	At	85
Barium .....	Ba	56
Berkelium .....	Bk	97
Beryllium .....	Be	4
Bismuth .....	Bi	83
Bromine .....	Br	35
Cadmium .....	Cd	48
Calcium .....	Ca	20
Californium .....	Cf	98
Carbon .....	C	6
Cerium .....	Ce	58
Cesium .....	Cs	55
Chlorine .....	Cl	17
Chromium .....	Cr	24
Cobalt .....	Co	27
Copper .....	Cu	29
Curium .....	Cm	96
Dysprosium .....	Dy	66
Einsteinium .....	Es	99
Erbium .....	Er	68
Europium .....	Eu	63
Fermium .....	Fm	100
Fluorine .....	F	9
Francium .....	Fr	87
Gadolinium .....	Gd	64
Gallium .....	Ga	31
Germanium .....	Ge	32
Gold .....	Au	79
Hafnium .....	Hf	72
Holmium .....	Ho	67
Hydrogen .....	H	1
Indium .....	In	49
Iodine .....	I	53
Iridium .....	Ir	77
Iron .....	Fe	26
Krypton .....	Kr	36
Lanthanum .....	La	57
Lead .....	Pb	82
Lutetium .....	Lu	71
Magnesium .....	Mg	12
Manganese .....	Mn	25

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LIST OF ELEMENTS—Continued

LIST OF ELEMENTS—Continued

Name	Atomic	
	Symbol	No.
Mendelevium .....	Md	101
Mercury .....	Hg	80
Molybdenum .....	Mo	42
Neodymium .....	Nd	60
Neptunium .....	Np	93
Nickel .....	Ni	28
Niobium .....	Nb	41
Nitrogen .....	N	7
Osmium .....	Os	76
Oxygen .....	O	8
Palladium .....	Pd	46
Phosphorus .....	P	15
Platinum .....	Pt	78
Plutonium .....	Pu	94
Polonium .....	Po	84
Potassium .....	K	19
Praseodymium .....	Pr	59
Promethium .....	Pm	61
Protactinium .....	Pa	91
Radium .....	Ra	88
Radon .....	Rn	86
Rhenium .....	Re	75
Rhodium .....	Rh	45
Rubidium .....	Rb	37
Ruthenium .....	Ru	44
Samarium .....	Sm	62

Name	Atomic	
	Symbol	No.
Scandium .....	Sc	21
Selenium .....	Se	34
Silicon .....	Si	14
Silver .....	Ag	47
Sodium .....	Na	11
Strontium .....	Sr	38
Sulfur .....	S	16
Tantalum .....	Ta	73
Technetium .....	Tc	43
Tellurium .....	Te	52
Terbium .....	Tb	65
Thallium .....	Tl	81
Thorium .....	Th	90
Thulium .....	Tm	69
Tin .....	Sn	50
Titanium .....	Ti	22
Tungsten .....	W	74
Uranium .....	U	92
Vanadium .....	V	23
Xenon .....	Xe	54
Ytterbium .....	Yb	70
Yttrium .....	Y	39
Zinc .....	Zn	30
Zirconium .....	Zr	40

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentration		Table 3 Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	
			Oral			Air ( $\mu\text{Ci}/\text{m}^3$ )	Water ( $\mu\text{Ci}/\text{ml}$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{ml}$ )
			Oral Ingestion	Inhalation				
ALI ( $\mu\text{Ci}$ )	ALI ( $\mu\text{Ci}$ )	DAC ( $\mu\text{Ci}/\text{m}^3$ )						
1	Hydrogen-3	Water, DAC includes skin absorption	8E+4	8E+4	2E-5	1E-7	1E-3	1E-2
Gas (HT or T <sub>2</sub> ) Submersion <sup>1</sup> : Use above values as HT and T <sub>2</sub> oxidize in air and in the body to HTO								
4	Beryllium-7	W, all compounds except those given for Y	4E+4	2E+4	9E-6	3E-8	6E-4	6E-3
		Y, oxides, halides, and nitrates	-	2E+4	8E-6	3E-8	-	-
4	Beryllium-10	W, see 7Be	1E+3	2E+2	6E-8	2E-10	-	-
		LLI wall	(1E+3)	-	-	-	2E-5	2E-4
		Y, see 7Be	-	1E+1	6E-9	2E-11	-	-
6	Carbon-11 <sup>2</sup>	Monoxide	-	1E+6	5E-4	2E-6	-	-
		Dioxide	-	6E+5	3E-4	9E-7	-	-
		Compounds	4E+5	4E+5	2E-4	6E-7	6E-3	6E-2
6	Carbon-14	Monoxide	-	2E+6	7E-4	2E-6	-	-
		Dioxide	-	2E+5	9E-5	3E-7	-	-
		Compounds	2E+3	2E+3	1E-6	3E-9	3E-5	3E-4

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentration		Table 3 Releases to Sewers	
			Col. 1	Col. 2	Col. 3	Col. 1	Col.2		
			Oral Ingestion		Inhalation		Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Monthly Average Concentration ( $\mu$ Ci/ml)
			ALI ( $\mu$ Ci)	ALI ( $\mu$ Ci)	DAC ( $\mu$ Ci/ml)				
7	Nitrogen-13 <sup>2</sup>	Submersion <sup>1</sup>	-	4E-6	2E-8	-	-	-	
8	Oxygen-15 <sup>2</sup>	Submersion <sup>1</sup>	-	4E-6	2E-8	-	-	-	
9	Fluorine-18 <sup>2</sup>	D, fluorides of H, Li, Na, K, Rb, Cs, and Fr	5e+4	7E+4	3E-5	1E-7	-	-	
		St wall	(5E+4)	-	-	-	7E-4	7E3	
		W, fluorides of Be, Mg	-	9e+4	4e-5	1e-7	-	-	
		Ca, Sr, Ba, Ra, Al, Ga, In, Ti, As, Sb, Bi, Fe, Ru, Os, Co, Ni, Pd, Pt, Cu, Ag, Au, Zn, Cd, Hg, Sc, Y, Ti, Zr, V, Nb, Ta, Nm, Tc, and Re y, LANTHANUM FLUORIDE	-	8e+4	3e-5	1e-7	-	-	
11	Sodium-22	D, all compounds	4E+2	6E+2	3E-7	9E-10	6E-6	6E-5	
11	Sodium-24	D, all compounds	4E+3	5E+3	2E-6	7E-9	5E-5	5E-4	
12	Magnesium-28	D, all compounds	7E+2	2E+3	7E-7	2E-9	9E-6	9E-5	
		except those given for W W, oxides, hydroxides, carbides, halides, and nitrates	-	1E+3	5E-7	2E-9	-	-	
13	Aluminum-26	D, all compounds	4E+2	6E+1	3E-8	9E-11	6E-6	6E-5	
		except those given for W W, oxides, hydroxides, carbides, halides, and nitrates	-	9E+1	4E-8	1E-10	-	-	

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Col. 2	Col. 3	Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Inhalation				
			ALI ( $\mu\text{Ci}$ )	ALI ( $\mu\text{Ci}$ )	DAC ( $\mu\text{Ci}/\text{m}^3$ )			
14	Silicon-31	D, all compounds except those given for W and Y	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
		W, oxides, hydroxides, carbides, and nitrates	-	3E+4	1E-5	5E-8	-	-
		Y, aluminosilicate glass	-	3E+4	1E-5	4E-8	-	-
14	Silicon-32	D, see $^{31}\text{Si}$	2E+3 LLI wall (3E+3)	2E+2	1E-7	3E-10	-	-
		W, see $^{31}\text{Si}$	-	1E+2	5E-8	2E-10	4E-5	4E-4
		Y, see $^{31}\text{Si}$	-	5E+0	2E-9	7E-12	-	-
15	Phosphorus-32	D, all compounds except phosphates given for W	6E+2	9E+2	4E-7	1E-9	9E-6	9E-5
		W, phosphates of $\text{Zn}^{2+}$ , $\text{S}^{3+}$ , $\text{Mg}^{2+}$ , $\text{Fe}^{3+}$ , $\text{Bi}^{3+}$ , and lanthanides	-	4E+2	2E-7	5E-10	-	-
15	Phosphorus-33	D, see $^{32}\text{P}$	6E+3	8E+3	4E-6	1E-8	8E-5	8E-4
		W, see $^{32}\text{P}$	-	3E+3	1E-6	4E-9	-	-
16	Sulfur-35	Vapor	-	1E+4	6E-6	2E-8	-	-
		D, sulfides and sulfates except those given for W	1E+4 LLI wall (8E+3)	2E+4	7E-6	2E-8	-	-
		W, elemental sulfur, sulfides of Sr, Ba, Ge, Sn, Pb, As, Sb, Bi, Cu, Ag, Au, Zn, Cd, Hg, W, and Mo. Sulfates of Ca, Sr, Ba, Ra, As, Sb, and Bi	6E+3	-	-	-	1E-4	1E-3
17	Chlorine-36	D, chlorides of H, Li, Na, K, Rb, Cs, and Fr	2E+3	2E+3	1E-6	3E-9	2E-5	2E-4
		W, chlorides of lanthanides, Be, Mg, Ca, Sr, Ba, Ra, Al, Ga, In, Tl, Ge, Sn, Pb, As, Sb, Bi, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Cu, Ag, Au, Zn, Cd, Mg, Sc, Y, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Tc, and Re	-	2E+2	1E-7	3E-10	-	-

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI (μCi)	Col. 2	Col. 3	Col. 1 Air (μCi/ml)	Col. 2 Water (μCi/ml)	Monthly Average Concentration (μCi/ml)
17	Chlorine-38 <sup>2</sup>	D, see <sup>36</sup> Cl	2E+4 St. wall (3E+4)	4E+4	2E-5	6E-8	-	-
		W, see <sup>36</sup> Cl	-	5E+4	2E-5	6E-8	3E-4	3E-3
17	Chlorine-39 <sup>2</sup>	D, see <sup>36</sup> Cl	2E+4 St. wall (4E+4)	5E+4	2E-5	7E-8	-	-
		W, see <sup>36</sup> Cl	-	6E+4	2E-5	8E-8	5E-4	5E-3
18	Argon-37	Submersion <sup>1</sup>	-	-	1E+0	6E-3	-	-
18	Argon-39	Submersion <sup>1</sup>	-	-	2E-4	8E-7	-	-
18	Argon-41	Submersion <sup>1</sup>	-	-	3E-6	1E-8	-	-
19	Potassium-40	D, all compounds	3E+2	4E+2	2E-7	6E-10	4E-6	4E-5
19	Potassium-42	D, all compounds	5E+3	5E+3	2E-6	7E-9	6E-5	6E-4
19	Potassium-43	D, all compounds	6E+3	9E+3	4E-6	1E-8	9E-5	9E-4
19	Potassium-44 <sup>2</sup>	D, all compounds	2E+4 St. wall (4E+4)	7E+4	3E-5	9E-8	-	-
			-	-	-	5E-4	5E-3	
19	Potassium-45 <sup>2</sup>	D, all compounds	3E+4 St. wall (5E+4)	1E+5	5E-5	2E-7	-	-
			-	-	-	7E-4	7E-3	
20	Calcium-41	W, all compounds	3E+3 Bone surf (4E+3)	4E+3 Bone surf (4E+3)	2E-6	-	-	-
			-	-	5E-9	6E-5	6E-4	
20	Calcium-45	W, all compounds	2E+3	8E+2	4E-7	1E-9	2E-5	2E-4
20	Calcium-47	W, all compounds	8E+2	9E+2	4E-7	1E-9	1E-5	1E-4
21	Scandium-43	Y, all compounds	7E+3	2E+4	9E-6	3E-8	1E-4	1E-3
21	Scandium-44a	Y, all compounds	5E+2	7E+2	3E-7	1E-9	7E-6	7E-5
21	Scandium-44	Y, all compounds	4E+3	1E+4	5E-6	2E-8	5E-5	5E-4
21	Scandium-46	Y, all compounds	9E+2	2E+2	1E-7	3E-10	1E-5	1E-4
21	Scandium-47	Y, all compounds	2E+3 LLI wall (3E+3)	3E+3	1E-6	4E-9	-	-
			-	-	-	4E-5	4E-4	
21	Scandium-48	Y, all compounds	8E+2	1E+3	6E-7	2E-9	1E-5	1E-4
21	Scandium-49 <sup>2</sup>	Y, all compounds	2E+4	5E+4	2E-5	8E-8	3E-4	3E-3
22	Titanium-44	D, all compounds except those given for W and Y	3E+2	1E+1	5E-9	2E-11	4E-6	4E-5
		W, oxides, hydroxides, carbides, halides, and nitrates	-	3E+1	1E-8	4E-11	-	-
		Y, SrTiO <sub>3</sub>	-	6E+0	2E-9	8E-12	-	-



Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI (μCi)	Col. 2 ALI (μCi)	Col. 3 Inhalation DAC (μCi/m)	Col. 1 Air (μCi/ml)	Col. 2 Water (μCi/ml)	Monthly Average Concentration (μCi/ml)
22	Titanium-45	D, see <sup>44</sup> Ti	9E+3	3E+4	1E-5	3E-8	1E-4	1E-3
		W, see <sup>44</sup> Ti	-	4E+4	1E-5	5E-8	-	-
		Y, see <sup>44</sup> Ti	-	3E+4	1E-5	4E-8	-	-
23	Vanadium-47 <sup>2</sup>	D, all compounds except those given for W	3E+4 St. wall (3E+4)	8E+4	3E-5	1E-7	-	-
		W, oxides, hydroxides, carbides, and halides	-	1E+5	4E-5	1E-7	-	-
23	Vanadium-48	D, see <sup>47</sup> V	6E+2	1E+3	5E-7	2E-9	9E-6	9E-5
		W, see <sup>47</sup> V	-	6E+2	3E-7	9E-10	-	-
23	Vanadium-49	D, see <sup>47</sup> V	7E+4	3E+4	1E-5	-	-	-
		W, see <sup>47</sup> V	1.1E+4 wall (9E+4)	3E+4 Bone surf (3E+4) 2E+4	-	5E-8 2E-8	1E-3	1E-2
24	Chromium-48	D, all compounds except those given for W and Y	6E+3	1E+4	5E-6	2E-8	8E-5	8E-4
		W, halides and nitrates	-	7E+3	3E-6	1E-8	-	-
		Y, oxides and hydroxides	-	7E+3	3E-6	1E-8	-	-
24	Chromium-49 <sup>2</sup>	D, see <sup>48</sup> Cr	3E+4	8E+4	4E-5	1E-7	4E-4	4E-3
		W, see <sup>48</sup> Cr	-	1E+5	4E-5	1E-7	-	-
		Y, see <sup>48</sup> Cr	-	9E+4	4E-5	1E-7	-	-
24	Chromium-51	D, see <sup>48</sup> Cr	4E+4	5E+4	2E-5	6E-8	5E-4	5E-3
		W, see <sup>48</sup> Cr	-	2E+4	1E-5	3E-8	-	-
		Y, see <sup>48</sup> Cr	-	2E+4	8E-6	3E-8	-	-
25	Manganese-51 <sup>2</sup>	D, all compounds except those given for W	2E+4	5E+4	2E-5	7E-8	3E-4	3E-3
		W, oxides, hydroxides, halides, and nitrates	-	6E+4	3E-5	8E-8	-	-
25	Manganese-52 <sup>2</sup>	D, see <sup>51</sup> Mn	3E+4 St. wall (4E+4)	9E+4	4E-5	1E-7	-	-
		W, see <sup>51</sup> Mn	-	1E+5	4E-5	1E-7	5E-4	5E-3
25	Manganese-52	D, see <sup>51</sup> Mn	7E+2	1E+3	5E-7	2E-9	1E-5	1E-4
		W, see <sup>51</sup> Mn	-	9E+2	4E-7	1E-9	-	-
25	Manganese-53	D, see <sup>51</sup> Mn	5E+4	1E+4	5E-6	-	7E-4	7E-3
		W, see <sup>51</sup> Mn	-	2E+4 Bone surf (2E+4) 1E+4	5E-6	3E-8 2E-8	-	-
25	Manganese-54	D, see <sup>51</sup> Mn	2E+3	9E+2	4E-7	1E-9	3E-5	3E-4
		W, see <sup>51</sup> Mn	-	8E+2	3E-7	1E-9	-	-
25	Manganese-56	D, see <sup>51</sup> Mn	5E+3	2E+4	6E-6	2E-8	7E-5	7E-4
		W, see <sup>51</sup> Mn	-	2E+4	9E-6	3E-8	-	-

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
			ALI ( $\mu\text{Ci}$ )	ALI ( $\mu\text{Ci}$ )	DAC ( $\mu\text{Ci}/\text{m}^3$ )	Air ( $\mu\text{Ci}/\text{m}^3$ )	Water ( $\mu\text{Ci}/\text{m}^3$ )	
26	Iron-52	D, all compounds except those given for W	9E+2	3E+3	1E-6	4E-9	1E-5	1E-4
		W, oxides, hydroxides, and halides	-	2E+3	1E-6	3E-9	-	-
26	Iron-55	D, see $^{52}\text{Fe}$	9E+3	2E+3	8E-7	3E-9	1E-4	1E-3
		W, see $^{52}\text{Fe}$	-	4E+3	2E-6	6E-9	-	-
26	Iron-59	D, see $^{52}\text{Fe}$	8E+2	3E+2	1E-7	5E-10	1E-5	1E-4
		W, see $^{52}\text{Fe}$	-	5E+2	2E-7	7E-10	-	-
26	Iron-60	D, see $^{52}\text{Fe}$	3E+1	6E+0	3E-9	9E-12	4E-7	4E-6
		W, see $^{52}\text{Fe}$	-	2E+1	8E-9	3E-11	-	-
27	Cobalt-55	W, all compounds except those given for Y	1E+3	3E+3	1E-6	4E-9	2E-5	2E-4
		Y, oxides, hydroxides, halides, and nitrates	-	3E+3	1E-6	4E-9	-	-
27	Cobalt-56	W, see $^{55}\text{Co}$	5E+2	3E+2	1E-7	4E-10	6E-6	6E-5
		Y, see $^{55}\text{Co}$	4E+2	2E+2	8E-8	3E-10	-	-
27	Cobalt-57	W, see $^{55}\text{Co}$	8E+3	3E+3	1E-6	4E-9	6E-5	6E-4
		Y, see $^{55}\text{Co}$	4E+3	7E+2	3E-7	9E-10	-	-
27	Cobalt-58m	W, see $^{55}\text{Co}$	6E+4	9E+4	4E-5	1E-7	8E-4	8E-3
		Y, see $^{55}\text{Co}$	-	6E+4	3E-5	9E-8	-	-
27	Cobalt-58	W, see $^{55}\text{Co}$	2E+3	1E+3	5E-7	2E-9	2E-5	2E-4
		Y, see $^{55}\text{Co}$	1E+3	7E+2	3E-7	1E-9	-	-
27	Cobalt-60m <sup>2</sup>	W, see $^{55}\text{Co}$	1E+6	4E+6	2E-3	6E-6	-	-
		Y, see $^{55}\text{Co}$	(1E+6) St. wall	-	-	-	2E-2	2E-1
27	Cobalt-60	W, see $^{55}\text{Co}$	5E+2	2E+2	7E-8	2E-10	3E-6	3E-5
		Y, see $^{55}\text{Co}$	2E+2	3E+1	1E-8	5E-11	-	-
27	Cobalt-61 <sup>2</sup>	W, see $^{55}\text{Co}$	2E+4	6E+4	3E-5	9E-8	3E-4	3E-3
		Y, see $^{55}\text{Co}$	2E+4	6E+4	2E-5	8E-8	-	-
27	Cobalt-62m <sup>2</sup>	W, see $^{55}\text{Co}$	4E+4	2E+5	7E-5	2E-7	-	-
		Y, see $^{55}\text{Co}$	(5E+4) St. wall	-	-	-	7E-4	7E-3
28	Nickel-56	D, all compounds except those given for W	1E+3	2E+3	8E-7	3E-9	2E-5	2E-4
		W, oxides, hydroxides, and carbides Vapor	-	1E+3	5E-7	2E-9	-	-
28	Nickel-57	D, see $^{56}\text{Ni}$	2E+3	5E+3	2E-6	7E-9	2E-5	2E-4
		W, see $^{56}\text{Ni}$ Vapor	-	3E+3	1E-6	4E-9	-	-
			-	6E+3	3E-6	9E-9	-	-

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Col. 2	Col. 3	Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
28	Nickel-59	D, see $^{56}\text{Ni}$ W, see $^{56}\text{Ni}$ Vapor	2E+4 - -	4E+3 7E+3 2E+3	2E-6 3E-6 8E-7	5E-9 1E-8 3E-9	3E-4 -	3E-3 - -
28	Nickel-63	D, see $^{56}\text{Ni}$ W, see $^{56}\text{Ni}$ Vapor	9E+3 - -	2E+3 3E+3 8E+2	7E-7 1E-6 3E-7	2E-9 4E-9 1E-9	1E-4 -	1E-3 - -
28	Nickel-65	D, see $^{56}\text{Ni}$ W, see $^{56}\text{Ni}$ Vapor	8E+3 - -	2E+4 3E+4 2E+4	1E-5 1E-5 7E-6	3E-8 4E-8 2E-8	1E-4 -	1E-3 - -
28	Nickel-66	D, see $^{56}\text{Ni}$ W, see $^{56}\text{Ni}$ Vapor	4E+2 LLI wall (5E+2) -	2E+3 - 6E+2 3E+3	7E-7 - 3E-7 1E-6	2E-9 - 9E-10 4E-9	- 6E-6 -	- 6E-5 -
29	Copper-60 <sup>2</sup>	D, all compounds except those given for W and Y W, sulfides, halides, and nitrates Y, oxides and hydroxides	3E+4 St. wall (3E+4) -	9E+4 - 1E+5	4E-5 - 5E-5	1E-7 - 2E-7	- 4E-4 -	- 4E-3 -
29	Copper-61	D, see $^{60}\text{Cu}$ W, see $^{60}\text{Cu}$ Y, see $^{60}\text{Cu}$	1E+4 - -	3E+4 4E+4 4E+4	1E-5 2E-5 1E-5	4E-8 6E-8 5E-8	2E-4 -	2E-3 - -
29	Copper-64	D, see $^{60}\text{Cu}$ W, see $^{60}\text{Cu}$ Y, see $^{60}\text{Cu}$	1E+4 - -	3E+4 2E+4 2E+4	1E-5 1E-5 9E-6	4E-8 3E-8 3E-8	2E-4 -	2E-3 - -
29	Copper-67	D, see $^{60}\text{Cu}$ W, see $^{60}\text{Cu}$ Y, see $^{60}\text{Cu}$	5E+3 - -	8E+3 5E+3 5E+3	3E-6 2E-6 2E-6	1E-8 7E-9 6E-9	6E-5 -	6E-4 - -
30	Zinc-62	Y, all compounds	1E+3	3E+3	1E-6	4E-9	2E-5	2E-4
30	Zinc-63 <sup>2</sup>	Y, all compounds	2E+4 St. wall (3E+4) -	7E+4 - -	3E-5 - -	9E-8 -	- 3E-4	- 3E-3
30	Zinc-65	Y, all compounds	4E+2	3E+2	1E-7	4E-10	5E-6	5E-5
30	Zinc-69m	Y, all compounds	4E+3	7E+3	3E-6	1E-8	6E-5	6E-4
30	Zinc-69 <sup>2</sup>	Y, all compounds	6E+4	1E+5	6E-5	2E-7	8E-4	8E-3
30	Zinc-71m	Y, all compounds	6E+3	2E+4	7E-6	2E-8	8E-5	8E-4
30	Zinc-72	Y, all compounds	1E+3	1E+3	5E-7	2E-9	1E-5	1E-4
31	Gallium-65 <sup>2</sup>	D, all compounds except those given for W W, oxides, hydroxides, carbides, halides, and nitrates	5E+4 St. wall (6E+4) -	2E+5 - 2E+5	7E-5 - 8E-5	2E-7 - 3E-7	- 9E-4 -	- 9E-3 -

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 AI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
31	Gallium-66	D, see $^{66}\text{Ga}$	1E+3	4E+3	1E-6	5E-9	1E-5	1E-4
		W, see $^{66}\text{Ga}$	-	3E+3	1E-6	4E-9	-	-
31	Gallium-67	D, see $^{65}\text{Ga}$	7E+3	1E+4	6E-6	2E-8	1E-4	1E-3
		W, see $^{65}\text{Ga}$	-	1E+4	4E-6	1E-8	-	-
31	Gallium-68 <sup>2</sup>	D, see $^{65}\text{Ga}$	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
		W, see $^{65}\text{Ga}$	-	5E+4	2E-5	7E-8	-	-
31	Gallium-70 <sup>2</sup>	D, see $^{65}\text{Ga}$	5E+4	2E+5	7E-5	2E-7	-	-
		W, see $^{65}\text{Ga}$	St. wall (7E+4)	-	-	-	1E-3	1E-2
31	Gallium-72	D, see $^{65}\text{Ga}$	1E+3	4E+3	1E-6	5E-9	2E-5	2E-4
		W, see $^{65}\text{Ga}$	-	3E+3	1E-6	4E-9	-	-
31	Gallium-73	D, see $^{65}\text{Ga}$	5E+3	2E+4	6E-6	2E-8	7E-5	7E-4
		W, see $^{65}\text{Ga}$	-	2E+4	6E-6	2E-8	-	-
32	Germanium-66	D, all compounds except those given for W	2E+4	3E+4	1E-5	4E-8	3E-4	3E-3
		W, oxides, sulfides, and halides	-	2E+4	8E-6	3E-8	-	-
32	Germanium-67 <sup>2</sup>	D, see $^{66}\text{Ge}$	3E+4	9E+4	4E-5	1E-7	-	-
		W, see $^{66}\text{Ge}$	St. wall (4E+4)	-	-	-	6E-4	6E-3
32	Germanium-68	D, see $^{66}\text{Ge}$	5E+3	4E+3	2E-6	5E-9	6E-5	6E-4
		W, see $^{66}\text{Ge}$	-	1E+2	4E-8	1E-10	-	-
32	Germanium-69	D, see $^{66}\text{Ge}$	1E+4	2E+4	6E-6	2E-8	2E-4	2E-3
		W, see $^{66}\text{Ge}$	-	8E+3	3E-6	1E-8	-	-
32	Germanium-71	D, see $^{66}\text{Ge}$	5E+5	4E+5	2E-4	6E-7	7E-3	7E-2
		W, see $^{66}\text{Ge}$	-	4E+4	2E-5	6E-8	-	-
32	Germanium-75 <sup>2</sup>	D, see $^{66}\text{Ge}$	4E+4	8E+4	3E-5	1E-7	-	-
		W, see $^{66}\text{Ge}$	St. wall (7E+4)	-	-	-	9E-4	9E-3
32	Germanium-77	D, see $^{66}\text{Ge}$	9E+3	1E+4	4E-6	1E-8	1E-4	1E-3
		W, see $^{66}\text{Ge}$	-	6E+3	2E-6	8E-9	-	-
32	Germanium-78 <sup>2</sup>	D, see $^{66}\text{Ge}$	2E+4	2E+4	9E-6	3E-8	-	-
		W, see $^{66}\text{Ge}$	St. wall (2E+4)	-	-	-	3E-4	3E-3
			-	2E+4	9E-6	3E-8	-	-

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 All ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
33	Arsenic-69 <sup>2</sup>	W, all compounds	3E+4 St. wall (4E+4)	1E+5 -	5E-5 -	2E-7 -	- 6E-4	- 6E-3
33	Arsenic-70 <sup>2</sup>	W, all compounds	1E+4	5E+4	2E-5	7E-8	2E-4	2E-3
33	Arsenic-71	W, all compounds	4E+3	5E+3	2E-6	6E-9	5E-5	5E-4
33	Arsenic-72	W, all compounds	9E+2	1E+3	6E-7	2E-9	1E-5	1E-4
33	Arsenic-73	W, all compounds	8E+3	2E+3	7E-7	2E-9	1E-4	1E-3
33	Arsenic-74	W, all compounds	1E+3	8E+2	3E-7	1E-9	2E-5	2E-4
33	Arsenic-76	W, all compounds	1E+3	1E+3	6E-7	2E-9	1E-5	1E-4
33	Arsenic-77	W, all compounds	4E+3 L11 wall (5E+3)	5E+3 -	2E-6 -	7E-9 -	- 6E-5	- 6E-4
33	Arsenic-78 <sup>2</sup>	W, all compounds	8E+3	2E+4	9E-6	3E-8	1E-4	1E-3
34	Selenium-70 <sup>2</sup>	D, all compounds except those given for W	2E+4	4E+4	2E-5	5E-8	1E-4	1E-3
		W, oxides, hydroxides, carbides, and elemental Se	1E+4-	4E+4	2E-5	6E-8	-	-
34	Selenium-73m <sup>2</sup>	D, see <sup>70</sup> Se W, see <sup>70</sup> Se	6E+4 3E+4	2E+5 1E+5	6E-5 6E-5	2E-7 2E-7	4E-4 -	4E-3 -
34	Selenium-73	D, see <sup>70</sup> Se W, see <sup>70</sup> Se	3E+3 -	1E+4 2E+4	5E-6 7E-6	2E-8 2E-8	4E-5 -	4E-4 -
34	Selenium-75	D, see <sup>70</sup> Se W, see <sup>70</sup> Se	5E+2 -	7E+2 6E+2	3E-7 3E-7	1E-9 8E-10	7E-6 8E-10	7E-5 -
34	Selenium-79	D, see <sup>70</sup> Se W, see <sup>70</sup> Se	6E+2 -	8E+2 6E+2	3E-7 2E-7	1E-9 8E-10	8E-6 -	8E-5 -
34	Selenium-81m <sup>2</sup>	D, see <sup>70</sup> Se W, see <sup>70</sup> Se	4E+4 2E+4	7E+4 7E+4	3E-5 3E-5	9E-8 1E-7	3E-4 -	3E-3 -
34	Selenium-81 <sup>2</sup>	D, see <sup>70</sup> Se	6E+4 St. wall (8E+4)	2E+5 -	9E-5 -	3E-7 -	- 1E-3	- 1E-2
		W, see <sup>70</sup> Se	-	2E+5	1E-4	3E-7	-	-
34	Selenium-83 <sup>2</sup>	D, see <sup>70</sup> Se W, see <sup>70</sup> Se	4E+4 3E+4	1E+5 1E+5	5E-5 5E-5	2E-7 2E-7	4E-4 -	4E-3 -

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{ml}$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{ml}$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{ml}$ )			
35	Bromine-74 <sup>m2</sup>	D, bromides of H, Li, Na, K, Rb, Cs, and Fr	1E+4 St. wall (2E+4)	4E+4	2E-5	5E-8	-	-
		W, bromides of lanthanides, Be, Mg, Ca, Sr, Ba, Ra, Al, Ga, In, Tl, Ge, Sn, Pb, As, Sb, Bi, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Cu, Ag, Au, Zn, Cd, Mg, Sc, Y, Ti, Zr, Hf, V, Nb, Ta, Mn, Tc, and Re	-	4E+4	2E-5	6E-8	-	-
35	Bromine-74 <sup>2</sup>	D, see <sup>74m</sup> Br	2E+4 St. wall (4E+4)	7E+4	3E-5	1E-7	-	-
		W, see <sup>74m</sup> Br	-	8E+4	4E-5	1E-7	5E-4	5E-3
35	Bromine-75 <sup>2</sup>	D, see <sup>74m</sup> Br	3E+4 St. wall (4E+4)	5E+4	2E-5	7E-8	-	-
		W, see <sup>74m</sup> Br	-	5E+4	2E-5	7E-8	5E-4	5E-3
35	Bromine-76	D, see <sup>74m</sup> Br	4E+3	5E+3	2E-6	7E-9	5E-5	5E-4
		W, see <sup>74m</sup> Br	-	4E+3	2E-6	6E-9	-	-
35	Bromine-77	D, see <sup>74m</sup> Br	2E+4	2E+4	1E-5	3E-8	2E-4	2E-3
		W, see <sup>74m</sup> Br	-	2E+4	8E-6	3E-8	-	-
35	Bromine-80m	D, see <sup>74m</sup> Br	2E+4	2E+4	7E-6	2E-8	3E-4	3E-3
		W, see <sup>74m</sup> Br	-	1E+4	6E-6	2E-8	-	-
35	Bromine-80 <sup>2</sup>	D, see <sup>74m</sup> Br	5E+4 St. wall (9E+4)	2E+5	8E-5	3E-7	-	-
		W, see <sup>74m</sup> Br	-	2E+5	9E-5	3E-7	1E-3	1E-2
35	Bromine-82	D, see <sup>74m</sup> Br	3E+3	4E+3	2E-6	6E-9	4E-5	4E-4
		W, see <sup>74m</sup> Br	-	4E+3	2E-6	5E-9	-	-
35	Bromine-83	D, see <sup>74m</sup> Br	5E+4 St. wall (7E+4)	6E+4	3E-5	9E-8	-	-
		W, see <sup>74m</sup> Br	-	6E+4	3E-5	9E-8	9E-4	9E-3
35	Bromine-84 <sup>2</sup>	D, see <sup>74m</sup> Br	2E+4 St. wall (3E+4)	6E+4	2E-5	8E-8	-	-
		W, see <sup>74m</sup> Br	-	6E+4	3E-5	9E-8	4E-4	4E-3
36	Krypton-74 <sup>2</sup>	Submersion <sup>1</sup>	-	-	3E-6	1E-8	-	-
36	Krypton-76	Submersion <sup>1</sup>	-	-	9E-6	4E-8	-	-
36	Krypton-77 <sup>2</sup>	Submersion <sup>1</sup>	-	-	4E-6	2E-8	-	-
36	Krypton-79	Submersion <sup>1</sup>	-	-	2E-5	7E-8	-	-
36	Krypton-81	Submersion <sup>1</sup>	-	-	7E-4	3E-6	-	-

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
36	Krypton-83m <sup>2</sup>	Submersion <sup>1</sup>			1E-2	5E-5	-	
36	Krypton-85a	Submersion <sup>1</sup>	-	-	2E-5	1E-7	-	-
36	Krypton-85	Submersion <sup>1</sup>	-	-	1E-4	7E-7	-	-
36	Krypton-87 <sup>2</sup>	Submersion <sup>1</sup>	-	-	5E-6	2E-8	-	-
36	Krypton-88	Submersion <sup>1</sup>	-	-	2E-6	9E-9	-	-
37	Rubidium-79 <sup>2</sup>	D, all compounds	4E+4 St. wall (6E+4)	1E+5	5E-5	2E-7	-	-
37	Rubidium-81m <sup>2</sup>	D, all compounds	2E+5 St. wall (3E+5)	3E+5	1E-4	5E-7	-	-
37	Rubidium-81	D, all compounds	4E+4	5E+4	2E-5	7E-8	5E-4	5E-3
37	Rubidium-82a	D, all compounds	1E+4	2E+4	7E-6	2E-8	2E-4	2E-3
37	Rubidium-83	D, all compounds	6E+2	1E+3	4E-7	1E-9	9E-6	9E-5
37	Rubidium-84	D, all compounds	5E+2	8E+2	3E-7	1E-9	7E-6	7E-5
37	Rubidium-86	D, all compounds	5E+2	8E+2	3E-7	1E-9	7E-6	7E-5
37	Rubidium-87	D, all compounds	1E+3	2E+3	6E-7	2E-9	1E-5	1E-4
37	Rubidium-88 <sup>2</sup>	D, all compounds	2E+4 St. wall (3E+4)	6E+4	3E-5	9E-8	-	-
37	Rubidium-89 <sup>2</sup>	D, all compounds	4E+4 St. wall (6E+4)	1E+5	6E-5	2E-7	-	-
38	Strontium-80 <sup>2</sup>	D, all soluble compounds except SrTiO <sub>3</sub> Y, all insoluble compounds and SrTiO <sub>3</sub>	4E+3	1E+4	5E-6	2E-8	6E-5	6E-4
38	Strontium-81 <sup>2</sup>	D, see <sup>80</sup> Sr Y, see <sup>80</sup> Sr	3E+4 2E+4	8E+4 8E+4	3E-5 3E-5	1E-7 1E-7	3E-4 -	3E-3 -
38	Strontium-82	D, see <sup>80</sup> Sr Y, see <sup>80</sup> Sr	3E+2 LLI wall (2E+2) 2E+2	4E+2	2E-7	6E-10	-	-
38	Strontium-83	D, see <sup>80</sup> Sr Y, see <sup>80</sup> Sr	3E+3 2E+3	7E+3 4E+3	3E-6 4E-6	1E-8 5E-9	3E-5 -	3E-4 -
38	Strontium-85a <sup>2</sup>	D, see <sup>80</sup> Sr Y, see <sup>80</sup> Sr	2E+5	6E+5 8E+5	3E-4 4E-4	9E-7 1E-6	3E-3 -	3E-2 -
38	Strontium-85	D, see <sup>80</sup> Sr Y, see <sup>80</sup> Sr	3E+3	3E+3 2E+3	1E-6 6E-7	4E-9 2E-9	4E-5 -	4E-4 -
38	Strontium-87m	D, see <sup>80</sup> Sr Y, see <sup>80</sup> Sr	5E+4 4E+4	1E+5 2E+5	5E-5 6E-5	2E-7 2E-7	6E-4 -	6E-3 -

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
38	Strontium-89	D, see $^{80}\text{Sr}$	6E+2 (LLI wall)	8E+2	4E-7	1E-9	-	-
		Y, see $^{80}\text{Sr}$	5E+2	1E+2	6E-8	2E-10	8E-6	8E-5
38	Strontium-90	D, see $^{80}\text{Sr}$	3E+1 Bone surf (4E+1)	2E+1 Bone surf (2E+1)	8E-9	-	-	-
		Y, see $^{80}\text{Sr}$	-	4E+0	2E-9	3E-11 6E-12	5E-7	5E-6
38	Strontium-91	D, see $^{80}\text{Sr}$	2E+3	6E+3	2E-6	8E-9	2E-5	2E-4
		Y, see $^{80}\text{Sr}$	-	4E+3	1E-6	5E-9	-	-
38	Strontium-92	D, see $^{80}\text{Sr}$	3E+3	9E+3	4E-6	1E-8	4E-5	4E-4
		Y, see $^{80}\text{Sr}$	-	7E+3	3E-6	9E-9	-	-
39	Yttrium-86 <sup>2</sup>	W, all compounds except those given for Y	2E+4	6E+4	2E-5	8E-8	3E-4	3E-3
		Y, oxides and hydroxides	-	5E+4	2E-5	8E-8	-	-
39	Yttrium-86	W, see $^{86}\text{mY}$	1E+3	3E+3	1E-6	5E-9	2E-5	2E-4
		Y, see $^{86}\text{mY}$	-	3E+3	1E-6	5E-9	-	-
39	Yttrium-87	W, see $^{86}\text{mY}$	2E+3	3E+3	1E-6	5E-9	3E-5	3E-4
		Y, see $^{86}\text{mY}$	-	3E+3	1E-6	5E-9	-	-
39	Yttrium-88	W, see $^{86}\text{mY}$	1E+3	3E+2	1E-7	3E-10	1E-5	1E-4
		Y, see $^{86}\text{mY}$	-	2E+2	1E-7	3E-10	-	-
39	Yttrium-90m	W, see $^{86}\text{mY}$	8E+3	1E+4	5E-6	2E-8	1E-4	1E-3
		Y, see $^{86}\text{mY}$	-	1E+4	5E-6	2E-8	-	-
39	Yttrium-90	W, see $^{86}\text{mY}$	4E+2 (LLI wall)	7E+2	3E-7	9E-10	-	-
		Y, see $^{86}\text{mY}$	5E+2	6E+2	3E-7	9E-10	7E-6	7E-5
39	Yttrium-91a <sup>2</sup>	W, see $^{86}\text{mY}$	1E+5	2E+5	1E-4	3E-7	2E-3	2E-2
		Y, see $^{86}\text{mY}$	-	2E+5	7E-5	2E-7	-	-
39	Yttrium-91	W, see $^{86}\text{mY}$	5E+2 (LLI wall)	2E+2	7E-8	2E-10	-	-
		Y, see $^{86}\text{mY}$	6E+2	1E+2	5E-8	2E-10	8E-6	8E-5
39	Yttrium-92	W, see $^{86}\text{mY}$	3E+3	9E+3	4E-6	1E-8	4E-5	4E-4
		Y, see $^{86}\text{mY}$	-	8E+3	3E-6	1E-8	-	-
39	Yttrium-93	W, see $^{86}\text{mY}$	1E+3	3E+3	1E-6	4E-9	2E-5	2E-4
		Y, see $^{86}\text{mY}$	-	2E+3	1E-6	3E-9	-	-
39	Yttrium-94 <sup>2</sup>	W, see $^{86}\text{mY}$	2E+4 St. wall	8E+4	3E-5	1E-7	-	-
		Y, see $^{86}\text{mY}$	3E+4	8E+4	3E-5	1E-7	4E-4	4E-3
39	Yttrium-95 <sup>2</sup>	W, see $^{86}\text{mY}$	4E+4 St. wall	2E+5	6E-5	2E-7	-	-
		Y, see $^{86}\text{mY}$	5E+4	1E+5	6E-5	2E-7	7E-4	7E-3



Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu$ Ci)	Col. 2	Col. 3	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average Concentration ( $\mu$ Ci/ml)
			ALI ( $\mu$ Ci)	DAC ( $\mu$ Ci/ml)				
40	Zirconium-86	D, all compounds except those given for W and Y	1E+3	4E+3	2E-6	6E-9	2E-5	2E-4
		W, oxides, hydroxides, halides, and nitrates	-	3E+3	1E-6	4E-9	-	-
		Y, carbide	-	2E+3	1E-6	3E-9	-	-
40	Zirconium-88	D, see <sup>86</sup> Zr	4E+3	2E+2	9E-8	3E-10	5E-5	5E-4
		W, see <sup>86</sup> Zr	-	5E+2	2E-7	7E-10	-	-
		Y, see <sup>86</sup> Zr	-	3E+2	1E-7	4E-10	-	-
40	Zirconium-89	D, see <sup>86</sup> Zr	2E+3	4E+3	1E-6	5E-9	2E-5	2E-4
		W, see <sup>86</sup> Zr	-	2E+3	1E-6	3E-9	-	-
		Y, see <sup>86</sup> Zr	-	2E+3	1E-6	3E-9	-	-
40	Zirconium-93	D, see <sup>86</sup> Zr	1E+3	6E+0	3E-9	-	-	-
		Bone surf	(3E+3)	(2E+1)	-	2E-11	4E-5	4E-4
		W, see <sup>86</sup> Zr	-	2E+1	1E-8	-	-	-
		Y, see <sup>86</sup> Zr	-	Bone surf (6E+1)	-	9E-11	-	-
40	Zirconium-95	D, see <sup>86</sup> Zr	1E+3	1E+2	5E-8	-	2E-5	2E-4
		Bone surf	-	(3E+2)	-	4E-10	-	-
		W, see <sup>86</sup> Zr	-	4E+2	2E-7	5E-10	-	-
		Y, see <sup>86</sup> Zr	-	3E+2	1E-7	4E-10	-	-
40	Zirconium-97	D, see <sup>86</sup> Zr	6E+2	2E+3	8E-7	3E-9	9E-6	9E-5
		W, see <sup>86</sup> Zr	-	1E+3	6E-7	2E-9	-	-
		Y, see <sup>86</sup> Zr	-	1E+3	5E-7	2E-9	-	-
41	Niobium-88 <sup>2</sup>	W, all compounds except those given for Y	5E+4	2E+5	9E-5	3E-7	-	-
		St. wall	(7E+4)	-	-	-	1E-3	1E-2
		Y, oxides and hydroxides	-	2E+5	9E-5	3E-7	-	-
41	Niobium-89m <sup>2</sup> (66 min)	W, see <sup>88</sup> Nb	1E+4	4E+4	2E-5	6E-8	1E-4	1E-3
		Y, see <sup>88</sup> Nb	-	4E+4	2E-5	5E-8	-	-
41	Niobium-89 (122 min)	W, see <sup>88</sup> Nb	5E+3	2E+4	8E-6	3E-8	7E-5	7E-4
		Y, see <sup>88</sup> Nb	-	2E+4	6E-6	2E-8	-	-
41	Niobium-90	W, see <sup>88</sup> Nb	1E+3	3E+3	1E-6	4E-9	1E-5	1E-4
		Y, see <sup>88</sup> Nb	-	2E+3	1E-6	3E-9	-	-
41	Niobium-93m	W, see <sup>88</sup> Nb	9E+3	2E+3	8E-7	3E-9	-	-
		LLI wall	(1E+4)	-	-	-	2E-4	2E-3
41	Niobium-94	W, see <sup>88</sup> Nb	9E+2	2E+2	8E-8	3E-10	1E-5	1E-4
		Y, see <sup>88</sup> Nb	-	2E+1	6E-9	2E-11	-	-
41	Niobium-95m	W, see <sup>88</sup> Nb	2E+3	3E+3	1E-6	4E-9	-	-
		LLI wall	(2E+3)	-	-	-	3E-5	3E-4
		Y, see <sup>88</sup> Nb	-	2E+3	9E-7	3E-9	-	-

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
41	Niobium-95	W, see <sup>88</sup> Nb Y, see <sup>88</sup> Nb	2E+3 -	1E+3 1E+3	5E-7 5E-7	2E-9 2E-9	3E-5 -	3E-4 -
41	Niobium-96	W, see <sup>88</sup> Nb Y, see <sup>88</sup> Nb	1E+3 -	3E+3 2E+3	1E-6 1E-6	4E-9 3E-9	2E-5 -	2E-4 -
41	Niobium-97 <sup>2</sup>	W, see <sup>88</sup> Nb Y, see <sup>88</sup> Nb	2E+4 -	8E+4 7E+4	3E-5 3E-5	1E-7 1E-7	3E-4 -	3E-3 -
41	Niobium-98 <sup>2</sup>	W, see <sup>88</sup> Nb Y, see <sup>88</sup> Nb	1E+4 -	5E+4 5E+4	2E-5 2E-5	8E-8 7E-8	2E-4 -	2E-3 -
42	Molybdenum-90	D, all compounds except those given for Y Y, oxides, hydroxides, and MoS <sub>2</sub>	4E+3 2E+3	7E+3 5E+3	3E-6 2E-6	1E-8 6E-9	3E-5 -	3E-4 -
42	Molybdenum-93m	D, see <sup>90</sup> Mo Y, see <sup>90</sup> Mo	9E+3 4E+3	2E+4 1E+4	7E-6 6E-6	2E-8 2E-8	6E-5 -	6E-4 -
42	Molybdenum-93	D, see <sup>90</sup> Mo Y, see <sup>90</sup> Mo	4E+3 2E+4	5E+3 2E+2	2E-6 8E-8	8E-9 2E-10	5E-5 -	5E-4 -
42	Molybdenum-99	D, see <sup>90</sup> Mo	2E+3	3E+3	1E-6	4E-9	-	-
		Y, see <sup>90</sup> Mo	LLI wall (1E+3) 1E+3	- 1E+3	- 6E-7	- 2E-9	2E-5 -	2E-4 -
42	Molybdenum-101 <sup>2</sup>	D, see <sup>90</sup> Mo Y, see <sup>90</sup> Mo	4E+4 (5E+4) -	1E+5 1E+5	6E-5 6E-5	2E-7 2E-7	- 7E-4 -	- 7E-3 -
43	Technetium-93n <sup>2</sup>	D, all compounds except those given for W W, oxides, hydroxides, halides, and nitrates	7E+4 -	2E+5 3E+5	6E-5 1E-4	2E-7 4E-7	1E-3 -	1E-2 -
43	Technetium-93	D, see <sup>93m</sup> Tc W, see <sup>93m</sup> Tc	3E+4 -	7E+4 1E+5	3E-5 4E-5	1E-7 1E-7	4E-4 -	4E-3 -
43	Technetium-94m <sup>2</sup>	D, see <sup>93m</sup> Tc W, see <sup>93m</sup> Tc	2E+4 -	4E+4 6E+4	2E-5 2E-5	6E-8 8E-8	3E-4 -	3E-3 -
43	Technetium-94	D, see <sup>93m</sup> Tc W, see <sup>93m</sup> Tc	9E+3 -	2E+4 2E+4	8E-6 1E-5	3E-8 3E-8	1E-4 -	1E-3 -
43	Technetium-95m	D, see <sup>93m</sup> Tc W, see <sup>93m</sup> Tc	4E+3 -	5E+3 2E+3	2E-6 8E-7	8E-9 3E-9	5E-5 -	5E-4 -
43	Technetium-95	D, see <sup>93m</sup> Tc W, see <sup>93m</sup> Tc	1E+4 -	2E+4 2E+4	9E-6 8E-6	3E-8 3E-8	1E-4 -	1E-3 -
43	Technetium-96m <sup>2</sup>	D, see <sup>93m</sup> Tc W, see <sup>93m</sup> Tc	2E+5 -	3E+5 2E+5	1E-4 1E-4	4E-7 3E-7	2E-3 -	2E-2 -
43	Technetium-96	D, see <sup>93m</sup> Tc W, see <sup>93m</sup> Tc	2E+3 -	3E+3 2E+3	1E-6 9E-7	5E-9 3E-9	3E-5 -	3E-4 -
43	Technetium-97m	D, see <sup>93m</sup> Tc W, see <sup>93m</sup> Tc	5E+3 -	7E+3 (7E+3) 1E+3	3E-6 -	- 1E-8 2E-9	6E-5 -	6E-4 -

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI (μCi)	Inhalation		Col. 1 Air (μCi/mi)	Col. 2 Water (μCi/mi)	Monthly Average Concentration (μCi/mi)
				Col. 2 ALI (μCi)	Col. 3 DAC (μCi/mi)			
43	Technetium-97	D, see <sup>93m</sup> Tc	4E+4	5E+4	2E-5	7E-8	5E-4	5E-3
		W, see <sup>93m</sup> Tc	-	6E+3	2E-6	8E-9	-	-
43	Technetium-98	D, see <sup>93m</sup> Tc	1E+3	2E+3	7E-7	2E-9	1E-5	1E-4
		W, see <sup>93m</sup> Tc	-	3E+2	1E-7	4E-10	-	-
43	Technetium-99m	D, see <sup>93m</sup> Tc	8E+4	2E+5	6E-5	2E-7	1E-3	1E-2
		W, see <sup>93m</sup> Tc	-	2E+5	1E-4	3E-7	-	-
43	Technetium-99	D, see <sup>93m</sup> Tc	4E+3	5E+3	2E-6	-	6E-5	6E-4
		W, see <sup>93m</sup> Tc	-	(6E+3) St. wall 7E+2	-	8E-9 9E-10	-	-
43	Technetium-101 <sup>2</sup>	D, see <sup>93m</sup> Tc	9E+4	3E+5	1E-4	5E-7	-	-
		W, see <sup>93m</sup> Tc	(1E+5) St. wall	-	-	-	2E-3	2E-2
43	Technetium-104 <sup>2</sup>	D, see <sup>93m</sup> Tc	2E+4	7E+4	3E-5	1E-7	-	-
		W, see <sup>93m</sup> Tc	(3E+4) St. wall	-	-	-	4E-4	4E-3
44	Ruthenium-94 <sup>2</sup>	D, all compounds except those given for W and Y	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
		W, halides	-	6E+4	3E-5	9E-8	-	-
		Y, oxides and hydroxides	-	6E+4	2E-5	8E-8	-	-
44	Ruthenium-97	D, see <sup>94</sup> Ru	8E+3	2E+4	8E-6	3E-8	1E-4	1E-3
		W, see <sup>94</sup> Ru	-	1E+4	5E-6	2E-8	-	-
		Y, see <sup>94</sup> Ru	-	1E+4	5E-6	2E-8	-	-
44	Ruthenium-103	D, see <sup>94</sup> Ru	2E+3	2E+3	7E-7	2E-9	3E-5	3E-4
		W, see <sup>94</sup> Ru	-	1E+3	4E-7	1E-9	-	-
		Y, see <sup>94</sup> Ru	-	6E+2	3E-7	9E-10	-	-
44	Ruthenium-105	D, see <sup>94</sup> Ru	5E+3	1E+4	6E-6	2E-8	7E-5	7E-4
		W, see <sup>94</sup> Ru	-	1E+4	6E-6	2E-8	-	-
		Y, see <sup>94</sup> Ru	-	1E+4	5E-6	2E-8	-	-
44	Ruthenium-106	D, see <sup>94</sup> Ru	2E+2	9E+1	4E-8	1E-10	-	-
		W, see <sup>94</sup> Ru	(2E+2) LLL wall	-	-	-	3E-6	3E-5
		Y, see <sup>94</sup> Ru	-	5E+1	2E-8	8E-11	-	-
45	Rhodium-95	D, all compounds except those given for W and Y	2E+4	6E+4	2E-5	8E-8	2E-4	2E-3
		W, halides	-	8E+4	3E-5	1E-7	-	-
		Y, oxides and hydroxides	-	7E+4	3E-5	9E-8	-	-
45	Rhodium-99	D, see <sup>99m</sup> Rh	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
		W, see <sup>99m</sup> Rh	-	2E+3	9E-7	3E-9	-	-
		Y, see <sup>99m</sup> Rh	-	2E+3	8E-7	3E-9	-	-

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Col. 2	Col. 3	Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Inhalation				
				ALI ( $\mu\text{Ci}$ )	DAE ( $\mu\text{Ci}/\text{m}^3$ )			
45	Rhodium-100	D, see $^{99\text{m}}\text{Rh}$	2E+3	5E+3	2E-6	7E-9	2E-5	2E-4
		W, see $^{99\text{m}}\text{Rh}$	-	4E+3	2E-6	6E-9	-	-
		Y, see $^{99\text{m}}\text{Rh}$	-	4E+3	2E-6	5E-9	-	-
45	Rhodium-101m	D, see $^{99\text{m}}\text{Rh}$	6E+3	1E+4	5E-6	2E-8	8E-5	8E-4
		W, see $^{99\text{m}}\text{Rh}$	-	8E+3	4E-6	1E-8	-	-
		Y, see $^{99\text{m}}\text{Rh}$	-	8E+3	3E-6	1E-8	-	-
45	Rhodium-101	D, see $^{99\text{m}}\text{Rh}$	2E+3	5E+2	2E-7	7E-10	3E-5	3E-4
		W, see $^{99\text{m}}\text{Rh}$	-	8E+2	3E-7	1E-9	-	-
		Y, see $^{99\text{m}}\text{Rh}$	-	2E+2	6E-8	2E-10	-	-
45	Rhodium-102m	D, see $^{99\text{m}}\text{Rh}$	1E+3	5E+2	2E-7	7E-10	-	-
		W, see $^{99\text{m}}\text{Rh}$	(1E+3) LLI wall	-	-	-	2E-5	2E-4
		Y, see $^{99\text{m}}\text{Rh}$	-	4E+2	2E-7	5E-10	-	-
45	Rhodium-102	D, see $^{99\text{m}}\text{Rh}$	6E+2	9E+1	4E-8	1E-10	8E-6	8E-5
		W, see $^{99\text{m}}\text{Rh}$	-	2E+2	7E-8	2E-10	-	-
		Y, see $^{99\text{m}}\text{Rh}$	-	6E+1	2E-8	8E-11	-	-
45	Rhodium-103m <sup>2</sup>	D, see $^{99\text{m}}\text{Rh}$	4E+5	1E+6	5E-4	2E-6	6E-3	6E-2
		W, see $^{99\text{m}}\text{Rh}$	-	1E+6	5E-4	2E-6	-	-
		Y, see $^{99\text{m}}\text{Rh}$	-	1E+6	5E-4	2E-6	-	-
45	Rhodium-105	D, see $^{99\text{m}}\text{Rh}$	4E+3	1E+4	5E-6	2E-8	-	-
		W, see $^{99\text{m}}\text{Rh}$	(4E+3) LLI wall	-	-	-	5E-5	5E-4
		Y, see $^{99\text{m}}\text{Rh}$	-	6E+3	3E-6	9E-9	-	-
45	Rhodium-106m	D, see $^{99\text{m}}\text{Rh}$	8E+3	3E+4	1E-5	4E-8	1E-4	1E-3
		W, see $^{99\text{m}}\text{Rh}$	-	4E+4	2E-5	5E-8	-	-
		Y, see $^{99\text{m}}\text{Rh}$	-	4E+4	1E-5	9E-8	-	-
45	Rhodium-107 <sup>2</sup>	D, see $^{99\text{m}}\text{Rh}$	7E+4 St. wall	2E+5	1E-4	3E-7	-	-
		W, see $^{99\text{m}}\text{Rh}$	(9E+4)	-	-	-	1E-3	1E-2
		Y, see $^{99\text{m}}\text{Rh}$	-	3E+5	1E-4	4E-7	-	-
46	Palladium-100	D, all compounds except those given for W and Y	1E+3	1E+3	6E-7	2E-9	2E-5	2E-4
		W, nitrates	-	1E+3	5E-7	2E-9	-	-
		Y, oxides and hydroxides	-	1E+3	6E-7	2E-9	-	-
46	Palladium-101	D, see $^{100}\text{Pd}$	1E+4	3E+4	1E-5	5E-8	2E-4	2E-3
		W, see $^{100}\text{Pd}$	-	3E+4	1E-5	9E-8	-	-
		Y, see $^{100}\text{Pd}$	-	3E+4	1E-5	4E-8	-	-
46	Palladium-103	D, see $^{100}\text{Pd}$	6E+3	6E+3	3E-6	9E-9	-	-
		W, see $^{100}\text{Pd}$	(7E+3) LLI wall	-	-	-	1E-4	1E-3
		Y, see $^{100}\text{Pd}$	-	4E+3	2E-6	6E-9	-	-
46	Palladium-107	D, see $^{100}\text{Pd}$	3E+4	2E+4	9E-6	-	-	-
		W, see $^{100}\text{Pd}$	(4E+4) LLI wall	Kidneys (2E+4)	-	3E-8	5E-4	5E-3
		Y, see $^{100}\text{Pd}$	-	7E+3	3E-6	1E-8	-	-
				4E+2	2E-7	6E-10	-	-

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
46	Palladium-109	D, see $^{100}\text{Pd}$ W, see $^{100}\text{Pd}$ Y, see $^{100}\text{Pd}$	2E+3 - -	6E+3 5E+3 5E+3	3E-6 2E-6 2E-6	9E-9 8E-9 6E-9	3E-5 -	3E-4 - -
47	Silver-102 <sup>2</sup>	D, all compounds except those given for W and Y  W, nitrates and sulfides  Y, oxides and hydroxides	5E+4 St. wall (6E+4) - -	2E+5 - 2E+5	8E-5 - 9E-5	2E-7 - 3E-7	- 9E-4 -	- 9E-3 -
47	Silver-103 <sup>2</sup>	D, see $^{102}\text{Ag}$ W, see $^{102}\text{Ag}$ Y, see $^{102}\text{Ag}$	4E+4 - -	1E+5 1E+5 1E+5	4E-5 5E-5 5E-5	1E-7 2E-7 2E-7	5E-4 - -	5E-3 - -
47	Silver-104m <sup>2</sup>	D, see $^{102}\text{Ag}$ W, see $^{102}\text{Ag}$ Y, see $^{102}\text{Ag}$	3E+4 - -	9E+4 1E+5 1E+5	4E-5 5E-5 5E-5	1E-7 2E-7 2E-7	4E-4 - -	4E-3 - -
47	Silver-104 <sup>2</sup>	D, see $^{102}\text{Ag}$ W, see $^{102}\text{Ag}$ Y, see $^{102}\text{Ag}$	2E+4 - -	7E+4 1E+5 1E+5	3E-5 6E-5 6E-5	1E-7 2E-7 2E-7	3E-4 - -	3E-3 - -
47	Silver-105	D, see $^{102}\text{Ag}$ W, see $^{102}\text{Ag}$ Y, see $^{102}\text{Ag}$	3E+3 - -	1E+3 2E+3 2E+3	4E-7 7E-7 7E-7	1E-9 2E-9 2E-9	4E-5 - -	4E-4 - -
47	Silver-106m	D, see $^{102}\text{Ag}$ W, see $^{102}\text{Ag}$ Y, see $^{102}\text{Ag}$	8E+2 - -	7E+2 9E+2 9E+2	3E-7 4E-7 4E-7	1E-9 1E-9 1E-9	1E-5 - -	1E-4 - -
47	Silver-106 <sup>2</sup>	D, see $^{102}\text{Ag}$  W, see $^{102}\text{Ag}$ Y, see $^{102}\text{Ag}$	6E+4 St. wall (6E+4) - -	2E+5 - 2E+5	8E-5 - 8E-5	3E-7 - 3E-7	- 9E-4 -	- 9E-3 -
47	Silver-108m	D, see $^{102}\text{Ag}$ W, see $^{102}\text{Ag}$ Y, see $^{102}\text{Ag}$	6E+2 - -	2E+2 3E+2 2E+1	8E-8 1E-7 1E-8	3E-10 4E-10 3E-11	9E-6 - -	9E-5 - -
47	Silver-110m	D, see $^{102}\text{Ag}$ W, see $^{102}\text{Ag}$ Y, see $^{102}\text{Ag}$	5E+2 - -	1E+2 2E+2 9E+1	5E-8 8E-8 4E-8	2E-10 3E-10 1E-10	6E-6 - -	6E-5 - -
47	Silver-111	D, see $^{102}\text{Ag}$  W, see $^{102}\text{Ag}$ Y, see $^{102}\text{Ag}$	9E+2 LLI wall (1E+3) - -	2E+3 Liver (2E+3) 9E+2 9E+2	6E-7 - 4E-7 4E-7	- 2E-9 1E-9 1E-9	- 2E-5 -	- 2E-4 -
47	Silver-112	D, see $^{102}\text{Ag}$ W, see $^{102}\text{Ag}$ Y, see $^{102}\text{Ag}$	3E+3 - -	8E+3 1E+4 9E+3	3E-6 4E-6 4E-6	1E-8 1E-8 1E-8	4E-5 -	4E-4 - -

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Col. 2 Inhalation ALI ( $\mu\text{Ci}$ )	Col. 3 Inhalation BRC ( $\mu\text{Ci}/\text{m}^3$ )	Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
47	Silver-115 <sup>2</sup>	D, see <sup>102</sup> Ag	3E+4 (3E+4)	9E+4	4E-5	1E-7	-	-
		W, see <sup>102</sup> Ag	-	9E+4	4E-5	1E-7	-	4E-3
		Y, see <sup>102</sup> Ag	-	8E+4	3E-5	1E-7	-	-
48	Cadmium-104 <sup>2</sup>	D, all compounds except those given for W and Y	2E+4	7E+4	3E-5	9E-8	3E-4	3E-3
		W, sulfides, halides, and nitrates	-	1E+5	5E-5	2E-7	-	-
		Y, oxides and hydroxides	-	1E+5	5E-5	2E-7	-	-
48	Cadmium-107	D, see <sup>104</sup> Cd	2E+4	5E+4	2E-5	8E-8	3E-4	3E-3
		W, see <sup>104</sup> Cd	-	8E+4	2E-5	8E-8	-	-
		Y, see <sup>104</sup> Cd	-	5E+4	2E-5	7E-8	-	-
48	Cadmium-109	D, see <sup>104</sup> Cd	3E+2 Kidneys (4E+2)	4E+3 Kidneys (5E+1)	1E-8	-	-	-
		W, see <sup>104</sup> Cd	-	3E+2 Kidneys (1E+2)	9E-8	7E-11	6E-6	6E-5
		Y, see <sup>104</sup> Cd	-	1E+2	5E-8	2E-10	-	-
48	Cadmium-113m	D, see <sup>104</sup> Cd	2E+1 Kidneys (4E+1)	2E+0 Kidneys (4E+0)	1E-9	-	-	-
		W, see <sup>104</sup> Cd	-	8E+0 Kidneys (1E+1)	4E-9	5E-12	5E-7	5E-6
		Y, see <sup>104</sup> Cd	-	1E+1	5E-9	2E-11	-	-
48	Cadmium-113	D, see <sup>104</sup> Cd	2E+1 Kidneys (3E+1)	2E+0 Kidneys (3E+0)	9E-10	-	-	-
		W, see <sup>104</sup> Cd	-	8E+0 Kidneys (1E+1)	3E-9	5E-12	4E-7	4E-6
		Y, see <sup>104</sup> Cd	-	1E+1	6E-9	2E-11	-	-
48	Cadmium-115m	D, see <sup>104</sup> Cd	3E+2	5E+1 Kidneys (8E+1)	2E-8	-	4E-6	4E-5
		W, see <sup>104</sup> Cd	-	1E+2	5E-8	1E-10	-	-
		Y, see <sup>104</sup> Cd	-	1E+2	6E-8	2E-10	-	-
48	Cadmium-115	D, see <sup>104</sup> Cd	9E+2 LLI wall	1E+3	8E-7	2E-9	-	-
		W, see <sup>104</sup> Cd	-	1E+3	5E-7	2E-9	1E-5	1E-4
		Y, see <sup>104</sup> Cd	-	1E+3	6E-7	2E-9	-	-
48	Cadmium-117m	D, see <sup>104</sup> Cd	5E+3	1E+4	5E-6	2E-8	6E-5	6E-4
		W, see <sup>104</sup> Cd	-	2E+4	7E-6	2E-8	-	-
		Y, see <sup>104</sup> Cd	-	1E+4	6E-6	2E-8	-	-

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
48	Cadmium-117	D, see <sup>104</sup> Cd W, see <sup>104</sup> Cd Y, see <sup>104</sup> Cd	5E-3 - -	1E+4 2E+4 1E+4	5E-6 7E-6 6E-6	2E-8 2E-8 2E-8	6E-5 -	6E-4 - -
49	Indium-109	D, all compounds except those given for W W, oxides, hydroxides, halides, and nitrates	2E+4 -	4E+4 6E+4	2E-5 3E-5	6E-8 9E-8	3E-4 -	3E-3 -
49	Indium-110 <sup>2</sup> (69.1 min)	D, see <sup>109</sup> In W, see <sup>109</sup> In	2E+4 -	4E+4 6E+4	2E-5 2E-5	6E-8 8E-8	2E-4 -	2E-3 -
49	Indium-110 (4.9 h)	D, see <sup>109</sup> In W, see <sup>109</sup> In	5E+3 -	2E+4 2E+4	7E-6 8E-6	2E-8 3E-8	7E-5 -	7E-4 -
49	Indium-111	D, see <sup>109</sup> In W, see <sup>109</sup> In	4E+3 -	6E+3 6E+3	3E-6 3E-6	9E-9 9E-9	6E-5 -	6E-4 -
49	Indium-112 <sup>2</sup>	D, see <sup>109</sup> In W, see <sup>109</sup> In	2E+5 -	6E+5 7E+5	3E-4 3E-4	9E-7 1E-6	2E-3 -	2E-2 -
49	Indium-113m <sup>2</sup>	D, see <sup>109</sup> In W, see <sup>109</sup> In	5E+4 -	1E+5 2E+5	6E-5 8E-5	2E-7 3E-7	7E-4 -	7E-3 -
49	Indium-114m	D, see <sup>109</sup> In W, see <sup>109</sup> In	3E+2 LLI wall (4E+2) -	6E+1 1E+2	3E-8 4E-8	9E-11 1E-10	- 5E-6	- 5E-5
49	Indium-115a	D, see <sup>109</sup> In W, see <sup>109</sup> In	1E+4 -	4E+4 5E+4	2E-5 2E-5	6E-8 7E-8	2E-4 -	2E-3 -
49	Indium-115	D, see <sup>109</sup> In W, see <sup>109</sup> In	4E+1 -	1E+0 5E+0	6E-10 2E-9	2E-12 8E-12	5E-7 -	5E-6 -
49	Indium-116a <sup>2</sup>	D, see <sup>109</sup> In W, see <sup>109</sup> In	2E+4 -	8E+4 1E+5	3E-5 5E-5	1E-7 2E-7	3E-4 -	3E-3 -
49	Indium-117a <sup>2</sup>	D, see <sup>109</sup> In W, see <sup>109</sup> In	1E+4 -	3E+4 4E+4	1E-5 2E-5	5E-8 6E-8	2E-4 -	2E-3 -
49	Indium-117 <sup>2</sup>	D, see <sup>109</sup> In W, see <sup>109</sup> In	6E+4 -	2E+5 2E+5	7E-5 9E-5	2E-7 3E-7	8E-4 -	8E-3 -
49	Indium-119a <sup>2</sup>	D, see <sup>109</sup> In W, see <sup>109</sup> In	4E+4 St. wall (5E+4) -	1E+5 1E+5	5E-5 6E-5	2E-7 2E-7	- 7E-4	- 7E-3
50	Tin-110	D, all compounds except those given for W W, sulfides, oxides, hydroxides, halides, nitrates, and stannic phosphate	4E+3 -	1E+4 1E+4	5E-6 5E-6	2E-8 -	5E-5 -	5E-4 -
50	Tin-111 <sup>2</sup>	D, see <sup>110</sup> Sn W, see <sup>110</sup> Sn	7E+4 -	2E+5 3E+5	9E-5 1E-4	3E-7 4E-7	1E-3 -	1E-2 -

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
50	Tin-113	D, see $^{110}\text{Sn}$	$2\text{E}+3$ LLI wall ( $2\text{E}+3$ )	$1\text{E}+3$	$5\text{E}-7$	$2\text{E}-9$	-	-
		W, see $^{110}\text{Sn}$	-	$5\text{E}+2$	$2\text{E}-7$	$8\text{E}-10$	$3\text{E}-5$	$3\text{E}-4$
50	Tin-117m	D, see $^{110}\text{Sn}$	$2\text{E}+3$ LLI wall ( $2\text{E}+3$ )	$1\text{E}+3$ Bone surf ( $2\text{E}+3$ )	$5\text{E}-7$	-	-	-
		W, see $^{110}\text{Sn}$	-	$1\text{E}+3$	$6\text{E}-7$	$3\text{E}-9$ $2\text{E}-9$	$3\text{E}-5$	$3\text{E}-4$
50	Tin-119m	D, see $^{110}\text{Sn}$	$3\text{E}+3$ LLI wall ( $4\text{E}+3$ )	$2\text{E}+3$	$1\text{E}-6$	$3\text{E}-9$	-	-
		W, see $^{110}\text{Sn}$	-	$1\text{E}+3$	$4\text{E}-7$	$1\text{E}-9$	$6\text{E}-5$	$6\text{E}-4$
50	Tin-121m	D, see $^{110}\text{Sn}$	$3\text{E}+3$ LLI wall ( $4\text{E}+3$ )	$9\text{E}+2$	$4\text{E}-7$	$1\text{E}-9$	-	-
		W, see $^{110}\text{Sn}$	-	$5\text{E}+2$	$2\text{E}-7$	$8\text{E}-10$	$5\text{E}-5$	$5\text{E}-4$
50	Tin-121	D, see $^{110}\text{Sn}$	$6\text{E}+3$ LLI wall ( $6\text{E}+3$ )	$2\text{E}+4$	$6\text{E}-6$	$2\text{E}-8$	-	-
		W, see $^{110}\text{Sn}$	-	$1\text{E}+4$	$5\text{E}-6$	$2\text{E}-8$	$8\text{E}-5$	$8\text{E}-4$
50	Tin-123m <sup>2</sup>	D, see $^{110}\text{Sn}$	$5\text{E}+4$	$1\text{E}+5$	$5\text{E}-5$	$2\text{E}-7$	$7\text{E}-4$	$7\text{E}-3$
		W, see $^{110}\text{Sn}$	-	$1\text{E}+5$	$6\text{E}-5$	$2\text{E}-7$	-	-
50	Tin-123	D, see $^{110}\text{Sn}$	$5\text{E}+2$ LLI wall ( $6\text{E}+2$ )	$6\text{E}+2$	$3\text{E}-7$	$9\text{E}-10$	-	-
		W, see $^{110}\text{Sn}$	-	$2\text{E}+2$	$7\text{E}-8$	$2\text{E}-10$	$9\text{E}-6$	$9\text{E}-5$
50	Tin-125	D, see $^{110}\text{Sn}$	$4\text{E}+2$ LLI wall ( $5\text{E}+2$ )	$9\text{E}+2$	$4\text{E}-7$	$1\text{E}-9$	-	-
		W, see $^{110}\text{Sn}$	-	$4\text{E}+2$	$1\text{E}-7$	$5\text{E}-10$	$6\text{E}-6$	$6\text{E}-5$
50	Tin-126	D, see $^{110}\text{Sn}$	$3\text{E}+2$	$6\text{E}+1$	$2\text{E}-8$	$8\text{E}-11$	$4\text{E}-6$	$4\text{E}-5$
		W, see $^{110}\text{Sn}$	-	$7\text{E}+1$	$3\text{E}-8$	$9\text{E}-11$	-	-
50	Tin-127	D, see $^{110}\text{Sn}$	$7\text{E}+3$	$2\text{E}+4$	$8\text{E}-6$	$3\text{E}-8$	$9\text{E}-5$	$9\text{E}-4$
		W, see $^{110}\text{Sn}$	-	$2\text{E}+4$	$8\text{E}-6$	$3\text{E}-8$	-	-
50	Tin-128 <sup>2</sup>	D, see $^{110}\text{Sn}$	$9\text{E}+3$	$3\text{E}+4$	$1\text{E}-5$	$4\text{E}-8$	$1\text{E}-4$	$1\text{E}-3$
		W, see $^{110}\text{Sn}$	-	$4\text{E}+4$	$1\text{E}-5$	$5\text{E}-8$	-	-
51	Antimony-115 <sup>2</sup>	D, all compounds except those given for W	$8\text{E}+4$	$2\text{E}+5$	$1\text{E}-4$	$3\text{E}-7$	$1\text{E}-3$	$1\text{E}-2$
		W, oxides, hydroxides, halides, sulfides, sulfates, and nitrates	-	$3\text{E}+5$	$1\text{E}-4$	$4\text{E}-7$	-	-
51	Antimony-116m <sup>2</sup>	D, see $^{115}\text{Sb}$	$2\text{E}+4$	$7\text{E}+4$	$3\text{E}-5$	$1\text{E}-7$	$3\text{E}-4$	$3\text{E}-3$
		W, see $^{115}\text{Sb}$	-	$1\text{E}+5$	$6\text{E}-5$	$2\text{E}-7$	-	-
51	Antimony-116 <sup>2</sup>	D, see $^{115}\text{Sb}$	$7\text{E}+4$ St. wall ( $9\text{E}+4$ )	$3\text{E}+5$	$1\text{E}-4$	$4\text{E}-7$	-	-
		W, see $^{115}\text{Sb}$	-	$3\text{E}+5$	$1\text{E}-4$	$5\text{E}-7$	$1\text{E}-3$	$1\text{E}-2$
51	Antimony-117	D, see $^{115}\text{Sb}$	$7\text{E}+4$	$2\text{E}+5$	$9\text{E}-5$	$3\text{E}-7$	$9\text{E}-4$	$9\text{E}-3$
		W, see $^{115}\text{Sb}$	-	$3\text{E}+5$	$1\text{E}-4$	$4\text{E}-7$	-	-



Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
51	Antimony-118m	D, see <sup>115</sup> Sb	6E+3	2E+4	8E-6	3E-8	7E-5	7E-4
		W, see <sup>115</sup> Sb	5E+3	2E+4	9E-6	3E-8	-	-
51	Antimony-119	D, see <sup>115</sup> Sb	2E+4	5E+4	2E-5	6E-8	2E-4	2E-3
		W, see <sup>115</sup> Sb	2E+4	3E+4	1E-5	4E-8	-	-
51	Antimony-120 <sup>1</sup> (16 min)	D, see <sup>115</sup> Sb	1E+5	4E+5	2E-4	6E-7	-	-
		W, see <sup>115</sup> Sb	St. wall (2E+5)	-	-	-	2E-3	2E-2
51	Antimony-120 (5.76 d)	D, see <sup>115</sup> Sb	1E+3	2E+3	9E-7	3E-9	1E-5	1E-4
		W, see <sup>115</sup> Sb	9E+2	1E+3	5E-7	2E-9	-	-
51	Antimony-122	D, see <sup>115</sup> Sb	8E+2	2E+3	1E-6	3E-9	-	-
		W, see <sup>115</sup> Sb	LLI wall (8E+2)	-	-	-	1E-5	1E-4
51	Antimony-124e <sup>2</sup>	D, see <sup>115</sup> Sb	3E+5	8E+5	4E-4	1E-6	3E-3	3E-2
		W, see <sup>115</sup> Sb	2E+5	6E+5	2E-4	8E-7	-	-
51	Antimony-124	D, see <sup>115</sup> Sb	6E+2	9E+2	4E-7	1E-9	7E-6	7E-5
		W, see <sup>115</sup> Sb	5E+2	2E+2	1E-7	3E-10	-	-
51	Antimony-125	D, see <sup>115</sup> Sb	2E+3	2E+3	1E-6	3E-9	3E-5	3E-4
		W, see <sup>115</sup> Sb	-	5E+2	2E-7	7E-10	-	-
51	Antimony-126m <sup>2</sup>	D, see <sup>115</sup> Sb	5E+4	2E+5	8E-5	3E-7	-	-
		W, see <sup>115</sup> Sb	St. wall (7E+4)	-	-	-	9E-4	9E-3
51	Antimony-126	D, see <sup>115</sup> Sb	6E+2	1E+3	5E-7	2E-9	7E-6	7E-5
		W, see <sup>115</sup> Sb	5E+2	5E+2	2E-7	7E-10	-	-
51	Antimony-127	D, see <sup>115</sup> Sb	8E+2	2E+3	9E-7	3E-9	-	-
		W, see <sup>115</sup> Sb	LLI wall (8E+2)	-	-	-	1E-5	1E-4
51	Antimony-128 <sup>2</sup> (10.4 min)	D, see <sup>115</sup> Sb	8E+4	4E+5	2E-4	5E-7	-	-
		W, see <sup>115</sup> Sb	St. wall (1E+5)	-	-	-	1E-3	1E-2
51	Antimony-128 (9.01 h)	D, see <sup>115</sup> Sb	1E+3	4E+3	2E-6	6E-9	2E-5	2E-4
		W, see <sup>115</sup> Sb	-	3E+3	1E-6	5E-9	-	-
51	Antimony-129	D, see <sup>115</sup> Sb	3E+3	9E+3	4E-6	1E-8	4E-5	4E-4
		W, see <sup>115</sup> Sb	-	9E+3	4E-6	1E-8	-	-
51	Antimony-130 <sup>2</sup>	D, see <sup>115</sup> Sb	2E+4	6E+4	3E-5	9E-8	3E-4	3E-3
		W, see <sup>115</sup> Sb	-	8E+4	3E-5	1E-7	-	-
51	Antimony-131 <sup>2</sup>	D, see <sup>115</sup> Sb	1E+4	2E+4	1E-5	-	-	-
		W, see <sup>115</sup> Sb	Thyroid (2E+4)	Thyroid (4E+4)	-	6E-8	2E-4	2E-3
			-	2E+4 Thyroid (4E+4)	1E-5	-	-	
			-	-	-	6E-8	-	

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration (μCi/ml)
			Oral Ingestion ALI (μCi)	Inhalation ALI (μCi)	DAC (μCi/ml)	Air (μCi/ml)	Water (μCi/ml)	
52	Tellurium-116	D, all compounds except those given for W W, oxides, hydroxides, and nitrates	8E+3 -	2E+4 3E+4	9E-6 1E-5	3E-8 4E-8	1E-4 -	1E-3 -
52	Tellurium-121m	D, see 116Te W, see 116Te	5E+2 Bone surf (7E+2) -	2E+2 Bone surf (4E+2) 4E-2	8E-8 -	- 5E-10 6E-10	- 1E-5 -	- 1E-4 -
52	Tellurium-121	D, see 116Te W, see 116Te	3E+3 -	4E+3 3E+3	2E-6 1E-6	6E-9 4E-9	4E-5 -	4E-4 -
52	Tellurium-123m	D, see 116Te W, see 116Te	6E+2 Bone surf (1E+3) -	2E+2 Bone surf (5E+2) 5E-2	9E-8 -	- 8E-10 8E-10	- 1E-5 -	- 1E-4 -
52	Tellurium-123	D, see 116Te W, see 116Te	5E+2 Bone surf (1E+3) -	2E+2 Bone surf (5E+2) 4E-2 Bone surf (1E+3)	8E-8 -	- 7E-10 -	- 2E-5 -	- 2E-4 -
52	Tellurium-125m	D, see 116Te W, see 116Te	1E+3 Bone surf (1E+3) -	4E+2 Bone surf (1E+3) 7E+2	2E-7 -	- 1E-9 1E-9	- 2E-5 -	- 2E-4 -
52	Tellurium-127m	D, see 116Te W, see 116Te	6E+2 -	3E+2 Bone surf (4E+2) 3E+2	1E-7 -	- 6E-10 4E-10	9E-6 -	9E-5 -
52	Tellurium-127	D, see 116Te W, see 116Te	7E+3 -	2E+4 2E+4	9E-6 7E-6	3E-8 2E-8	1E-4 -	1E-3 -
52	Tellurium-129m	D, see 116Te W, see 116Te	5E+2 -	6E+2 2E+2	3E-7 1E-7	9E-10 3E-10	7E-6 -	7E-5 -
52	Tellurium-129 <sup>2</sup>	D, see 116Te W, see 116Te	3E+4 -	6E+4 7E+4	3E-5 3E-5	9E-8 1E-7	4E-4 -	4E-3 -
52	Tellurium-131m	D, see 116Te W, see 116Te	3E+2 Thyroid (6E+2) -	4E+2 Thyroid (1E+3) 4E-2 Thyroid (9E+2)	2E-7 -	- 2E-9 -	- 8E-6 -	- 8E-5 -
52	Tellurium-131 <sup>2</sup>	D, see 116Te W, see 116Te	3E+3 Thyroid (6E+3) -	5E+3 Thyroid (1E+4) 5E+3 Thyroid (1E+4)	2E-6 -	- 2E-8 -	- 8E-5 -	- 8E-4 -

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI (μCi)	Inhalation		Col. 1 Air (μCi/ml)	Col. 2 Water (μCi/ml)	Monthly Average Concentration (μCi/ml)
				Col. 2 ALI (μCi)	Col. 3 DAC (μCi/ml)			
52	Tellurium-132	D, see <sup>116</sup> Te	2E+2 Thyroid (7E+2)	2E+2 Thyroid (8E+2)	9E-8	-	-	-
		W, see <sup>116</sup> Te	-	2E+2 Thyroid (6E+2)	9E-8	1E-9	9E-6	9E-5
52	Tellurium-133m <sup>2</sup>	D, see <sup>116</sup> Te	3E+3 Thyroid (6E+3)	5E+3 Thyroid (1E+4)	2E-6	-	-	-
		W, see <sup>116</sup> Te	-	5E+3 Thyroid (1E+4)	2E-6	2E-8	9E-5	9E-4
52	Tellurium-133 <sup>2</sup>	D, see <sup>116</sup> Te	1E+4 Thyroid (3E+4)	2E+4 Thyroid (6E+4)	9E-6	-	-	-
		W, see <sup>116</sup> Te	-	2E+4 Thyroid (6E+4)	9E-6	8E-8	4E-4	4E-3
52	Tellurium-134 <sup>2</sup>	D, see <sup>116</sup> Te	2E+4 Thyroid (2E+4)	2E+4 Thyroid (5E+4)	1E-5	-	-	-
		W, see <sup>116</sup> Te	-	2E+4 Thyroid (5E+4)	1E-5	7E-8	3E-4	3E-3
53	Iodine-120m <sup>2</sup>	D, all compounds	1E+4 Thyroid (1E+4)	2E+4	9E-6	3E-8	-	-
53	Iodine-120 <sup>2</sup>	D, all compounds	4E+3 Thyroid (8E+3)	9E+3 Thyroid (1E+4)	4E-6	-	2E-4	2E-3
53	Iodine-121	D, all compounds	1E+4 Thyroid (3E+4)	2E+4 Thyroid (5E+4)	8E-6	-	-	-
53	Iodine-123	D, all compounds	3E+3 Thyroid (1E+4)	6E+3 Thyroid (2E+4)	3E-6	-	-	-
53	Iodine-124	D, all compounds	5E+1 Thyroid (2E+2)	8E+1 Thyroid (3E+2)	3E-8	-	-	-
53	Iodine-125	D, all compounds	4E+1 Thyroid (1E+2)	6E+1 Thyroid (2E+2)	3E-8	-	-	-
53	Iodine-126	D, all compounds	2E+1 Thyroid (7E+1)	4E+1 Thyroid (1E+2)	1E-8	-	-	-
52	Iodine-128 <sup>2</sup>	D, all compounds	4E+4 St. wall (6E+4)	1E+5	5E-5	2E-7	-	-
			-	-	-	8E-4	8E-3	
53	Iodine-129	D, all compounds	5E+0 Thyroid (2E+1)	9E+0 Thyroid (3E+1)	4E-9	-	-	-
					4E-11	2E-7	2E-6	

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion All ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 All ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
53	Iodine-130	D, all compounds	4E+2 Thyroid (1E+3)	7E+2 Thyroid (2E+3)	3E-7	-	-	2E-4
53	Iodine-131	D, all compounds	3E+1 Thyroid (9E+1)	5E+1 Thyroid (2E+2)	2E-8	-	-	1E-5
53	Iodine-132m <sup>2</sup>	D, all compounds	4E+3 Thyroid (1E+4)	8E+3 Thyroid (2E+4)	4E-6	-	-	1E-3
53	Iodine-132	D, all compounds	4E+3 Thyroid (9E+3)	8E+3 Thyroid (1E+4)	3E-6	-	-	1E-3
53	Iodine-133	D, all compounds	1E+2 Thyroid (5E+2)	3E+2 Thyroid (9E+2)	1E-7	-	-	7E-5
53	Iodine-134 <sup>2</sup>	D, all compounds	2E+4 Thyroid (3E+4)	5E+4	2E-5	6E-8	-	4E-3
53	Iodine-135	D, all compounds	8E+2 Thyroid (3E+3)	2E+3 Thyroid (4E+3)	7E-7	-	-	3E-4
54	Xenon-120 <sup>2</sup>	Submersion <sup>1</sup>	-	-	1E-5	4E-8	-	-
54	Xenon-121 <sup>2</sup>	Submersion <sup>1</sup>	-	-	2E-6	1E-8	-	-
54	Xenon-122	Submersion <sup>1</sup>	-	-	7E-5	3E-7	-	-
54	Xenon-123	Submersion <sup>1</sup>	-	-	6E-6	3E-8	-	-
54	Xenon-125	Submersion <sup>1</sup>	-	-	2E-5	7E-8	-	-
54	Xenon-127	Submersion <sup>1</sup>	-	-	1E-5	6E-8	-	-
54	Xenon-129m	Submersion <sup>1</sup>	-	-	2E-4	9E-7	-	-
54	Xenon-131m	Submersion <sup>1</sup>	-	-	4E-4	2E-6	-	-
54	Xenon-133m	Submersion <sup>1</sup>	-	-	1E-4	6E-7	-	-
54	Xenon-133	Submersion <sup>1</sup>	-	-	1E-4	5E-7	-	-
54	Xenon-135m <sup>2</sup>	Submersion <sup>1</sup>	-	-	9E-6	4E-8	-	-
54	Xenon-135	Submersion <sup>1</sup>	-	-	1E-5	7E-8	-	-
54	Xenon-138 <sup>2</sup>	Submersion <sup>1</sup>	-	-	4E-6	2E-8	-	-
55	Cesium-125 <sup>2</sup>	D, all compounds	5E+4 St. wall (9E+4)	1E+5	6E-5	2E-7	-	-
55	Cesium-127	D, all compounds	6E+4	9E+4	4E-5	1E-7	9E-4	9E-3

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
55	Cesium-129	D, all compounds	2E+4	3E+4	1E-5	5E-8	3E-4	3E-3
55	Cesium-130 <sup>2</sup>	D, all compounds	6E+4	2E+5	8E-5	3E-7	-	-
			St. wall (1E+5)	-	-	-	1E-3	1E-2
55	Cesium-131	D, all compounds	2E+4	3E+4	1E-5	4E-8	3E-4	3E-3
55	Cesium-132	D, all compounds	3E+3	4E+3	2E-6	6E-9	4E-5	4E-4
55	Cesium-134m	D, all compounds	1E+5	1E+5	6E-5	2E-7	-	-
			St. wall (1E+5)	-	-	-	2E-3	2E-2
55	Cesium-134	D, all compounds	7E+1	1E+2	4E-8	2E-10	9E-7	9E-6
55	Cesium-135m <sup>2</sup>	D, all compounds	1E+5	2E+5	8E-5	3E-7	1E-3	1E-2
55	Cesium-135	D, all compounds	7E+2	1E+3	5E-7	2E-9	1E-5	1E-4
55	Cesium-136	D, all compounds	4E+2	7E+2	3E-7	9E-10	6E-6	6E-5
55	Cesium-137	D, all compounds	1E+2	2E+2	6E-8	2E-10	1E-6	1E-5
55	Cesium-138 <sup>2</sup>	D, all compounds	2E+4	6E+4	2E-5	8E-8	-	-
			St. wall (3E+4)	-	-	-	4E-4	4E-3
56	Barium-126 <sup>2</sup>	D, all compounds	6E+3	2E+4	6E-6	2E-8	8E-5	8E-4
56	Barium-128	D, all compounds	5E+2	2E+3	7E-7	2E-9	7E-6	7E-5
56	Barium-131m <sup>2</sup>	D, all compounds	4E+5	1E+6	6E-4	2E-6	-	-
			St. wall (5E+5)	-	-	-	7E-3	7E-2
56	Barium-131	D, all compounds	3E+3	8E+3	3E-6	1E-8	4E-5	4E-4
56	Barium-133m	D, all compounds	2E+3	9E+3	4E-6	1E-8	-	-
			LLI wall (3E+3)	-	-	-	4E-5	4E-4
56	Barium-133	D, all compounds	2E+3	7E+2	3E-7	9E-10	2E-5	2E-4
56	Barium-135m	D, all compounds	3E+3	1E+4	5E-6	2E-8	4E-5	4E-4
56	Barium-139 <sup>2</sup>	D, all compounds	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3
56	Barium-140	D, all compounds	5E+2	1E+3	6E-7	2E-9	-	-
			LLI wall (6E+2)	-	-	-	8E-6	8E-5
56	Barium-141 <sup>2</sup>	D, all compounds	2E+4	7E+4	3E-5	1E-7	3E-4	3E-3
56	Barium-142 <sup>2</sup>	D, all compounds	5E+4	1E+5	6E-5	2E-7	7E-4	7E-3
57	Lanthanum-131 <sup>2</sup>	D, all compounds except those given for W	5E+4	1E+5	5E-5	2E-7	6E-4	6E-3
		W, oxides and hydroxides	-	2E+5	7E-5	2E-7	-	-

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
57	Lanthanum-132	D, see $^{131}\text{La}$ W, see $^{131}\text{La}$	3E+3 -	1E+4 1E+4	4E-6 5E-6	1E-8 2E-8	4E-5 -	4E-4 -
57	Lanthanum-135	D, see $^{131}\text{La}$ W, see $^{131}\text{La}$	4E+4 -	1E+5 9E+4	4E-5 4E-5	1E-7 1E-7	5E-4 -	5E-3 -
57	Lanthanum-137	D, see $^{131}\text{La}$ W, see $^{131}\text{La}$	1E+4 -	6E+1 (7E+1) 3E+2 Liver (3E+2)	3E-8 -	- 1E-10 -	2E-4 -	2E-3 -
57	Lanthanum-138	D, see $^{131}\text{La}$ W, see $^{131}\text{La}$	9E+2 -	4E+0 1E+1	1E-9 6E-9	5E-12 2E-11	1E-5 -	1E-4 -
57	Lanthanum-140	D, see $^{131}\text{La}$ W, see $^{131}\text{La}$	6E+2 -	1E+3 1E+3	6E-7 5E-7	2E-9 2E-9	9E-6 -	9E-5 -
57	Lanthanum-141	D, see $^{131}\text{La}$ W, see $^{131}\text{La}$	4E+3 -	9E+3 1E+4	4E-6 5E-6	1E-8 2E-8	5E-5 -	5E-4 -
57	Lanthanum-142 <sup>2</sup>	D, see $^{131}\text{La}$ W, see $^{131}\text{La}$	8E+3 -	2E+4 3E+4	9E-6 1E-5	3E-8 5E-8	1E-4 -	1E-3 -
57	Lanthanum-143 <sup>2</sup>	D, see $^{131}\text{La}$ W, see $^{131}\text{La}$	4E+4 (4E+4) -	1E+5 -	4E-5 -	1E-7 -	- 5E-4	- 5E-3
58	Cerium-134	W, all compounds except those given for Y Y, oxides, hydroxides, and fluorides	5E+2 (LLI wall) (6E+2) -	7E+2 -	3E-7 -	1E-9 -	- 8E-6	- 8E-5
58	Cerium-135	W, see $^{134}\text{Ce}$ Y, see $^{134}\text{Ce}$	2E+3 -	4E+3 4E+3	2E-6 1E-6	5E-9 5E-9	2E-5 -	2E-4 -
58	Cerium-137m	W, see $^{134}\text{Ce}$ Y, see $^{134}\text{Ce}$	2E+3 (LLI wall) (2E+3) -	4E+3 -	2E-6 -	6E-9 -	- 3E-5	- 3E-4
58	Cerium-137	W, see $^{134}\text{Ce}$ Y, see $^{134}\text{Ce}$	5E+4 -	1E+5 1E+5	6E-5 5E-5	2E-7 2E-7	7E-4 -	7E-3 -
58	Cerium-139	W, see $^{134}\text{Ce}$ Y, see $^{134}\text{Ce}$	5E+3 -	8E+2 7E+2	3E-7 3E-7	1E-9 9E-10	7E-5 -	7E-4 -
58	Cerium-141	W, see $^{134}\text{Ce}$ Y, see $^{134}\text{Ce}$	2E+3 (LLI wall) (2E+3) -	7E+2 -	3E-7 -	1E-9 -	- 3E-5	- 3E-4
58	Cerium-143	W, see $^{134}\text{Ce}$ Y, see $^{134}\text{Ce}$	1E+3 (LLI wall) (1E+3) -	2E+3 -	8E-7 -	3E-9 -	- 2E-5	- 2E-4

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Col. 2	Col. 3	Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
			ALI ( $\mu\text{Ci}$ )	DAC ( $\mu\text{Ci}/\text{m}^3$ )				
58	Cerium-144	W, see $^{134}\text{Ce}$	$2\text{E}+2$ LLL wall ( $3\text{E}+2$ )	$3\text{E}+1$	$1\text{E}-8$	$4\text{E}-11$	-	-
		Y, see $^{134}\text{Ce}$	-	$1\text{E}+1$	$6\text{E}-9$	$2\text{E}-11$	$3\text{E}-6$	$3\text{E}-5$
59	Praseodymium-136 <sup>2</sup>	W, all compounds except those given for Y	$5\text{E}+4$ St. wall ( $7\text{E}+4$ )	$2\text{E}+5$	$1\text{E}-4$	$3\text{E}-7$	-	-
		Y, oxides, hydroxides, carbides, and fluorides	-	$2\text{E}+5$	$9\text{E}-5$	$3\text{E}-7$	$1\text{E}-3$	$1\text{E}-2$
59	Praseodymium-137 <sup>2</sup>	W, see $^{136}\text{Pr}$ Y, see $^{136}\text{Pr}$	$4\text{E}+4$	$2\text{E}+5$ $1\text{E}+5$	$6\text{E}-5$ $6\text{E}-5$	$2\text{E}-7$ $2\text{E}-7$	$5\text{E}-4$	$5\text{E}-3$
59	Praseodymium-138m	W, see $^{136}\text{Pr}$ Y, see $^{136}\text{Pr}$	$1\text{E}+4$	$5\text{E}+4$ $4\text{E}+4$	$2\text{E}-5$ $2\text{E}-5$	$8\text{E}-8$ $6\text{E}-8$	$1\text{E}-4$	$1\text{E}-3$
59	Praseodymium-139	W, see $^{136}\text{Pr}$ Y, see $^{136}\text{Pr}$	$4\text{E}+4$	$1\text{E}+5$ $1\text{E}+5$	$5\text{E}-5$ $5\text{E}-5$	$2\text{E}-7$ $2\text{E}-7$	$6\text{E}-4$	$6\text{E}-3$
59	Praseodymium-142m <sup>2</sup>	W, see $^{136}\text{Pr}$ Y, see $^{136}\text{Pr}$	$8\text{E}+4$	$2\text{E}+5$ $1\text{E}+5$	$7\text{E}-5$ $6\text{E}-5$	$2\text{E}-7$ $2\text{E}-7$	$1\text{E}-3$	$1\text{E}-2$
59	Praseodymium-142	W, see $^{136}\text{Pr}$ Y, see $^{136}\text{Pr}$	$1\text{E}+3$	$2\text{E}+3$ $2\text{E}+3$	$9\text{E}-7$ $8\text{E}-7$	$3\text{E}-9$ $3\text{E}-9$	$1\text{E}-5$	$1\text{E}-4$
59	Praseodymium-143	W, see $^{136}\text{Pr}$	$9\text{E}+2$ LLL wall ( $1\text{E}+3$ )	$8\text{E}+2$	$3\text{E}-7$	$1\text{E}-9$	-	-
		Y, see $^{136}\text{Pr}$	-	$7\text{E}+2$	$3\text{E}-7$	$9\text{E}-10$	$2\text{E}-5$	$2\text{E}-4$
59	Praseodymium-144 <sup>2</sup>	W, see $^{136}\text{Pr}$	$3\text{E}+4$ St. wall ( $4\text{E}+4$ )	$1\text{E}+5$	$5\text{E}-5$	$2\text{E}-7$	-	-
		Y, see $^{136}\text{Pr}$	-	$1\text{E}+5$	$5\text{E}-5$	$2\text{E}-7$	$6\text{E}-4$	$6\text{E}-3$
59	Praseodymium-145	W, see $^{136}\text{Pr}$ Y, see $^{136}\text{Pr}$	$3\text{E}+3$	$9\text{E}+3$ $8\text{E}+3$	$4\text{E}-6$ $3\text{E}-6$	$1\text{E}-8$ $1\text{E}-8$	$4\text{E}-5$	$4\text{E}-4$
59	Praseodymium-147 <sup>2</sup>	W, see $^{136}\text{Pr}$	$5\text{E}+4$ St. wall ( $8\text{E}+4$ )	$2\text{E}+5$	$8\text{E}-5$	$3\text{E}-7$	-	-
		Y, see $^{136}\text{Pr}$	-	$2\text{E}+5$	$8\text{E}-5$	$3\text{E}-7$	$1\text{E}-3$	$1\text{E}-2$
60	Neodymium-136 <sup>2</sup>	W, all compounds except those given for Y	$1\text{E}+4$	$6\text{E}+4$	$2\text{E}-5$	$8\text{E}-8$	$2\text{E}-4$	$2\text{E}-3$
		Y, oxides, hydroxides, carbides, and fluorides	-	$5\text{E}+4$	$2\text{E}-5$	$8\text{E}-8$	-	-
60	Neodymium-138	W, see $^{136}\text{Nd}$ Y, see $^{136}\text{Nd}$	$2\text{E}+3$	$6\text{E}+3$ $5\text{E}+3$	$3\text{E}-6$ $2\text{E}-6$	$9\text{E}-9$ $7\text{E}-9$	$3\text{E}-5$	$3\text{E}-4$
60	Neodymium-139m	W, see $^{136}\text{Nd}$ Y, see $^{136}\text{Nd}$	$5\text{E}+3$	$2\text{E}+4$ $1\text{E}+4$	$7\text{E}-6$ $6\text{E}-6$	$2\text{E}-8$ $2\text{E}-8$	$7\text{E}-5$	$7\text{E}-4$

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Col. 2	Col. 3	Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				ALI ( $\mu\text{Ci}$ )	DAC ( $\mu\text{Ci}/\text{m}^3$ )			
60	Neodymium-139 <sup>2</sup>	W, see <sup>136</sup> Nd Y, see <sup>136</sup> Nd	9E+4 -	3E+5 3E+5	1E-4 1E-4	5E-7 4E-7	1E-3 -	1E-2 -
60	Neodymium-141	W, see <sup>136</sup> Nd Y, see <sup>136</sup> Nd	2E+5 -	7E+5 6E+5	3E-4 3E-4	1E-6 9E-7	2E-3 -	2E-2 -
60	Neodymium-147	W, see <sup>136</sup> Nd  Y, see <sup>136</sup> Nd	1E+3 LLI wall (1E+3) -	9E+2 - 8E+2	4E-7 - 4E-7	1E-9 - 1E-9	- 2E-5 -	- 2E-4 -
60	Neodymium-149 <sup>2</sup>	W, see <sup>136</sup> Nd Y, see <sup>136</sup> Nd	1E+4 -	3E+4 2E+4	1E-5 1E-5	4E-8 3E-8	1E-4 -	1E-3 -
60	Neodymium-151 <sup>2</sup>	W, see <sup>136</sup> Nd Y, see <sup>136</sup> Nd	7E+4 -	2E+5 2E+5	8E-5 8E-5	3E-7 3E-7	9E-4 -	9E-3 -
61	Promethium-141 <sup>2</sup>	W, all compounds except those given for Y  Y, oxides, hydroxides, carbides, and fluorides	5E+4 St. wall (6E+4) -	2E+5 - 2E+5	8E-5 - 7E-5	3E-7 - 2E-7	- 8E-4 -	- 8E-3 -
61	Promethium-143	W, see <sup>141</sup> Pm Y, see <sup>141</sup> Pm	5E+3 -	6E+2 7E+2	2E-7 3E-7	8E-10 1E-9	7E-5 -	7E-4 -
61	Promethium-144	W, see <sup>141</sup> Pm Y, see <sup>141</sup> Pm	1E+3 -	1E+2 1E+2	5E-8 5E-8	2E-10 2E-10	2E-5 -	2E-4 -
61	Promethium-145	W, see <sup>141</sup> Pm  Y, see <sup>141</sup> Pm	1E+4 -	2E+2 Bone surf (2E+2) 2E+2	7E-8 - 8E-8	- 3E-10 3E-10	1E-4 -	1E-3 -
61	Promethium-146	W, see <sup>141</sup> Pm Y, see <sup>141</sup> Pm	2E+3 -	5E+1 4E+1	2E-8 2E-8	7E-11 6E-11	2E-5 -	2E-4 -
61	Promethium-147	W, see <sup>141</sup> Pm  Y, see <sup>141</sup> Pm	4E+3 LLI wall (5E+3) -	1E+2 Bone surf (2E+2) 1E+2	5E-8 - 6E-8	- 3E-10 2E-10	- 7E-5 -	- 7E-4 -
61	Promethium-148a	W, see <sup>141</sup> Pm Y, see <sup>141</sup> Pm	7E+2 -	3E+2 3E+2	1E-7 1E-7	4E-10 5E-10	1E-5 -	1E-4 -
61	Promethium-148	W, see <sup>141</sup> Pm  Y, see <sup>141</sup> Pm	4E+2 LLI wall (5E+2) -	5E+2 - 5E+2	2E-7 - 2E-7	8E-10 - 7E-10	- 7E-6 -	- 7E-5 -
61	Promethium-149	W, see <sup>141</sup> Pm  Y, see <sup>141</sup> Pm	1E+3 LLI wall (1E+3) -	2E+3 - 2E+3	8E-7 - 8E-7	3E-9 - 2E-9	- 2E-5 -	- 2E-4 -
61	Promethium-150	W, see <sup>141</sup> Pm Y, see <sup>141</sup> Pm	5E+3 -	2E+4 2E+4	8E-6 7E-6	3E-8 2E-8	7E-5 -	7E-4 -
61	Promethium-151	W, see <sup>141</sup> Pm Y, see <sup>141</sup> Pm	2E+3 -	4E+3 3E+3	1E-6 1E-6	5E-9 4E-9	2E-5 -	2E-4 -



Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI (μCi)	Inhalation		Col. 1 Air (μCi/m)	Col. 2 Water (μCi/m)	Monthly Average Concentration (μCi/ml)
				Col. 2 ALI (μCi)	Col. 3 DAC (μCi/ml)			
62	Samarium-141m <sup>2</sup>	W, all compounds	3E+4	1E+5	4E-5	1E-7	4E-4	4E-3
62	Samarium-141 <sup>2</sup>	W, all compounds	5E+4 St. wall (6E+4)	2E+5	8E-5	2E-7	-	-
62	Samarium-142 <sup>2</sup>	W, all compounds	8E+3	3E+4	1E-5	4E-8	1E-4	1E-3
62	Samarium-145	W, all compounds	6E+3	5E+2	2E-7	7E-10	8E-5	8E-4
62	Samarium-146	W, all compounds	1E+1 Bone surf (3E+1)	4E-2 Bone surf (6E-2)	1E-11	-	-	-
62	Samarium-147	W, all compounds	2E+1 Bone surf (3E+1)	4E-2 Bone surf (7E-2)	2E-11	-	-	-
62	Samarium-151	W, all compounds	1E+4 LLI wall (1E+4)	1E+2 Bone surf (2E+2)	4E-8	-	-	-
62	Samarium-153	W, all compounds	2E+3 LLI wall (2E+3)	3E+3	1E-6	4E-9	-	-
62	Samarium-155 <sup>2</sup>	W, all compounds	6E+4 St. wall (8E+4)	2E+5	9E-5	3E-7	-	-
62	Samarium-156	W, all compounds	5E+3	9E+3	4E-6	1E-8	7E-5	7E-4
63	Europium-145	W, all compounds	2E+3	2E+3	8E-7	3E-9	2E-5	2E-4
63	Europium-146	W, all compounds	1E+3	1E+3	5E-7	2E-9	1E-5	1E-4
63	Europium-147	W, all compounds	3E+3	2E+3	7E-7	2E-9	4E-5	4E-4
63	Europium-148	W, all compounds	1E+3	4E+2	1E-7	5E-10	1E-5	1E-4
63	Europium-149	W, all compounds	1E+4	3E+3	1E-6	4E-9	2E-4	2E-3
63	Europium-150 (12.62 h)	W, all compounds	3E+3	8E+3	4E-6	1E-8	4E-5	4E-4
63	Europium-150 (34.2 y)	W, all compounds	8E+2	2E+1	8E-9	3E-11	1E-5	1E-4
63	Europium-152m	W, all compounds	3E+3	6E+3	3E-6	9E-9	4E-5	4E-4
63	Europium-152	W, all compounds	8E+2	2E+1	1E-8	3E-11	1E-5	1E-4
63	Europium-154	W, all compounds	5E+2	2E+1	8E-9	3E-11	7E-6	7E-5
63	Europium-155	W, all compounds	4E+3	9E+1 Bone surf (1E+2)	4E-8	-	5E-5	5E-4
63	Europium-156	W, all compounds	6E+2	5E+2	2E-7	6E-10	8E-6	8E-5

Atomic No.	Radioisotope	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI (μCi)	Col. 2 Inhalation		Col. 1 Air (μCi/ml)	Col. 2 Water (μCi/ml)	Monthly Average Concentration (μCi/ml)
				ALI (μCi)	DAL (μCi/ml)			
62	Europium-157	W, all compounds	2E+3	5E+3	2E-6	7E-9	3E-5	3E-4
63	Europium-158 <sup>2</sup>	W, all compounds	2E+4	6E+4	2E-5	8E-8	3E-4	3E-3
64	Gadolinium-145 <sup>2</sup>	D, all compounds except those given for W	5E+4	2E+5	6E-5	2E-7	-	-
		W, oxides, hydroxides, and fluorides	5E+4 St. wall (5E+4)	-	-	-	6E-4	6E-3
64	Gadolinium-146	D, see <sup>145</sup> Gd	1E+3	1E+2	5E-8	2E-10	2E-5	2E-4
		W, see <sup>145</sup> Gd	-	3E+2	1E-7	4E-20	-	-
64	Gadolinium-147	D, see <sup>145</sup> Gd	2E+3	4E+3	2E-6	6E-9	3E-5	3E-4
		W, see <sup>145</sup> Gd	-	4E+3	1E-6	5E-9	-	-
64	Gadolinium-148	D, see <sup>145</sup> Gd	1E+1	8E-3	3E-12	-	-	-
		W, see <sup>145</sup> Gd	Bone surf (2E+1)	Bone surf (2E-2)	-	2E-14	3E-7	3E-6
			-	3E-2	1E-11	-	-	-
			-	Bone surf (6E-2)	-	8E-14	-	-
64	Gadolinium-149	D, see <sup>145</sup> Gd	3E+3	2E+3	9E-7	2E-9	4E-5	4E-4
		W, see <sup>145</sup> Gd	-	2E+3	1E-6	3E-9	-	-
64	Gadolinium-151	D, see <sup>145</sup> Gd	6E+3	4E+2	2E-7	-	9E-5	9E-4
		W, see <sup>145</sup> Gd	-	Bone surf (6E+2)	-	9E-10	-	-
			-	1E+3	5E-7	2E-9	-	-
64	Gadolinium-152	D, see <sup>145</sup> Gd	2E+1	1E-2	4E-12	-	-	-
		W, see <sup>145</sup> Gd	Bone surf (3E+1)	Bone surf (2E-2)	-	3E-14	4E-7	4E-6
			-	4E-2	2E-11	-	-	-
			-	Bone surf (8E-2)	-	1E-13	-	-
64	Gadolinium-153	D, see <sup>145</sup> Gd	9E+3	1E+2	6E-8	-	6E-5	6E-4
		W, see <sup>145</sup> Gd	-	Bone surf (2E+2)	-	3E-10	-	-
			-	6E+2	2E-7	8E-10	-	-
64	Gadolinium-159	D, see <sup>145</sup> Gd	3E+3	8E+3	3E-6	1E-8	4E-5	4E-4
		W, see <sup>145</sup> Gd	-	6E+3	2E-6	8E-9	-	-
65	Terbium-147 <sup>2</sup>	W, all compounds	9E+3	3E+4	1E-5	5E-8	1E-4	1E-3
65	Terbium-149	W, all compounds	5E+3	7E+2	3E-7	1E-9	7E-5	7E-4
65	Terbium-150	W, all compounds	5E+3	2E+4	9E-6	3E-8	7E-5	7E-4
65	Terbium-151	W, all compounds	4E+3	9E+3	4E-6	1E-8	5E-5	5E-4
65	Terbium-153	W, all compounds	5E+3	7E+3	3E-6	1E-8	7E-5	7E-4
65	Terbium-154	W, all compounds	2E+3	4E+3	2E-6	6E-9	2E-5	2E-4
65	Terbium-155	W, all compounds	6E+3	8E+3	3E-6	1E-8	8E-5	8E-4
65	Terbium-156m (5.0 h)	W, all compounds	2E+4	3E+4	1E-5	4E-8	2E-4	2E-3

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
65	Terbium-156m (24.4 h)	W, all compounds	7E+3	8E+3	3E-6	1E-8	1E-4	1E-3
65	Terbium-156	W, all compounds	1E+3	1E+3	6E-7	2E-9	1E-5	1E-4
65	Terbium-157	W, all compounds	5E+4 LLI wall (5E+4)	3E+2 Bone surf (6E+2)	1E-7	-	-	-
65	Terbium-158	W, all compounds	1E+3	2E+1	8E-9	3E-11	2E-5	2E-4
65	Terbium-160	W, all compounds	8E+2	2E+2	9E-8	3E-10	1E-5	1E-4
65	Terbium-161	W, all compounds	2E+3 LLI wall (2E+3)	2E+3	7E-7	2E-9	-	-
66	Dysprosium-155	W, all compounds	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
66	Dysprosium-157	W, all compounds	2E+4	6E+4	3E-5	9E-8	3E-4	3E-3
66	Dysprosium-159	W, all compounds	1E+4	2E+3	1E-6	3E-9	2E-4	2E-3
66	Dysprosium-165	W, all compounds	1E+4	5E+4	2E-5	6E-8	2E-4	2E-3
66	Dysprosium-166	W, all compounds	6E+2 LLI wall (8E+2)	7E+2	3E-7	1E-9	-	-
67	Holmium-155 <sup>2</sup>	W, all compounds	4E+4	2E+5	6E-5	2E-7	6E-4	6E-3
67	Holmium-157 <sup>2</sup>	W, all compounds	3E+5	1E+6	6E-4	2E-6	4E-3	4E-2
67	Holmium-159 <sup>2</sup>	W, all compounds	2E+5	1E+6	4E-4	1E-6	3E-3	3E-2
67	Holmium-161	W, all compounds	1E+5	4E+5	2E-4	6E-7	1E-3	1E-2
67	Holmium-162m <sup>2</sup>	W, all compounds	5E+4	3E+5	1E-4	4E-7	7E-4	7E-3
67	Holmium-162 <sup>2</sup>	W, all compounds	5E+5 St. wall (8E+5)	2E+6	1E-3	3E-6	-	-
67	Holmium-164m <sup>2</sup>	W, all compounds	1E+5	3E+5	1E-4	4E-7	1E-3	1E-2
67	Holmium-164 <sup>2</sup>	W, all compounds	2E+5 St. wall (2E+5)	6E+5	3E-4	9E-7	-	-
67	Holmium-166m	W, all compounds	6E+2	7E+0	3E-9	9E-12	9E-6	9E-5
67	Holmium-166	W, all compounds	9E+2 LLI wall (9E+2)	2E+3	7E-7	2E-9	-	-
67	Holmium-167	W, all compounds	2E+4	6E+4	2E-5	8E-8	2E-4	2E-3
68	Erbium-161	W, all compounds	2E+4	6E+4	3E-5	9E-8	2E-4	2E-3
68	Erbium-165	W, all compounds	6E+4	2E+5	8E-5	3E-7	9E-4	9E-3

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Col. 2	Col. 3	Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
			ALI ( $\mu\text{Ci}$ )	DAC ( $\mu\text{Ci}/\text{m}^3$ )				
68	Erbium-169	W, all compounds	3E+3 LLI wall (4E+3)	3E+3	1E-6	4E-9	-	-
68	Erbium-171	W, all compounds	4E+3	1E+4	4E-6	1E-8	5E-5	5E-4
68	Erbium-172	W, all compounds	1E+3 LLI wall (1E+3)	1E+3	6E-7	2E-9	-	-
69	Thulium-162 <sup>2</sup>	W, all compounds	7E+4 St. wall (7E+4)	3E+5	1E-4	4E-7	-	-
69	Thulium-166	W, all compounds	4E+3	1E+4	6E-6	2E-8	6E-5	6E-4
69	Thulium-167	W, all compounds	2E+3 LLI wall (2E+3)	2E+3	8E-7	3E-9	-	-
69	Thulium-170	W, all compounds	8E+2 LLI wall (1E+3)	2E+2	9E-8	3E-10	-	-
69	Thulium-171	W, all compounds	1E+4 LLI wall (1E+4)	3E+2 Bone surf (6E+2)	1E-7	-	-	-
69	Thulium-172	W, all compounds	7E+2 LLI wall (8E+2)	1E+3	5E-7	2E-9	-	-
69	Thulium-173	W, all compounds	4E+3	1E+4	5E-6	2E-8	6E-5	6E-4
69	Thulium-175 <sup>2</sup>	W, all compounds	7E+4 St. wall (9E+4)	3E+5	1E-4	4E-7	-	-
70	Ytterbium-162 <sup>2</sup>	W, all compounds except those given for Y	7E+4	3E+5	1E-4	4E-7	1E-3	1E-2
		Y, oxides, hydroxides, and fluorides	-	3E+5	1E-4	4E-7	-	-
70	Ytterbium-166	W, see <sup>162</sup> Yb Y, see <sup>162</sup> Yb	1E+3	2E+3	8E-7	3E-9	2E-5	2E-4
70	Ytterbium-167 <sup>2</sup>	W, see <sup>162</sup> Yb Y, see <sup>162</sup> Yb	3E+5	8E+5 7E+5	3E-4 3E-4	1E-6 1E-6	4E-3	4E-2
70	Ytterbium-169	W, see <sup>162</sup> Yb Y, see <sup>162</sup> Yb	2E+3	8E+2 7E+2	4E-7 3E-7	1E-9 1E-9	2E-5	2E-4
70	Ytterbium-175	W, see <sup>162</sup> Yb	3E+3 LLI wall (3E+3)	4E+3	1E-6	5E-9	-	-
		Y, see <sup>162</sup> Yb	-	3E+3	1E-6	5E-9	4E-5	4E-4
70	Ytterbium-177 <sup>2</sup>	W, see <sup>162</sup> Yb Y, see <sup>162</sup> Yb	2E+4	5E+4 5E+4	2E-5 2E-5	7E-8 6E-8	2E-4	2E-3
70	Ytterbium-178 <sup>2</sup>	W, see <sup>162</sup> Yb Y, see <sup>162</sup> Yb	1E+4	4E+4 4E+4	2E-5 2E-5	6E-8 5E-8	2E-4	2E-3

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI (μCi)	Inhalation		Col. 1 Air (μCi/ml)	Col. 2 Water (μCi/ml)	Monthly Average Concentration (μCi/ml)
				Col. 2 ALI (μCi)	Col. 3 DAC (μCi/ml)			
71	Lutetium-169	W, all compounds except those given for Y	3E+3	4E+3	2E-6	6E-9	3E-5	3E-4
		Y, oxides, hydroxides, and fluorides	-	4E+3	2E-6	6E-9	-	-
71	Lutetium-170	W, see <sup>169</sup> Lu Y, see <sup>169</sup> Lu	1E+3 -	2E+3 2E+3	9E-7 8E-7	3E-9 3E-9	2E-5 -	2E-4 -
71	Lutetium-171	W, see <sup>169</sup> Lu Y, see <sup>169</sup> Lu	2E+3 -	2E+3 2E+3	8E-7 8E-7	3E-9 3E-9	3E-5 -	3E-4 -
71	Lutetium-172	W, see <sup>169</sup> Lu Y, see <sup>169</sup> Lu	1E+3 -	1E+3 1E+3	5E-7 5E-7	2E-9 2E-9	1E-5 -	1E-4 -
71	Lutetium-173	W, see <sup>169</sup> Lu	5E+3	3E+2 Bone surf (5E+2)	1E-7	-	7E-5	7E-4
		Y, see <sup>169</sup> Lu	-	3E+2	1E-7	6E-10	-	-
71	Lutetium-174m	W, see <sup>169</sup> Lu	2E+3 LLI wall (3E+3)	2E+2 Bone surf (3E+2)	1E-7	-	-	-
		Y, see <sup>169</sup> Lu	-	2E+2	9E-8	5E-10 3E-10	4E-5	4E-4
71	Lutetium-174	W, see <sup>169</sup> Lu	5E+3	1E+2 Bone surf (2E+2)	5E-8	-	7E-5	7E-4
		Y, see <sup>169</sup> Lu	-	2E+2	6E-8	3E-10 2E-10	-	-
71	Lutetium-176m	W, see <sup>169</sup> Lu Y, see <sup>169</sup> Lu	8E+3 -	3E+4 2E+4	1E-5 9E-6	3E-8 3E-8	1E-4 -	1E-3 -
71	Lutetium-176	W, see <sup>169</sup> Lu	7E+2	5E+0 Bone surf (1E+1)	2E-9	-	1E-5	1E-4
		Y, see <sup>169</sup> Lu	-	8E+0	3E-9	2E-11 1E-11	-	-
71	Lutetium-177m	W, see <sup>169</sup> Lu	7E+2	1E+2 Bone surf (1E+2)	5E-8	-	1E-5	1E-4
		Y, see <sup>169</sup> Lu	-	8E+1	3E-8	2E-10 1E-10	-	-
71	Lutetium-177	W, see <sup>169</sup> Lu	2E+3 LLI wall (3E+3)	2E+3	9E-7	3E-9	-	-
		Y, see <sup>169</sup> Lu	-	2E+3	9E-7	3E-9	4E-5	4E-4
71	Lutetium-178m <sup>2</sup>	W, see <sup>169</sup> Lu	5E+4 St. wall (6E+4)	2E+5	8E-5	3E-7	-	-
		Y, see <sup>169</sup> Lu	-	2E+5	7E-5	2E-7	8E-4	8E-3
71	Lutetium-176 <sup>2</sup>	W, see <sup>169</sup> Lu	4E+4 St. wall (4E+4)	1E+5	5E-5	2E-7	-	-
		Y, see <sup>169</sup> Lu	-	1E+5	5E-5	2E-7	6E-4	6E-3
71	Lutetium-179	W, see <sup>169</sup> Lu Y, see <sup>169</sup> Lu	6E+3 -	2E+4 2E+4	8E-6 6E-6	3E-8 3E-8	9E-5 -	9E-4 -

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI (μCi)	Inhalation		Col. 1 Air (μCi/m)	Col. 2 Water (μCi/m)	Monthly Average Concentration (μCi/m)
				Col. 2 ALI (μCi)	Col. 3 DAC (μCi/m)			
72	Hafnium-170	D, all compounds except those given for W W, oxides, hydroxides, carbides, and nitrates	3E+3 -	6E+3 5E+3	2E-6 2E-6	8E-9 6E-9	4E-5 -	4E-4 -
72	Hafnium-172	D, see <sup>170</sup> Hf W, see <sup>170</sup> Hf	1E+3 - -	9E+0 Bone surf (2E+1) 4E+1 Bone surf (6E+1)	4E-9 - 2E-8 -	- 3E-11 - 8E-11	2E-5 - - -	2E-4 - - -
72	Hafnium-173	D, see <sup>170</sup> Hf W, see <sup>170</sup> Hf	5E+3 -	1E+4 1E+4	5E-6 5E-6	2E-8 2E-8	7E-5 2E-8	7E-4 -
72	Hafnium-175	D, see <sup>170</sup> Hf W, see <sup>170</sup> Hf	3E+3 - -	9E+2 Bone surf (1E+3) 1E+3	4E-7 - 5E-7	- 1E-9 2E-9	4E-5 - -	4E-4 - -
72	Hafnium-177m <sup>2</sup>	D, see <sup>170</sup> Hf W, see <sup>170</sup> Hf	2E+4 -	6E+4 9E+4	2E-5 4E-5	8E-8 1E-7	3E-4 -	3E-3 -
72	Hafnium-178m	D, see <sup>170</sup> Hf W, see <sup>170</sup> Hf	3E+2 - -	1E+0 Bone surf (2E+0) 5E+0 Bone surf (9E+0)	5E-10 - 2E-9 -	- 3E-12 - 1E-11	3E-6 - - -	3E-5 - - -
72	Hafnium-179m	D, see <sup>170</sup> Hf W, see <sup>170</sup> Hf	1E+3 - -	3E+2 Bone surf (5E+2) 6E+2	1E-7 - 3E-7	- 8E-10 8E-10	1E-5 - -	1E-4 - -
72	Hafnium-180m	D, see <sup>170</sup> Hf W, see <sup>170</sup> Hf	7E+3 -	2E+4 3E+4	9E-6 1E-5	3E-8 4E-8	1E-4 -	1E-3 -
72	Hafnium-181	D, see <sup>170</sup> Hf W, see <sup>170</sup> Hf	1E+3 - -	2E+2 Bone surf (4E+2) 4E+2	7E-8 - 2E-7	- 6E-10 6E-10	2E-5 - -	2E-4 - -
72	Hafnium-182m <sup>2</sup>	D, see <sup>170</sup> Hf W, see <sup>170</sup> Hf	4E+4 -	9E+4 1E+5	4E-5 6E-5	1E-7 2E-7	5E-4 -	5E-3 -
72	Hafnium-182	D, see <sup>170</sup> Hf W, see <sup>170</sup> Hf	2E+2 Bone surf (4E+2) - -	8E-1 Bone surf (2E+0) 3E+0 Bone surf (7E+0)	3E-10 - 1E-9 -	- 2E-12 - 1E-11	- 5E-6 - -	- 5E-5 - -
72	Hafnium-183 <sup>2</sup>	D, see <sup>170</sup> Hf W, see <sup>170</sup> Hf	2E+4 -	5E+4 6E+4	2E-5 2E-5	6E-8 8E-8	3E-4 -	3E-3 -
72	Hafnium-184	D, see <sup>170</sup> Hf W, see <sup>170</sup> Hf	2E+3 -	8E+3 6E+3	3E-6 3E-6	1E-8 9E-9	3E-5 -	3E-4 -

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
73	Tantalum-172 <sup>2</sup>	W, all compounds except those given for Y Y, elemental Ta, oxides, hydroxides, halides, carbides, nitrates, and nitrides	4E+4 -	1E+5 1E+5	5E-5 4E-5	2E-7 1E-7	5E-4 -	5E-3 -
73	Tantalum-173	W, see 172Ta Y, see 172Ta	7E+3 -	2E+4 2E+4	8E-6 7E-6	3E-8 2E-8	9E-5 -	9E-4 -
73	Tantalum-174 <sup>2</sup>	W, see 172Ta Y, see 172Ta	3E+4 -	1E+5 9E+4	4E-5 4E-5	1E-7 1E-7	4E-4 -	4E-3 -
73	Tantalum-175	W, see 172Ta Y, see 172Ta	6E+3 -	2E+4 1E+4	7E-6 6E-6	2E-8 2E-8	8E-5 -	8E-4 -
73	Tantalum-176	W, see 172Ta Y, see 172Ta	4E+3 -	1E+4 1E+4	5E-6 5E-6	2E-8 2E-8	5E-5 -	5E-4 -
73	Tantalum-177	W, see 172Ta Y, see 172Ta	1E+4 -	2E+4 2E+4	8E-6 7E-6	3E-8 2E-8	2E-4 -	2E-3 -
73	Tantalum-178	W, see 172Ta Y, see 172Ta	2E+4 -	9E+4 7E+4	4E-5 3E-5	1E-7 1E-7	2E-4 -	2E-3 -
73	Tantalum-179	W, see 172Ta Y, see 172Ta	2E+4 -	5E+3 9E+2	2E-6 4E-7	8E-9 1E-9	3E-4 -	3E-3 -
73	Tantalum-180m	W, see 172Ta Y, see 172Ta	2E+4 -	7E+4 6E+4	3E-5 2E-5	9E-8 8E-8	3E-4 -	3E-3 -
73	Tantalum-180	W, see 172Ta Y, see 172Ta	1E+3 -	4E+2 2E+1	2E-7 1E-8	6E-10 3E-11	2E-5 -	2E-4 -
73	Tantalum-182a <sup>2</sup>	W, see 172Ta Y, see 172Ta	2E+5 (2E+5) St. wall	5E+5 -	2E-4 -	8E-7 6E-7	- 3E-3	- 3E-2
73	Tantalum-182	W, see 172Ta Y, see 172Ta	8E+2 -	3E+2 1E+2	1E-7 6E-8	5E-10 2E-10	1E-5 -	1E-4 -
73	Tantalum-183	W, see 172Ta Y, see 172Ta	9E+2 (1E+3) LLI wall	1E+3 -	5E-7 -	2E-9 4E-7	- 1E-9	- 2E-4
73	Tantalum-184	W, see 172Ta Y, see 172Ta	2E+3 -	5E+3 5E+3	2E-6 2E-6	8E-9 7E-9	3E-5 -	3E-4 -
73	Tantalum-185 <sup>2</sup>	W, see 172Ta Y, see 172Ta	3E+4 -	7E+4 6E+4	3E-5 3E-5	1E-7 9E-8	4E-4 -	4E-3 -
73	Tantalum-186 <sup>2</sup>	W, see 172Ta Y, see 172Ta	5E+4 (7E+4) St. wall	2E+5 -	1E-4 -	3E-7 3E-7	- 1E-3	- 1E-2
74	Tungsten-176	D, all compounds	1E+4	5E+4	2E-5	7E-8	1E-4	1E-3
74	Tungsten-177	D, all compounds	2E+4	9E+4	4E-5	1E-7	3E-4	3E-3

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{ml}$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{ml}$ )
				Col. 2 ALL ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{ml}$ )			
74	Tungsten-178	D, all compounds	5E+3	2E+4	8E-6	3E-8	7E-5	7E-4
74	Tungsten-179 <sup>2</sup>	D, all compounds	5E+5	2E+6	7E-4	2E-6	7E-3	7E-2
74	Tungsten-181	D, all compounds	2E+4	3E+4	1E-5	5E-8	2E-4	2E-3
74	Tungsten-185	D, all compounds	2E+3 ALI wall (3E+3)	7E+3	3E-6	9E-9	-	4E-8
74	Tungsten-187	D, all compounds	2E+3	9E+3	8E-6	1E-8	3E-5	3E-4
74	Tungsten-188	D, all compounds	4E+2 ALI wall (5E+2)	1E+3	9E-7	2E-9	-	7E-5
75	Rhenium-177 <sup>2</sup>	D, all compounds except those given for W	9E+4 St. wall (2E+5)	3E+5	1E-4	4E-7	-	-
		W, oxides, hydroxides, and nitrates	-	4E+5	1E-4	5E-7	-	2E-2
75	Rhenium-178 <sup>2</sup>	D, see <sup>177</sup> Re	7E+4 St. wall (1E+5)	3E+5	1E-4	4E-7	-	-
		W, see <sup>177</sup> Re	-	3E+5	1E-4	4E-7	-	1E-2
75	Rhenium-181	D, see <sup>177</sup> Re W, see <sup>177</sup> Re	5E+3 -	9E+3 8E+3	8E-6 4E-6	1E-8 1E-8	7E-5 -	7E-4 -
75	Rhenium-182 (12.7 h)	D, see <sup>177</sup> Re W, see <sup>177</sup> Re	7E+3 -	1E+4 2E+4	5E-6 4E-6	2E-8 2E-8	9E-5 -	9E-4 -
75	Rhenium-182 (64.0 h)	D, see <sup>177</sup> Re W, see <sup>177</sup> Re	1E+3 -	2E+3 2E+3	1E-6 9E-7	3E-9 2E-9	2E-5 -	2E-4 -
75	Rhenium-184m	D, see <sup>177</sup> Re W, see <sup>177</sup> Re	2E+3 -	3E+3 4E+2	1E-6 2E-7	4E-9 5E-10	3E-5 -	3E-4 -
75	Rhenium-184	D, see <sup>177</sup> Re W, see <sup>177</sup> Re	2E+3 -	4E+3 1E+3	1E-6 6E-7	5E-9 2E-9	3E-5 -	3E-4 -
75	Rhenium-186m	D, see <sup>177</sup> Re W, see <sup>177</sup> Re	1E+3 St. wall (2E+3)	2E+3 St. wall (2E+3) 2E+2	7E-7 -	- 2E-9 2E-10	- 2E-5 -	- 2E-4 -
75	Rhenium-186	D, see <sup>177</sup> Re W, see <sup>177</sup> Re	2E+3 -	2E+3 2E+3	1E-6 7E-7	4E-9 2E-9	3E-5 -	2E-4 -
75	Rhenium-187	D, see <sup>177</sup> Re W, see <sup>177</sup> Re	6E+5 -	8E+5 St. wall (9E+5) 1E+5	4E-4 -	- 1E-6 1E-7	8E-3 -	8E-2 -
75	Rhenium-188m <sup>2</sup>	D, see <sup>177</sup> Re W, see <sup>177</sup> Re	8E+4 -	1E+5 1E+5	6E-5 4E-5	2E-7 2E-7	1E-3 -	1E-2 -
75	Rhenium-188	D, see <sup>177</sup> Re W, see <sup>177</sup> Re	2E+3 -	3E+3 3E+3	1E-6 1E-6	4E-9 4E-9	2E-5 -	2E-4 -



Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
75	Rhenium-189	D, see <sup>177</sup> Re W, see <sup>177</sup> Re	3E+3 -	5E+3 4E+3	2E-6 2E-6	7E-9 6E-9	4E-5 -	4E-4 -
76	Osmium-180 <sup>2</sup>	D, all compounds except those given for W and Y W, halides and nitrates Y, oxides and hydroxides	1E+5 - -	4E+5 5E+5 5E+5	2E-4 2E-4 2E-4	5E-7 7E-7 6E-7	1E-3 - -	1E-2 - -
76	Osmium-181 <sup>2</sup>	D, see <sup>180</sup> Os W, see <sup>180</sup> Os Y, see <sup>180</sup> Os	1E+4 - -	4E+4 5E+4 4E+4	2E-5 2E-5 2E-5	6E-8 6E-8 6E-8	2E-4 - -	2E-3 - -
76	Osmium-182	D, see <sup>180</sup> Os W, see <sup>180</sup> Os Y, see <sup>180</sup> Os	2E+3 - -	6E+3 4E+3 4E+3	2E-6 2E-6 2E-6	8E-9 6E-9 6E-9	3E-5 - -	3E-4 - -
76	Osmium-185	D, see <sup>180</sup> Os W, see <sup>180</sup> Os Y, see <sup>180</sup> Os	2E+3 - -	5E+2 8E+2 8E+2	2E-7 3E-7 3E-7	7E-10 1E-9 1E-9	3E-5 - -	3E-4 - -
76	Osmium-189a	D, see <sup>180</sup> Os W, see <sup>180</sup> Os Y, see <sup>180</sup> Os	8E+4 - -	2E+5 2E+5 2E+5	1E-4 9E-5 7E-5	3E-7 3E-7 2E-7	1E-3 - -	1E-2 - -
76	Osmium-191a	D, see <sup>180</sup> Os W, see <sup>180</sup> Os Y, see <sup>180</sup> Os	1E+4 - -	3E+4 2E+4 2E+4	1E-5 8E-6 7E-6	4E-8 3E-8 2E-8	2E-4 - -	2E-3 - -
76	Osmium-191	D, see <sup>180</sup> Os W, see <sup>180</sup> Os Y, see <sup>180</sup> Os	2E+3 LLI wall (3E+3) - -	2E+3 - 2E+3 1E+3	2E-6 - 7E-7 6E-7	3E-9 - 2E-9 2E-9	- 3E-5 - -	- 3E-4 - -
76	Osmium-193	D, see <sup>180</sup> Os W, see <sup>180</sup> Os Y, see <sup>180</sup> Os	2E+3 LLI wall (2E+3) - -	5E+3 - 3E+3 3E+3	2E-6 - 1E-6 3E-6	6E-9 - 4E-9 4E-9	- 2E-5 - -	- 2E-4 - -
76	Osmium-194	D, see <sup>180</sup> Os W, see <sup>180</sup> Os Y, see <sup>180</sup> Os	4E+2 LLI wall (6E+2) - -	4E+1 - 6E+1 8E+0	2E-8 - 2E-8 3E-9	6E-11 - 8E-11 1E-11	- 8E-6 - -	- 8E-5 - -
77	Iridium-182 <sup>2</sup>	D, all compounds except those given for W and Y W, halides, nitrates, and metallic iridium Y, oxides and hydroxides	4E+4 St. wall (4E+4) - -	1E+5 - 2E+5 1E+5	6E-5 - 6E-5 5E-5	2E-7 - 2E-7 2E-7	- 6E-4 - -	- 6E-3 - -
77	Iridium-184	D, see <sup>182</sup> Ir W, see <sup>182</sup> Ir Y, see <sup>182</sup> Ir	8E+3 - -	2E+4 3E+4 3E+4	1E-5 1E-5 1E-5	3E-8 5E-8 4E-8	1E-4 - -	1E-3 - -

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
77	Iridium-185	D, see $^{182}\text{Ir}$	5E+3	1E+4	5E-6	2E-8	7E-5	7E-4
		W, see $^{182}\text{Ir}$	-	1E+4	5E-6	2E-8	-	-
		Y, see $^{182}\text{Ir}$	-	1E+4	4E-6	1E-8	-	-
77	Iridium-186	D, see $^{182}\text{Ir}$	2E+3	8E+3	3E-6	1E-8	3E-5	3E-4
		W, see $^{182}\text{Ir}$	-	6E+3	3E-6	9E-9	-	-
		Y, see $^{182}\text{Ir}$	-	6E+3	2E-6	8E-9	-	-
77	Iridium-187	D, see $^{182}\text{Ir}$	1E+4	2E+4	1E-5	5E-8	1E-4	1E-3
		W, see $^{182}\text{Ir}$	-	3E+4	1E-5	4E-8	-	-
		Y, see $^{182}\text{Ir}$	-	3E+4	1E-5	4E-8	-	-
77	Iridium-188	D, see $^{182}\text{Ir}$	2E+3	5E+3	2E-6	6E-9	3E-5	3E-4
		W, see $^{182}\text{Ir}$	-	4E+3	1E-6	5E-9	-	-
		Y, see $^{182}\text{Ir}$	-	3E+3	1E-6	5E-9	-	-
77	Iridium-189	D, see $^{182}\text{Ir}$	3E+3	5E+3	2E-6	7E-9	-	-
		W, see $^{182}\text{Ir}$	LLI wall (5E+3)	-	-	-	7E-5	7E-4
		Y, see $^{182}\text{Ir}$	-	4E+3	2E-6	5E-9	-	-
77	Iridium-190m <sup>2</sup>	D, see $^{182}\text{Ir}$	2E+5	2E+5	8E-5	2E-7	2E-3	2E-2
		W, see $^{182}\text{Ir}$	-	2E+5	9E-5	3E-7	-	-
		Y, see $^{182}\text{Ir}$	-	2E+5	8E-5	3E-7	-	-
77	Iridium-190	D, see $^{182}\text{Ir}$	1E+3	9E+2	4E-7	1E-9	1E-5	1E-4
		W, see $^{182}\text{Ir}$	-	1E+3	4E-7	1E-9	-	-
		Y, see $^{182}\text{Ir}$	-	9E+2	4E-7	1E-9	-	-
77	Iridium-192m	D, see $^{182}\text{Ir}$	3E+8	9E+1	4E-8	1E-10	4E-5	4E-4
		W, see $^{182}\text{Ir}$	-	2E+2	9E-8	3E-10	-	-
		Y, see $^{182}\text{Ir}$	-	2E+1	6E-9	2E-11	-	-
77	Iridium-192	D, see $^{182}\text{Ir}$	9E+2	3E+2	3E-7	4E-10	1E-5	1E-4
		W, see $^{182}\text{Ir}$	-	4E+2	2E-7	6E-10	-	-
		Y, see $^{182}\text{Ir}$	-	2E+2	3E-8	3E-10	-	-
77	Iridium-194m	D, see $^{182}\text{Ir}$	6E+2	9E+1	4E-8	1E-10	9E-6	9E-5
		W, see $^{182}\text{Ir}$	-	2E+2	3E-8	2E-10	-	-
		Y, see $^{182}\text{Ir}$	-	1E+2	4E-8	1E-10	-	-
77	Iridium-194	D, see $^{182}\text{Ir}$	1E+3	3E+3	1E-6	4E-9	1E-5	1E-4
		W, see $^{182}\text{Ir}$	-	2E+3	9E-7	3E-9	-	-
		Y, see $^{182}\text{Ir}$	-	2E+3	8E-7	2E-9	-	-
77	Iridium-195m	D, see $^{182}\text{Ir}$	8E+3	2E+4	1E-5	3E-8	1E-4	1E-3
		W, see $^{182}\text{Ir}$	-	3E+4	1E-5	4E-8	-	-
		Y, see $^{182}\text{Ir}$	-	2E+4	9E-6	3E-8	-	-
77	Iridium-195	D, see $^{182}\text{Ir}$	1E+4	4E+4	2E-5	6E-8	2E-4	2E-3
		W, see $^{182}\text{Ir}$	-	5E+4	2E-5	7E-8	-	-
		Y, see $^{182}\text{Ir}$	-	4E+4	2E-5	6E-8	-	-
78	Platinum-186	D, all compounds	1E+4	4E+4	2E-5	5E-8	2E-4	2E-3
78	Platinum-188	D, all compounds	2E+3	2E+3	7E-7	2E-9	2E-5	2E-4
78	Platinum-189	D, all compounds	1E+4	3E+4	1E-5	4E-8	1E-4	1E-3
78	Platinum-191	D, all compounds	4E+3	8E+3	4E-6	1E-8	5E-5	5E-4

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
78	Platinum-193m	D, all compounds	3E+3 LLI wall (3E+4)	6E+3	3E-6	8E-9	-	4E-4
78	Platinum-193	D, all compounds	4E+4 LLI wall (5E+4)	2E+4	1E-5	3E-8	-	6E-3
78	Platinum-195m	D, all compounds	2E+3 LLI wall (2E+3)	4E+3	2E-6	6E-9	-	3E-4
78	Platinum-197m <sup>2</sup>	D, all compounds	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
78	Platinum-197	D, all compounds	3E+3	1E+4	4E-6	1E-8	4E-5	4E-4
78	Platinum-199 <sup>2</sup>	D, all compounds	5E+4	1E+5	6E-5	2E-7	7E-4	7E-3
78	Platinum-200	D, all compounds	1E+3	3E+3	1E-6	5E-9	2E-5	2E-4
79	Gold-193	D, all compounds except those given for W and Y	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
		W, halides and nitrates	-	2E+4	9E-6	3E-8	-	-
		Y, oxides and hydroxides	-	2E+4	8E-6	3E-8	-	-
79	Gold-194	D, see <sup>193</sup> Au	3E+3	8E+3	3E-6	1E-8	4E-5	4E-4
		W, see <sup>193</sup> Au	-	5E+3	2E-6	8E-9	-	-
		Y, see <sup>193</sup> Au	-	5E+3	2E-6	7E-9	-	-
79	Gold-195	D, see <sup>195</sup> Au	5E+3	1E+4	5E-6	2E-8	7E-5	7E-4
		W, see <sup>195</sup> Au	-	1E+3	6E-7	2E-9	-	-
		Y, see <sup>195</sup> Au	-	4E+2	2E-7	6E-10	-	-
79	Gold-198m	D, see <sup>193</sup> Au	1E+3	3E+3	1E-6	4E-9	1E-5	1E-4
		W, see <sup>193</sup> Au	-	1E+3	5E-7	2E-9	-	-
		Y, see <sup>193</sup> Au	-	1E+3	5E-7	2E-9	-	-
79	Gold-198	D, see <sup>193</sup> Au	1E+3	4E+3	2E-6	5E-9	2E-5	2E-4
		W, see <sup>193</sup> Au	-	2E+3	8E-7	3E-9	-	-
		Y, see <sup>193</sup> Au	-	2E+3	7E-7	2E-9	-	-
79	Gold-199	D, see <sup>193</sup> Au	3E+3 LLI wall (3E+3)	9E+3	4E-6	1E-8	-	-
		W, see <sup>193</sup> Au	-	4E+3	2E-6	6E-9	-	4E-4
		Y, see <sup>193</sup> Au	-	4E+3	2E-6	5E-9	-	-
79	Gold-200m	D, see <sup>193</sup> Au	1E+3	4E+3	1E-6	5E-9	2E-5	2E-4
		W, see <sup>193</sup> Au	-	3E+3	1E-6	4E-9	-	-
		Y, see <sup>193</sup> Au	-	2E+4	1E-6	3E-9	-	-
79	Gold-200 <sup>2</sup>	D, see <sup>193</sup> Au	3E+4	6E+4	3E-5	9E-8	4E-4	4E-3
		W, see <sup>193</sup> Au	-	8E+4	3E-5	1E-7	-	-
		Y, see <sup>193</sup> Au	-	7E+4	3E-5	1E-7	-	-
79	Gold-201 <sup>2</sup>	D, see <sup>193</sup> Au	7E+4 St. wall (9E+4)	2E+5	9E-5	3E-7	-	-
		W, see <sup>193</sup> Au	-	2E+5	1E-4	3E-7	1E-3	1E-2
		Y, see <sup>193</sup> Au	-	2E+5	9E-5	3E-7	-	-

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
80	Mercury-193m	Vapor	-	8E+3	4E-6	1E-8	-	-
		Organic D D, sulfates	4E+3 3E+3	1E+4 9E+3	5E-6 4E-6	2E-8 1E-8	6E-5 4E-5	6E-4 4E-4
80	Mercury-193	W, oxides, hydroxides, halides, nitrates, and sulfides	-	8E+3	3E-6	1E-8	-	-
		Vapor	-	3E+4	1E-5	4E-8	-	-
80	Mercury-194	Organic D	2E+4	6E+4	3E-5	9E-8	3E-4	3E-3
		D, see <sup>193m</sup> Hg W, see <sup>193m</sup> Hg	2E+4 -	4E+4 4E+4	2E-5 2E-5	6E-8 6E-8	2E-4 -	2E-3 -
80	Mercury-195	Vapor	-	3E+1	1E-8	4E-11	-	-
		Organic D	2E+1	3E+1	1E-8	4E-11	2E-7	2E-6
80	Mercury-195m	D, see <sup>193m</sup> Hg W, see <sup>193m</sup> Hg	8E+2 -	4E+1 1E+2	2E-8 5E-8	6E-11 2E-10	1E-5 -	1E-4 -
		Vapor	-	4E+3	2E-6	6E-9	-	-
80	Mercury-195	Organic D	3E+3	6E+3	3E-6	8E-9	4E-5	4E-4
		D, see <sup>193m</sup> Hg W, see <sup>193m</sup> Hg	2E+3 -	5E+3 4E+3	2E-6 2E-6	7E-9 5E-9	3E-5 -	3E-4 -
80	Mercury-197m	Vapor	-	3E+4	1E-5	4E-8	-	-
		Organic D	2E+4	5E+4	2E-5	6E-8	2E-4	2E-3
80	Mercury-197	D, see <sup>193m</sup> Hg W, see <sup>193m</sup> Hg	1E+4 -	4E+4 3E+4	1E-5 1E-5	5E-8 5E-8	2E-4 -	2E-3 -
		Vapor	-	5E+3	2E-6	7E-9	-	-
80	Mercury-199m <sup>2</sup>	Organic D	4E+3	9E+3	4E-6	1E-8	5E-5	5E-4
		D, see <sup>193m</sup> Hg W, see <sup>193m</sup> Hg	3E+3 -	7E+3 5E+3	3E-6 2E-6	1E-8 7E-9	4E-5 -	4E-4 -
80	Mercury-199m <sup>2</sup>	Vapor	-	8E+3	4E-6	1E-8	-	-
		Organic D	7E+3	1E+4	6E-6	2E-8	9E-5	9E-4
80	Mercury-203	D, see <sup>193m</sup> Hg W, see <sup>193m</sup> Hg	6E+3 -	1E+4 9E+3	5E-6 4E-6	2E-8 1E-8	8E-5 -	8E-4 -
		Vapor	-	8E+2	4E-7	1E-9	-	-
80	Mercury-203	Organic D	5E+2	8E+2	3E-7	1E-9	7E-6	7E-5
		D, see <sup>193m</sup> Hg W, see <sup>193m</sup> Hg	2E+3 -	1E+3 1E+3	5E-7 5E-7	2E-9 2E-9	3E-5 -	3E-4 -
81	Thallium-204m <sup>2</sup>	D, all compounds	5E+4 St. wall (7E+4)	2E+5 -	6E-5 -	2E-7 -	- 1E-3	- 1E-2

Atomic No.	Radioisotope	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI (μCi)	Col. 2 Inhalation ALI (μCi)	Col. 3 DAC (μCi/ml)	Col. 1 Air (μCi/ml)	Col. 2 Water (μCi/ml)	Monthly Average Concentration (μCi/ml)
81	Thallium-194 <sup>2</sup>	D, all compounds	3E+5	6E+5	2E-4	8E-7	-	-
			St. wall (3E+5)	-	-	-	4E-3	4E-2
81	Thallium-195 <sup>2</sup>	D, all compounds	6E+4	1E+5	5E-5	2E-7	9E-4	9E-3
81	Thallium-197	D, all compounds	7E+4	1E+5	5E-5	2E-7	1E-3	1E-2
81	Thallium-198m <sup>2</sup>	D, all compounds	3E+4	5E+4	2E-5	8E-8	4E-4	4E-3
81	Thallium-198	D, all compounds	2E+4	3E+4	1E-5	5E-8	3E-4	3E-3
81	Thallium-199	D, all compounds	6E+4	8E+4	4E-5	1E-7	9E-4	9E-3
81	Thallium-200	D, all compounds	8E+3	1E+4	5E-6	2E-8	1E-4	1E-3
81	Thallium-201	D, all compounds	2E+4	2E+4	9E-6	3E-8	2E-4	2E-3
81	Thallium-202	D, all compounds	4E+3	5E+3	2E-6	7E-9	5E-5	5E-4
81	Thallium-204	D, all compounds	2E+3	2E+3	9E-7	3E-9	2E-5	2E-4
82	Lead-195m <sup>2</sup>	D, all compounds	6E+4	2E+5	8E-5	3E-7	8E-4	8E-3
82	Lead-198	D, all compounds	3E+4	6E+4	3E-5	9E-8	4E-4	4E-3
82	Lead-199 <sup>2</sup>	D, all compounds	2E+4	7E+4	3E-5	1E-7	3E-4	3E-3
82	Lead-200	D, all compounds	3E+3	6E+3	3E-6	9E-9	4E-5	4E-4
82	Lead-201	D, all compounds	7E+3	2E+4	8E-6	3E-8	1E-4	1E-3
82	Lead-202m	D, all compounds	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
82	Lead-202	D, all compounds	1E+2	5E+1	2E-8	7E-11	2E-6	2E-5
82	Lead-203	D, all compounds	5E+3	9E+3	4E-6	1E-8	7E-5	7E-4
82	Lead-205	D, all compounds	4E+3	1E+3	6E-7	2E-9	5E-5	5E-4
82	Lead-209	D, all compounds	2E+4	6E+4	2E-5	8E-8	3E-4	3E-3
82	Lead-210	D, all compounds	6E-1 Bone surf (1E+0)	2E-1 Bone surf (4E-1)	1E-10	-	-	-
						6E-13	1E-8	1E-7
82	Lead-211 <sup>2</sup>	D, all compounds	1E+4	6E+2	3E-7	9E-10	2E-4	2E-3
82	Lead-212	D, all compounds	8E+1 Bone surf (1E+2)	3E+1	1E-8	9E-11	-	-
							2E-6	2E-5
82	Lead-214 <sup>2</sup>	D, all compounds	9E+3	8E+2	3E-7	1E-9	1E-4	1E-3
83	Bismuth-200 <sup>2</sup>	D, nitrates W, all other compounds	3E+4	8E+4 1E+5	4E-5 4E-5	1E-7 1E-7	4E-4	4E-3
							-	-
83	Bismuth-201 <sup>2</sup>	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	1E+4	2E+4 4E+4	1E-5 2E-5	4E-8 5E-8	2E-4	2E-3
							-	-
83	Bismuth-202 <sup>2</sup>	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	1E+4	4E+4 8E+4	2E-5 3E-5	6E-8 1E-7	2E-4	2E-3
							-	-

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI (μCi)	Inhalation		Col. 1 Air (μCi/m)	Col. 2 Water (μCi/m)	Monthly Average Concentration (μCi/m)
				Col. 2 ALI (μCi)	Col. 3 DAC (μCi/m)			
83	Bismuth-203	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	2E+3 -	7E+3 6E+3	3E-6 3E-6	9E-9 9E-9	3E-5 -	3E-4 -
83	Bismuth-205	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	1E+3 -	3E+3 1E+3	1E-6 5E-7	3E-9 2E-9	2E-5 -	2E-4 -
83	Bismuth-206	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	6E+2 -	1E+3 9E+2	6E-7 4E-7	2E-9 1E-9	9E-6 -	9E-5 -
83	Bismuth-207	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	1E+3 -	2E+3 4E+2	7E-7 1E-7	2E-9 5E-10	1E-5 -	1E-4 -
83	Bismuth-210m	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	4E+1 (6E+1) -	5E+0 Kidneys (6E+0) 7E-1	2E-9 -	- 9E-12 9E-13	- 8E-7	- 8E-6
83	Bismuth-210	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	8E+2 -	2E+2 Kidneys (4E+2) 3E+1	1E-7 -	- 5E-10 4E-11	1E-5 -	1E-4 -
83	Bismuth-212 <sup>2</sup>	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	5E+3 -	2E+2 3E+2	1E-7 1E-7	3E-10 4E-10	7E-5 -	7E-4 -
83	Bismuth-213 <sup>2</sup>	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	7E+3 -	3E+2 4E+2	1E-7 1E-7	4E-10 5E-10	1E-4 -	1E-3 -
83	Bismuth-214 <sup>2</sup>	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	2E+4 St. wall (2E+4) -	8E+2 -	3E-7 -	1E-9 -	- 3E-4	- 3E-3
84	Polonium-203 <sup>2</sup>	D, all compounds except those given for W W, oxides, hydroxides, and nitrates	3E+4 -	6E+4 9E+4	3E-5 4E-5	9E-8 1E-7	3E-4 -	3E-3 -
84	Polonium-205 <sup>2</sup>	D, see <sup>203</sup> Po W, see <sup>203</sup> Po	2E+4 -	4E+4 7E+4	2E-5 3E-5	5E-8 1E-7	3E-4 -	3E-3 -
84	Polonium-207	D, see <sup>203</sup> Po W, see <sup>203</sup> Po	8E+3 -	3E+4 3E+4	1E-5 1E-5	3E-8 4E-8	1E-4 -	1E-3 -
84	Polonium-210	D, see <sup>203</sup> Po W, see <sup>203</sup> Po	3E+0 -	6E-1 6E-1	3E-10 3E-10	9E-13 9E-13	4E-8 -	4E-7 -
85	Astatine-207 <sup>2</sup>	D, halides W	6E+3 -	3E+3 2E+3	1E-6 9E-7	4E-9 3E-9	8E-5 -	8E-4 -
85	Astatine-211	D, halides	1E+2 -	8E+1 5E+1	3E-8 2E-8	1E-10 8E-11	2E-6 -	2E-5 -
86	Radon-220	With daughters removed With daughters present	- -	2E+4 2E+1 (or 12 working level months)	7E-6 9E-9 (or 1.0 working level)	2E-8 3E-11	- -	- -

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI (μCi)	Inhalation		Col. 1 Air (μCi/ml)	Col. 2 Water (μCi/ml)	Monthly Average Concentration (μCi/ml)
				Col. 2 ALI (μCi)	Col. 3 DAC (μCi/ml)			
86	Radon-222	With daughters removed With daughters present	-	1E+4 1E+2 (or 4 working level months)	4E-6 3E-8 (or 0.33 working level)	1E-8 1E-10	-	-
87	Francium-222 <sup>2</sup>	D, all compounds	2E+3	5E+2	2E-7	6E-10	3E-5	3E-4
87	Francium-223 <sup>2</sup>	D, all compounds	6E+2	8E+2	3E-7	1E-9	8E-6	8E-5
88	Radium-223	W, all compounds	5E+0 Bone surf (9E+0)	7E-1	3E-10	9E-13	-	1E-6
88	Radium-224	W, all compounds	8E+0 Bone surf (2E+1)	2E+0	7E-10	2E-12	-	2E-6
88	Radium-225	W, all compounds	8E+0 Bone surf (2E+1)	7E-1	3E-10	9E-13	-	2E-6
88	Radium-226	W, all compounds	2E+0 Bone surf (5E+0)	6E-1	3E-10	9E-13	-	6E-7
88	Radium-227 <sup>2</sup>	W, all compounds	2E+4 Bone surf (2E+4)	1E+4 Bone surf (2E+4)	6E-6	-	-	-
88	Radium-228	W, all compounds	2E+0 Bone surf (4E+0)	1E+0	5E-10	2E-12	-	6E-7
89	Actinium-224	D, all compounds except those given for W and Y	2E+3 LLI wall (2E+3)	3E+1 Bone surf (4E+1)	1E-8	-	-	-
		W, halides and nitrates	-	5E+1	2E-8	7E-11	-	-
		Y, oxides and hydroxides	-	5E+1	2E-8	6E-11	-	-
89	Actinium-225	D, see <sup>224</sup> Ac	5E+1 LLI wall (5E+1)	3E-1 Bone surf (5E-1)	1E-10	-	-	-
		W, see <sup>224</sup> Ac	-	6E-1	3E-10	9E-13	-	-
		Y, see <sup>224</sup> Ac	-	6E-1	3E-10	9E-13	-	-
89	Actinium-226	D, see <sup>224</sup> Ac	1E+2 LLI wall (1E+2)	3E+0 Bone surf (4E+0)	1E-9	-	-	-
		W, see <sup>224</sup> Ac	-	5E+0	2E-9	5E-12	2E-6	2E-5
		Y, see <sup>224</sup> Ac	-	5E+0	2E-9	6E-12	-	-
89	Actinium-227	D, see <sup>224</sup> Ac	2E-1 Bone surf (4E-1)	4E-4 Bone surf (8E-4)	2E-13	-	-	-
		W, see <sup>224</sup> Ac	-	2E-3 Bone surf (3E-3)	7E-13	1E-15	5E-9	5E-8
		Y, see <sup>224</sup> Ac	-	4E-3	2E-12	6E-15	-	-

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI (μCi)	Col. 2 Inhalation		Col. 1 Air (μCi/ml)	Col. 2 Water (μCi/ml)	Monthly Average Concentration (μCi/ml)
				Col. 1 ALI (μCi)	Col. 3 DAC (μCi/ml)			
89	Actinium-228	D, see <sup>224</sup> Ac	2E+3	9E+0 Bone surf	4E-9	-	3E-5	3E-4
		W, see <sup>224</sup> Ac	-	(2E+1) 4E+1 Bone surf	-	2E-11	-	-
		Y, see <sup>224</sup> Ac	-	(6E+1) 4E+1	2E-8	8E-11	-	-
90	Thorium-226 <sup>2</sup>	W, all compounds except those given for Y	5E+3 St. wall (5E+3)	2E+2	6E-8	2E-10	-	7E-4
		Y, oxides and hydroxides	-	1E+2	6E-8	2E-10	-	-
90	Thorium-227	W, see <sup>226</sup> Th	1E+2	3E-1	1E-10	5E-13	2E-6	2E-5
		Y, see <sup>226</sup> Th	-	3E-1	1E-10	5E-13	-	-
90	Thorium-228	W, see <sup>226</sup> Th	6E+0 Bone surf (1E+1)	1E-2 Bone surf (2E-2)	4E-12	-	-	-
		Y, see <sup>226</sup> Th	-	2E-2	7E-12	3E-14 2E-14	2E-7	2E-6
90	Thorium-229	W, see <sup>226</sup> Th	6E-1 Bone surf (1E+0)	9E-4 Bone surf (2E-3)	4E-13	-	-	-
		Y, see <sup>226</sup> Th	-	2E-3 Bone surf (3E-3)	1E-12	3E-15	2E-8	2E-7
90	Thorium-230	W, see <sup>226</sup> Th	4E+0 Bone surf (9E+0)	6E-3 Bone surf (2E-2)	3E-12	-	-	-
		Y, see <sup>226</sup> Th	-	2E-2 Bone surf (2E-2)	6E-12	2E-14	1E-7	1E-6
90	Thorium-231	W, see <sup>226</sup> Th	4E+3	6E+3	3E-6	9E-9	5E-5	5E-4
		Y, see <sup>226</sup> Th	-	6E+3	3E-6	9E-9	-	-
90	Thorium-232	W, see <sup>226</sup> Th	7E-1 Bone surf (2E+0)	1E-3 Bone surf (3E-3)	5E-13	-	-	-
		Y, see <sup>226</sup> Th	-	3E-3 Bone surf (4E-3)	1E-12	4E-15	3E-8	3E-7
90	Thorium-234	W, see <sup>226</sup> Th	3E+2 LLI wall (4E+2)	2E+2	8E-8	3E-10	-	-
		Y, see <sup>226</sup> Th	-	2E+2	6E-8	2E-10	5E-6	5E-5
91	Protactinium-227 <sup>2</sup>	W, all compounds except those given for Y	4E+3	1E+2	5E-8	2E-10	5E-5	5E-4
		Y, oxides and hydroxides	-	1E+2	4E-8	1E-10	-	-
91	Protactinium-228	W, see <sup>227</sup> Pa	1E+3	1E+1 Bone surf (2E+1)	5E-9	-	2E-5	2E-4
		Y, see <sup>226</sup> Pa	-	1E+1	5E-9	3E-11	-	-



Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
91	Protactinium-230	W, see $^{227}\text{Pa}$	6E+2 Bone surf (9E+2)	5E+0	2E-9	7E-12	-	-
		Y, see $^{227}\text{Pa}$	-	4E+0	1E-9	5E-12	1E-5	1E-4
91	Protactinium-231	W, see $^{227}\text{Pa}$	2E-1 Bone surf (5E-1)	2E-3 Bone surf (4E-3)	6E-13	-	-	-
		Y, see $^{226}\text{Pa}$	-	4E-3 Bone surf (6E-3)	2E-12	6E-15	6E-9	6E-8
91	Protactinium-232	W, see $^{227}\text{Pa}$	1E+3	2E+1 Bone surf (6E+1)	9E-9	-	2E-5	2E-4
		Y, see $^{227}\text{Pa}$	-	6E+1 Bone surf (7E+1)	2E-8	8E-11	-	-
91	Protactinium-233	W, see $^{227}\text{Pa}$	1E+3 LLI wall (2E+3)	7E+2	3E-7	1E-9	-	-
		Y, see $^{227}\text{Pa}$	-	6E+2	2E-7	8E-10	2E-5	2E-4
91	Protactinium-234	W, see $^{227}\text{Pa}$	2E+3	8E+3	3E-6	1E-8	3E-5	3E-4
		Y, see $^{227}\text{Pa}$	-	7E+3	3E-6	9E-9	-	-
92	Uranium-230	D, $\text{UF}_6, \text{UO}_2\text{F}_2, \text{UO}_2(\text{NO}_3)_2$	4E+0 Bone surf (6E+0)	4E-1 Bone surf (6E-1)	2E-10	-	-	-
		W, $\text{UO}_3, \text{UF}_4, \text{UCl}_4$	-	4E-1	1E-10	8E-13	8E-8	8E-7
		Y, $\text{UO}_2, \text{U}_3\text{O}_8$	-	3E-1	1E-10	4E-13	-	-
92	Uranium-231	D, see $^{230}\text{U}$	5E+3 LLI wall (4E+3)	8E+3	3E-6	1E-8	-	-
		W, see $^{230}\text{U}$	-	6E+3	2E-6	8E-9	6E-5	6E-4
		Y, see $^{230}\text{U}$	-	5E+3	2E-6	6E-9	-	-
92	Uranium-232	D, see $^{230}\text{U}$	2E+0 Bone surf (4E+0)	2E-1 Bone surf (4E-1)	9E-11	-	-	-
		W, see $^{230}\text{U}$	-	4E-1	2E-10	6E-13	6E-8	6E-7
		Y, see $^{230}\text{U}$	-	8E-3	3E-12	1E-14	-	-
92	Uranium-233	D, see $^{230}\text{U}$	1E+1 Bone surf (2E+1)	1E+0 Bone surf (2E+0)	5E-10	-	-	-
		W, see $^{230}\text{U}$	-	7E-1	3E-10	3E-12	3E-7	3E-6
		Y, see $^{230}\text{U}$	-	4E-2	2E-11	5E-14	-	-
92	Uranium-234 <sup>3</sup>	D, see $^{230}\text{U}$	1E+1 Bone surf (2E+1)	1E+0 Bone surf (2E+0)	5E-10	-	-	-
		W, see $^{230}\text{U}$	-	7E-1	3E-10	3E-12	3E-7	3E-6
		Y, see $^{230}\text{U}$	-	4E-2	2E-11	5E-14	-	-

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
92	Uranium-235 <sup>3</sup>	D, see <sup>230</sup> U	1E+1 Bone surf (2E+1)	1E+0 Bone surf (2E+0)	6E-10	-	-	-
		W, see <sup>230</sup> U	-	-	-	3E-12	3E-7	3E-6
		Y, see <sup>230</sup> U	-	8E-1 4E-2	3E-10 2E-11	1E-12 6E-14	-	-
92	Uranium-236	D, see <sup>230</sup> U	1E+1 Bone surf (2E+1)	1E+0 Bone surf (2E+0)	5E-10	-	-	-
		W, see <sup>230</sup> U	-	-	-	3E-12	3E-7	3E-6
		Y, see <sup>230</sup> U	-	8E-1 4E-2	3E-10 2E-11	1E-12 6E-14	-	-
92	Uranium-237	D, see <sup>230</sup> U	2E+3 LLI wall (2E+3)	3E+3	1E-6	4E-9	-	-
		W, see <sup>230</sup> U	-	2E+3	7E-7	2E-9	3E-5	3E-4
		Y, see <sup>230</sup> U	-	2E+3	6E-7	2E-9	-	-
92	Uranium-238 <sup>3</sup>	D, see <sup>230</sup> U	1E+1 Bone surf (2E+1)	1E+0 Bone surf (2E+0)	6E-10	-	-	-
		W, see <sup>230</sup> U	-	-	-	3E-12	3E-7	3E-6
		Y, see <sup>230</sup> U	-	8E-1 4E-2	3E-10 2E-11	1E-12 6E-14	-	-
92	Uranium-239 <sup>2</sup>	D, see <sup>230</sup> U	7E+4	2E+5	8E-5	3E-7	9E-4	9E-3
		W, see <sup>230</sup> U	-	2E+5	7E-5	2E-7	-	-
		Y, see <sup>230</sup> U	-	2E+5	6E-5	2E-7	-	-
92	Uranium-240	D, see <sup>230</sup> U	1E+3	4E+3	2E-6	5E-9	2E-5	2E-4
		W, see <sup>230</sup> U	-	3E+3	1E-6	4E-9	-	-
		Y, see <sup>230</sup> U	-	2E+3	1E-6	3E-9	-	-
92	Uranium-natural <sup>3</sup>	D, see <sup>230</sup> U	1E+1 Bone surf (2E+1)	1E+0 Bone surf (2E+0)	5E-10	-	-	-
		W, see <sup>230</sup> U	-	-	-	3E-12	3E-7	3E-6
		Y, see <sup>230</sup> U	-	8E-1 5E-2	3E-10 2E-11	9E-13 9E-14	-	-
93	Neptunium-232 <sup>2</sup>	W, all compounds	1E+5	2E+3 Bone surf (5E+2)	7E-7	-	2E-3	2E-2
93	Neptunium-233 <sup>2</sup>	W, all compounds	8E+5	3E+6	1E-3	4E-6	1E-2	1E-1
93	Neptunium-234	W, all compounds	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
93	Neptunium-235	W, all compounds	2E+4 LLI wall (2E+4)	8E+2 Bone surf (1E+3)	3E-7	-	2E-9	3E-4
93	Neptunium-236 (1.15E+5 y)	W, all compounds	3E+0 Bone surf (6E+0)	2E-2 Bone surf (5E-2)	9E-12	-	8E-14	9E-8
93	Neptunium-236m (22.5 h)	W, all compounds	3E+3 Bone surf (4E+3)	3E+1 Bone surf (7E+1)	1E-8	-	1E-10	5E-5
93	Neptunium-237	W, all compounds	5E-1 Bone surf (1E+0)	4E-3 Bone surf (1E-2)	2E-12	-	1E-14	2E-8

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
93	Neptunium-238	W, all compounds	1E+3	6E+1 Bone surf (2E+2)	3E-8	-	2E-5	2E-4
93	Neptunium-239	W, all compounds	2E+3 LLI wall (2E+3)	2E+3	9E-7	3E-9	-	-
93	Neptunium-240 <sup>2</sup>	W, all compounds	2E+4	8E+4	3E-5	1E-7	3E-4	3E-3
94	Plutonium-234	W, all compounds except PuO <sub>2</sub> Y, see <sup>234</sup> Pu	8E+3	2E+2 2E+2	9E-8 8E-8	3E-10 3E-10	1E-4	1E-3
94	Plutonium-235 <sup>2</sup>	W, see <sup>234</sup> Pu Y, see <sup>234</sup> Pu	9E+5	3E+6 3E+6	1E-3 1E-3	4E-6 3E-6	1E-2	1E-1
94	Plutonium-236	W, see <sup>234</sup> Pu Y, see <sup>234</sup> Pu	2E+0 Bone surf (4E+0)	2E-2 Bone surf (4E-2)	8E-12	-	-	-
94	Plutonium-237	W, see <sup>234</sup> Pu Y, see <sup>234</sup> Pu	1E+4	3E+3 3E+3	1E-6 1E-6	5E-9 4E-9	2E-4	2E-3
94	Plutonium-238	W, see <sup>234</sup> Pu Y, see <sup>234</sup> Pu	9E-1 Bone surf (2E+0)	7E-3 Bone surf (1E-2)	3E-12	-	-	-
94	Plutonium-239	W, see <sup>234</sup> Pu Y, see <sup>234</sup> Pu	8E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	-	-
94	Plutonium-240	W, see <sup>234</sup> Pu Y, see <sup>234</sup> Pu	8E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	-	-
94	Plutonium-241	W, see <sup>234</sup> Pu Y, see <sup>234</sup> Pu	4E+1 Bone surf (7E+1)	3E-1 Bone surf (6E-1)	1E-10	-	-	-
			-	8E-1 Bone surf (1E+0)	3E-10	8E-13	1E-6	1E-5
			-	-	-	1E-12	-	-

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
94	Plutonium-242	W, see $^{234}\text{Pu}$	8E-1 Bone surf (1E+0)	7E-3 Bone surf (1E-2)	3E-12	-	-	-
		Y, see $^{234}\text{Pu}$	-	2E-2 Bone surf (2E-2)	-	2E-14	2E-8	2E-7
94	Plutonium-243	W, see $^{234}\text{Pu}$	2E+4	4E+4	2E-5	5E-8	2E-4	2E-3
		Y, see $^{234}\text{Pu}$	-	4E+4	2E-5	5E-8	-	-
94	Plutonium-244	W, see $^{234}\text{Pu}$	8E-1 Bone surf (2E+0)	7E-3 Bone surf (1E-2)	3E-12	-	-	-
		Y, see $^{234}\text{Pu}$	-	2E-2 Bone surf (2E-2)	-	2E-14	2E-8	2E-7
94	Plutonium-245	W, see $^{234}\text{Pu}$	2E+3	5E+3	2E-6	6E-9	3E-5	3E-4
		Y, see $^{234}\text{Pu}$	-	4E+3	2E-6	6E-9	-	-
94	Plutonium-246	W, see $^{234}\text{Pu}$	4E+2 LLI wall (4E+2)	3E+2	1E-7	4E-10	-	-
		Y, see $^{234}\text{Pu}$	-	3E+2	1E-7	4E-10	6E-6	6E-5
95	Americium-237 <sup>2</sup>	W, all compounds	8E+4	3E+5	1E-4	4E-7	1E-3	1E-2
95	Americium-238 <sup>2</sup>	W, all compounds	4E+4	3E+3	1E-6	-	5E-4	5E-3
			-	Bone surf (6E+3)	-	9E-9	-	-
95	Americium-239	W, all compounds	5E+3	1E+4	5E-6	2E-8	7E-5	7E-4
95	Americium-240	W, all compounds	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
95	Americium-241	W, all compounds	8E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	-	-
95	Americium-242m	W, all compounds	8E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	-	-
			-	-	-	2E-14	2E-8	2E-7
95	Americium-242	W, all compounds	4E+3	8E+1 Bone surf (9E+1)	4E-8	-	5E-5	5E-4
			-	-	-	1E-10	-	-
95	Americium-243	W, all compounds	8E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	-	-
			-	-	-	2E-14	2E-8	2E-7
95	Americium-244m <sup>2</sup>	W, all compounds	6E+4 St. wall (6E+4)	4E+3 Bone surf (7E+3)	2E-6	-	-	-
			-	-	-	1E-8	1E-3	1E-2
95	Americium-244	W, all compounds	3E+3	2E+2 Bone surf (3E+2)	8E-8	-	4E-5	4E-4
			-	-	-	4E-10	-	-
95	Americium-245	W, all compounds	3E+4	8E+4	3E-5	1E-7	4E-4	4E-3

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers	
			Col. 1 Oral Ingestion ALI (μCi)	Col. 2 Inhalation		Col. 1 Air (μCi/ml)	Col. 2 Water (μCi/ml)	Monthly Average Concentration (μCi/ml)	
				Col. 2 ALI (μCi)	Col. 3 DAC (μCi/ml)				
95	Americium-246 <sup>2</sup>	W, all compounds	5E+4 St. wall (6E+4)	2E+5	8E-5	3E-7	-	-	
95	Americium-246 <sup>2</sup>	W, all compounds	3E+4	1E+5	4E-5	1E-7	8E-4	8E-3	
96	Curium-238	W, all compounds	2E+4	1E+3	5E-7	2E-9	2E-4	2E-3	
96	Curium-240	W, all compounds	6E+1 Bone surf (8E+1)	6E-1 Bone surf (6E-1)	2E-10	-	9E-13	1E-6	1E-5
96	Curium-241	W, all compounds	1E+3	3E+1 Bone surf (4E+1)	1E-8	-	2E-5	2E-4	
96	Curium-242	W, all compounds	3E+1 Bone surf (5E+1)	3E-1 Bone surf (3E-1)	1E-10	-	4E-13	7E-7	7E-6
96	Curium-243	W, all compounds	1E+0 Bone surf (2E+0)	9E-3 Bone surf (2E-2)	4E-12	-	2E-14	3E-8	3E-7
96	Curium-244	W, all compounds	1E+0 Bone surf (3E+0)	1E-2 Bone surf (2E-2)	5E-12	-	3E-14	3E-8	3E-7
96	Curium-245	W, all compounds	7E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	2E-14	2E-8	2E-7
96	Curium-246	W, all compounds	7E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	2E-14	2E-8	2E-7
96	Curium-247	W, all compounds	8E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	2E-14	2E-8	2E-7
96	Curium-248	W, all compounds	2E-1 Bone surf (4E-1)	2E-3 Bone surf (3E-3)	7E-13	-	4E-15	5E-9	5E-8
96	Curium-249 <sup>2</sup>	W, all compounds	5E+4	2E+4 Bone surf (3E+4)	7E-6	-	7E-4	7E-3	
96	Curium-250	W, all compounds	4E-2 Bone surf (6E-2)	3E-4 Bone surf (5E-4)	1E-13	-	8E-16	9E-10	9E-9
97	Berkelium-245	W, all compounds	2E+3	1E+3	5E-7	2E-9	3E-5	3E-4	
97	Berkelium-246	W, all compounds	3E+3	3E+3	1E-6	4E-9	4E-5	4E-4	
97	Berkelium-247	W, all compounds	5E-1 Bone surf (1E+0)	4E-3 Bone surf (9E-3)	2E-12	-	1E-14	2E-8	2E-7
97	Berkelium-249	W, all compounds	2E+2 Bone surf (5E+2)	2E+0 Bone surf (4E+0)	7E-10	-	5E-12	6E-6	6E-5

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu$ Ci)	Inhalation		Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average Concentration ( $\mu$ Ci/ml)
				Col. 2 ALI ( $\mu$ Ci)	Col. 3 DAC ( $\mu$ Ci/ml)			
97	Berkelium-250	W, all compounds	9E+3	3E+2 Bone surf (7E+2)	1E-7	-	1E-4	1E-3
98	Californium-244 <sup>2</sup>	W, all compounds except those given for Y	3E+4 St. wall (3E+4)	6E+2	2E-7	8E-10	-	-
		Y, oxides and hydroxides	-	6E+2	2E-7	8E-10	-	-
98	Californium-246	W, see <sup>244</sup> Cf Y, see <sup>244</sup> Cf	4E+2 -	9E+0 9E+0	4E-9 4E-9	1E-11 1E-11	5E-6 -	5E-5 -
98	Californium-248	W, see <sup>244</sup> Cf Y, see <sup>244</sup> Cf	8E+0 Bone surf (2E+1)	6E-2 Bone surf (1E-1)	3E-11 -	- 2E-13 1E-13	- 2E-7 -	- 2E-6 -
98	Californium-249	W, see <sup>244</sup> Cf Y, see <sup>244</sup> Cf	5E-1 Bone surf (1E+0)	4E-3 Bone surf (9E-3)	2E-12 -	- 1E-14	- 2E-8	- 2E-7
			-	1E-2 Bone surf (1E-2)	4E-12	-	-	-
98	Californium-250	W, see <sup>244</sup> Cf Y, see <sup>244</sup> Cf	1E+0 Bone surf (2E+0)	9E-3 Bone surf (2E-2)	4E-12 -	- 3E-14 4E-14	- 3E-8	- 3E-7
98	Californium-251	W, see <sup>244</sup> Cf Y, see <sup>244</sup> Cf	5E-1 Bone surf (1E+0)	4E-3 Bone surf (9E-3)	2E-12 -	- 1E-14	- 2E-8	- 2E-7
			-	1E-2 Bone surf (1E-2)	4E-12	-	-	-
98	Californium-252	W, see <sup>244</sup> Cf Y, see <sup>244</sup> Cf	2E+0 Bone surf (5E+0)	2E-2 Bone surf (4E-2)	8E-12 -	- 5E-14 5E-14	- 7E-8	- 7E-7
98	Californium-253	W, see <sup>244</sup> Cf Y, see <sup>244</sup> Cf	2E+2 Bone surf (4E+2)	2E+0	8E-10	3E-12	-	-
			-	2E+0	7E-10	2E-12	5E-6	5E-5
98	Californium-254	W, see <sup>244</sup> Cf Y, see <sup>244</sup> Cf	2E+0 -	2E-2 2E-2	9E-12 7E-12	3E-14 2E-14	3E-8 -	3E-7 -
99	Einsteinium-250	W, all compounds	4E+4	5E+2 Bone surf (1E+3)	2E-7	-	6E-4	6E-3
			-	-	-	2E-9	-	-
99	Einsteinium-251	W, all compounds	7E+3	9E+2 Bone surf (1E+3)	4E-7	-	1E-4	1E-3
			-	-	-	2E-9	-	-
99	Einsteinium-253	W, all compounds	2E+2	1E+0	6E-10	2E-12	2E-6	2E-5

Atomic No.	Radionuclide	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
			Col. 1 Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation		Col. 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Col. 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
				Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 DAC ( $\mu\text{Ci}/\text{m}^3$ )			
99	Einsteinium-254m	W, all compounds	3E+2 LLI wall (3E+2)	1E+1 -	4E-9 -	1E-11 -	- 4E-6	- 4E-5
99	Einsteinium-254	W, all compounds	8E+0 Bone surf (2E+1)	7E-2 Bone surf (1E-1)	3E-11 -	- 2E-13	- 2E-7	- 2E-6
100	Fermium-252	W, all compounds	5E+2	1E+1	5E-9	2E-11	6E-6	6E-5
100	Fermium-253	W, all compounds	1E+3	1E+1	4E-9	1E-11	1E-5	1E-4
100	Fermium-254	W, all compounds	3E+3	9E+1	4E-8	1E-10	4E-5	4E-4
100	Fermium-255	W, all compounds	5E+2	2E+1	9E-9	3E-11	7E-6	7E-5
100	Fermium-257	W, all compounds	2E+1 Bone surf (4E+1)	2E-1 Bone surf (2E-1)	7E-11 -	- 3E-13	- 5E-7	- 5E-6
101	Mendelevium-257	W, all compounds	7E+3 -	8E+1 Bone surf (9E+1)	4E-8 -	- 1E-10	1E-4 -	1E-3 -
101	Mendelevium-258	W, all compounds	3E+1 Bone surf (5E+1)	2E-1 Bone surf (3E-1)	1E-10 -	- 5E-13	- 6E-7	- 6E-6
-	Any single radionuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radioactive half-life less than 2 hours	Submersion <sup>1</sup>	-	2E+2	1E-7	1E-9	-	-
-	Any single radionuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radioactive half-life greater than 2 hours		-	2E+1	1E-10	1E-12	1E-8	1E-7
-	Any single radionuclide not listed above that decays by alpha emission or spontaneous fission, or any mixture for which either the identity or the concentration of any radionuclide in the mixture is not known		-	4E-4	2E-13	1E-15	2E-9	2E-8

FOOTNOTES:

<sup>1</sup>"Submersion" means that values given are for submersion in a hemispherical semi-infinite cloud of airborne material.

<sup>2</sup>These radionuclides have radiological half-lives of less than 2 hours. The total effective dose equivalent received during operations with these radionuclides might include a significant contribution from external exposure. The DAC values for all radionuclides, other than those designated Class "Submersion," are based upon the committed effective dose equivalent due to the intake of the radionuclide into the body and do NOT include potentially significant contributions to dose equivalent from external exposures. The licensee may substitute 1E-7 µCi/mi for the listed DAC to account for the submersion dose prospectively, but should use individual monitoring devices or other radiation measuring instruments that measure external exposure to demonstrate compliance with the limits. (See § 20.1203.)

<sup>3</sup>For soluble mixtures of U-238, U-234, and U-235 in air, chemical toxicity may be the limiting factor (see § 20.1201(e)). If the percent by weight (enrichment) of U-235 is not greater than 5, the concentration value for a 40-hour workweek is 0.2 milligrams uranium per cubic meter of air average. For any enrichment, the product of the average concentration and time of exposure during a 40-hour workweek shall not exceed 8E-3 (SA) µCi-hr/mi, where SA is the specific activity of the uranium inhaled. The specific activity for natural uranium is 6.77E-7 curies per gram U. The specific activity for other mixtures of U-238, U-235, and U-234, if not known, shall be:

$$SA = 3.6E-7 \text{ curies/gram U} \quad \text{U-depleted}$$

$$SA = [0.4 + 0.38 (\text{enrichment}) + 0.0034 (\text{enrichment})^2] E-6 \quad \text{enrichment} \geq 0.72$$

where enrichment is the percentage by weight of U-235, expressed as percent.

NOTE:

1. If the identity of each radionuclide in a mixture is known but the concentration of one or more of the radionuclides in the mixture is not known, the DAC for the mixture shall be the most restrictive DAC of any radionuclide in the mixture.
2. If the identity of each radionuclide in the mixture is not known, but it is known that certain radionuclides specified in this appendix are not present in the mixture, the inhalation ALI, DAC, and effluent and sewage concentrations for the mixture are the lowest values specified in this appendix for any radionuclide that is not known to be absent from the mixture; or

Radionuclide	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
	Col. 1 Oral Ingestion ALI (µCi)	Col. 2 Col. 3 Inhalation ALI DAC (µCi/mi)	Col. 1 Col. 2 Air Water (µCi/ml)	Col. 1 Col. 2 Air Water (µCi/ml)	Monthly Average Concentration (µCi/ml)	
	If it is known that Ac-227-D and Cm-250-W are not present	-	7E-4	3E-13	-	-
If, in addition, it is known that Ac-227-W,Y, Th-229-W,Y, Th-230-W, Th-232-W,Y, Pa-231-W,Y, Np-237-W, Pu-239-W, Pu-240-W, Pu-242-W, Am-241-W, Am-242m-W, Am-243-W, Cm-245-W, Cm-246-W, Cm-247-W, Cm-248-W, Bk-247-W, Cf-249-W, and Cf-251-W are not present	-	7E-3	3E-12	-	-	-
If, in addition, it is known that Sm-146-W, Sm-147-W, Gd-148-D,W, Gd-152-D,W, Th-228-W,Y, Th-230-Y, U-232-Y, U-233-Y, U-234-Y, U-235-Y, U-236-Y, U-238-Y, Np-236-W, Pu-236-W,Y, Pu-238-W,Y, Pu-239-Y, Pu-240-Y, Pu-242-Y, Pu-244-W,Y, Cm-243-W, Cm-244-W, Cf-248-W, Cf-249-Y, Cf-250-W,Y, Cf-251-Y, Cf-252-W,Y, and Cf-254-W,Y are not present	-	7E-2	3E-11	-	-	-
If, in addition, it is known that Pb-210-D, Bi-210m-W, Po-210-D,W, Ra-223-W, Ra-225-W, Ra-226-W, Ac-225-D,W,Y, Th-227-W,Y, U-230-D,W,Y, U-232-D,W, Pu-241-W, Cm-240-W, Cm-242-W, Cf-248-Y, Es-254-W, Fm-257-W, and Md-258-W are not present	-	7E-1	3E-10	-	-	-



Radionuclide	Table 2 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
	Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration ( $\mu\text{Ci}/\text{m}^3$ )
	Oral Ingestion ALI ( $\mu\text{Ci}$ )	Inhalation ALI ( $\mu\text{Ci}$ )	DAC ( $\mu\text{Ci}/\text{m}^3$ )	Air ( $\mu\text{Ci}/\text{m}^3$ )	Water ( $\mu\text{Ci}/\text{m}^3$ )	
If, in addition, it is known that Si-32-Y, Ti-44-Y, Fe-60-D, Sr-90-Y, Zr-93-D, Cd-113m-D, Cd-113-D, In-115-D, W, I-130-D, Lu-176m-W, Hf-176m-D, W, Hf-182-D, W, Bi-210m-D, Ra-224-W, Ra-228-W, Ac-226-D, W, Y, Pa-230m-W, U-233-D, W, U-234-D, W, U-235-D, W, U-236-D, W, U-238-D, W, Pu-241-Y, Bk-249-W, Cf-253-W, Y, and Es-253-W are not present	-	7E+0	3E-9	-	-	-
If it is known that Ac-227-D, W, Y, Th-229-W, Y, Th-232-W, Y, Pa-231-W, Y, Cm-248-W, and Cm-250-W are not present -	-	-	-	1E-14	-	-
If, in addition, it is known that Sm-146-W, Gd-148-D, W, Gd-152-D, Th-228-W, Y, Th-230-W, Y, U-232-Y, U-233-Y, U-234-Y, U-235-Y, U-236-Y, U-238-Y, U-Nat-Y, Nd-236-W, Mo-237-W, Pu-238-W, Y, Pu-239-W, Y, Pu-240-W, Y, Pu-242-W, Y, Pu-244-W, Y, Am-241-W, Am-242m-W, Am-243-W, Cm-243-W, Cm-244-W, Cm-245-W, Cm-246-W, Cm-247-W, Bk-247-W, Cf-249-W, Y, Cf-250-W, Y, Cf-251-W, Y, Cf-252-W, Y, and Cf-254-W, Y are not present	-	-	-	1E-13	-	-
If, in addition, it is known that Sm-147-W, Gd-152-W, Pb-210-D, Bi-210m-W, Po-210-D, W, Ra-223-W, Ra-225-W, Ra-226-W, Ac-225-D, W, Y, Th-227-W, Y, U-230-D, W, Y, U-232-D, W, U-Nat-W, Pu-241-W, Cm-240-W, Cm-242-W, Cf-248-W, Y, Es-254-W, Fm-257-W, and Md-258-W are not present	-	-	-	1E-12	-	-
If, in addition it is known that Fe-60, Sr-90, Cd-113m, Cd-113, In-115, I-129, Cs-134, Sm-145, Sm-147, Gd-148, Gd-152, Hg-194 (organic), Bi-210m, Ra-223, Ra-224, Ra-225, Ac-225, Th-228, Th-230, U-233, U-234, U-235, U-236, U-238, U-Nat, Cm-242, Cf-248, Es-254, Fm-257, and Md-258 are not present	-	-	-	-	1E-6	1E-5

- If a mixture of radionuclides consists of uranium and its daughters in ore dust (10  $\mu\text{m}$  AMAD particle distribution assumed) prior to chemical separation of the uranium from the ore, the following values may be used for the DAC of the mixture: 6E-11  $\mu\text{Ci}$  of gross alpha activity from uranium-238, uranium-234, thorium-230, and radium-226 per milliliter of air; 3E-11  $\mu\text{Ci}$  of natural uranium per milliliter of air; or 45 micrograms of natural uranium per cubic meter of air.
- If the identity and concentration of each radionuclide in a mixture are known, the limiting values should be derived as follows: determine, for each radionuclide in the mixture, the ratio between the concentration present in the mixture and the concentration otherwise established in Appendix B for the specific radionuclide when not in a mixture. The sum of such ratios for all of the radionuclides in the mixture may not exceed "1" (i.e., "unity").

Example: If radionuclides "A," "B," and "C" are present in concentrations  $C_A$ ,  $C_B$ , and  $C_C$ , and if the applicable DACs are  $\text{DAC}_A$ ,  $\text{DAC}_B$ , and  $\text{DAC}_C$ , respectively, then the concentrations shall be limited so that the following relationship exists:

$$\frac{C_A}{\text{DAC}_A} + \frac{C_B}{\text{DAC}_B} + \frac{C_C}{\text{DAC}_C} < 1$$

[56 FR 23409, May 21, 1991; 56 FR 61352, Dec. 3, 1991, as amended at 57 FR 57879, Dec. 8, 1992. Redesignated at 58 FR 67659, Dec. 22, 1993, as amended at 71 FR 15007, Mar. 27, 2006; 72 FR 55922, Oct. 1, 2007; 75 FR 73938, Nov. 30, 2010]