STATE OF FLORIDA

BUREAU OF RADIATION CONTROL

ALIs, DACs AND EFFLUENT CONCENTRATIONS

July 1993

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ATTACHMENT 1

ANNUAL LIMITS ON INTAKE (ALI) AND DERIVED AIR CONCENTRATIONS (DAC) OF RADIONUCLIDES FOR OCCUPATIONAL EXPOSURE; EFFLUENT CONCENTRATIONS; CONCENTRATIONS FOR RELEASE TO SANITARY SEWERAGE

Introduction

For each radionuclide, Table I 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 medial aerodynamic diameter (AMAD) if 1 µm, micron, 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 for D if less than 10 days, for W from 10 to 100 days, and for Y greater than 100 days. Table II provides concentration limits for airborne and liquid effluents released to the general environment. Table III provides concentration limits for discharges to sanitary sewerage.

Note:

The values in Tables I, II, and III are presented in the computer "E" notation. In this notation a value of 6E-02 represents a value of 6×10^{-2} or 0.06, 6E+2 represents 6×10^{2} or 600, and 6E+0 represents 6×10^{0} or 6.

Table I "Occupational Values"

Note that the columns in Table I captioned "Oral Ingestion ALI, "Inhalation ALI," and "DAC," are applicable to occupational exposure to radioactive material.

The ALIs are the annual intakes of given radionuclide by "Reference Man" which would result in either (1) a committed effective dose equivalent of 5 rem (0.05 sievert), stochastic ALI, or (2) a committed dose equivalent of 50 rem (0.5 sievert) 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 to 5 rem (0.05 sievert). 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 64E-5.101. 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 portions of the GI track --stomach, small intestine, upper large intestine, and lower large intestine -- are to be treated as four separate organs.

Note that the dose equivalents for an extremity, skin and lens of the eye are not considered in computing the committed effective dose equivalent, but are subject to the 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 parenthesis. 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 the 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 (0.5 sievert) 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 equivalent 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 non-stochastic ALIs (ALI_{ns}) that contributed to the committed dose equivalent to the organ receiving the highest dose does not exceed unity, that is the sum of (intake (in µCi) of each radionuclide/ALI_{ns}) $\leq$ 1.0. If there is an external deep dose contribution of H_d, then this sum must be less than 1 - (H_d/50), instead of $\leq$ 1.0.

Note that the dose equivalents for an extremity, 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.

The derived air concentrations (DAC) values are derived limits intended to control chronic occupational exposures. The relationship between the DAC and the ALI is given by:

DAC = ALI(in µCi)/(2000 hours per working year x 60 minutes/hour x 2 x 10^4 ml per minute)
= [ALI/2.4 x 10^9) µCi/ml,

where 2 x 10^4 milliliters is the volume of air breathed per minute at work by Reference Man under working conditions or 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. DACs 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 include contributions to exposure by the single radionuclide named and any in-growth of daughter radionuclides produced in the body by 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 values of ALI and DAC do not apply when the individual both ingest and inhales a radionuclide, when the individual is exposed to a mixture of radionuclieds by either inhalation or ingestion or both, or when the individual is exposed to both internal and external irradiation. See 64E-5.219. When an individual is exposed to radioactive materials which fall under several of the translocation classifications of the same radionuclide, such as, Class D, Class W or Class Y, the exposure may be evaluated as if it were a mixture or 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 radionuclides. For this reason, values are given for Class D, W, and Y compounds, even for very short-lived radionuclides.

Table II "Effluent Concentrations"

The columns in Table II 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 64E-5.312. The concentration values given in Columns 1 and 2 of Table II 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 (0.5 millisievert).

Consideration of non-stochastic limits has not been included in deriving the air and water effluent concentrations limits because non-stochastic effects are presumed not to occur at or below 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 II. For this reason, the DAC and airborne effluent limits are not always proportional as they were in 10D-91.429.

The air concentrations values listed in Table II, 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 2.4×10^9, relating the inhalation ALI to the DAC, as explained above, and then divided by a factor of 300. The factor 300 includes the following components: a factor of 50 to relate to the 5 rem (0.05 sievert) annual occupational dose limit of 0.1 rem limit for members of the public; and 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, that is external dose , is limiting, the occupational DAC in Table I, Column 3 was divided by 219. The factor 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 consideration 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 7.3×10^7. The factor of 7.3×10^7 (ml) includes the following components: the factor of 50 and 2 described above and a factor of 7.3×10^5 (ml) which is the annual water intake of "Reference Man".

Note 2 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 releases to sewer, require demonstrating that the most limiting radionculedes 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 as being present either from knowledge of the radionuclide composition of the source or from actual measurements.

Table III "Release to Sewers"

The monthly average concentrations for release to sanitary sewerage are applicable to the provisions in 64E-5.330. The concentration values were derived by taking the most restrictive occupational stochastic oral ingestion ALI and dividing by 7.3×10^6 (ml). The factor of 7.3×10^6 (ml) is composed of a factor of 7.3×10^5 (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 (5 millisievert).

LIST OF ELEMENTS

Name	Symbol	Atomic Number	Name	Symbol	Atomic Number
Actinium	Ac	89	Mendelevium	Md	101
Aluminum	Al	13	Mercury	Hg	80
Americium	Am	95	Molybdenum	Mo	42
Antimony	Sb	51	Neodymium	Nd	60
Argon	Ar	18	Neptunium	Np	93
Arsenic	As	33	Nickel	Ni	28
Astatine	At	85	Niobium	Nb	41
Barium	Ba	56	Osmium	Os	76
Berkelium	Bk	97	Palladium	Pd	46
Beryllium	Be	4	Phosphorus	P	15
Bismuth	Bi	83	Platinum	Pt	78
Bromine	Br	35	Plutonium	Pu	94
Cadmium	Cd	48	Polonium	Po	84
Calcium	Ca	20	Potassium	K	19
Californium	Cf	98	Praseodymium	Pr	59
Carbon	C	6	Promethium	Pm	61
Cerium	Ce	58	Protactinium	Pa	91
Cesium	Cs	55	Radium	Ra	88
Chlorine	Cl	17	Radon	Rn	86
Chromium	Cr	24	Rhenium	Re	75
Cobalt	Co	27	Rhodium	Rh	45
Copper	Cu	29	Rubidium	Rb	37
Curium	Cm	96	Ruthenium	Ru	44
Dysprosium	Dy	66	Samarium	Sm	62
Einsteinium	Es	99	Scandium	Sc	21
Erbium	Er	68	Selenium	Se	34
Europium	Eu	63	Silicon	Si	14
Fermium	Fm	100	Silver	Ag	47
Fluorine	F	9	Sodium	Na	11
Francium	Fr	87	Strontium	Sr	38
Gadolinium	Gd	64	Sulfur	S	16
Gallium	Ga	31	Tantalum	Ta	73
Germanium	Ge	32	Technetium	Tc	43
Gold	Au	79	Tellurium	Te	52
Hafnium	Hf	72	Terbium	Tb	65
Holmium	Ho	67	Thallium	Tl	81
Hydrogen	H	1	Thorium	Th	90
Indium	In	49	**Thulium**	**Tm**	**69**
Iodine	I	53	Tin	Sn	50
Iridium	Ir	77	Titanium	Ti	22
Iron	Fe	26	Tungsten	W	74
Krypton	Kr	36	Uranium	U	92
Lanthanum	La	57	Vanadium	V	23
Lead	Pb	82	Xenon	Xe	54
Lutetium	Lu	71	Ytterbium	Yb	70
Magnesium	Mg	12	Yttrium	Y	39
Manganese	Mn	25	Zinc	Zn	30
Mendelevium	Md	101	Zirconium	Zr	40

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			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
1	H-3	Water, DAC includes skin absorption	8E+4	8E+4	2E-5	1E-7	1E-3	1E-2
	H-3	Gas (HT or T2) Submersion[1]: Use above values as HT and T2 oxidize in air and in the body to HTO						
1	Be-7	W: all compounds except those given for Y	4E+4	2E+4	9E-6	3E-8	6E-4	6E-3
4	Be-7	Y: oxides, halides, and nitrates	0	2E+4	8E-6	3E-8	0	0
4	Be-10	W: see Be-7	1E+3 LLI wall (1E+3)	2E+2 0	6E-8 0	2E-10 0	0 2E-5	0 2E-4
4	Be-10	Y: see Be-7	0	1E+1	6E-9	2E-11	0	0
6	C-11[2]	Monoxide	0	1E+6	5E-4	2E-6	0	0
6	C-11[2]	Dioxide	0	6E+5	3E-4	9E-7	0	0
6	C-11[2]	Compounds	4E+5	4E+5	2E-4	6E-7	6E-3	6E-2
6	C-14	Monoxide	0	2E+6	7E-4	2E-6	0	0
6	C-14	Dioxide	0	2E+5	9E-5	3E-7	0	0
6	C-14	Compounds	2E+3	2E+3	1E-6	3E-9	3E-5	3E-4
9	F-18[2]	D: fluorides of H, Li, Na, K, Rb, Cs, and Fr	5E+4 St. wall (5E+4)	7E+4 0	3E-5 0	1E-7 0	0 7E-4	0 7E-3
9	F-18[2]	W: fluorides of Be, Mg, Ca, Sr, Ba, Ra, Al, Ga, In, Tl, As, Sb, Bi, Fe, Ru, Os, Co, Ni, Pd, Pt, Cu, Ag, Au, Zn, Cd, Hg, Sc, Y, Ti, Zr, V, Nb, Ta, Mn, Tc, and Re	0	9E+4	4E-5	1E-7	0	0
9	F-18[2]	Y: lanthanum fluoride	0	8E+4	3E-5	1E-7	0	0
11	Na-22	D: all compounds	4E+2	6E+2	3E-7	9E-10	6E-6	6E-5
11	Na-24	D: all compounds	4E+3	5E+3	2E-6	7E-9	5E-5	5E-4
12	Mg-28	D: all compounds except those given for W	7E+2	2E+3	7E-7	2E-9	9E-6	9E-5
12	Mg-28	W: oxides, hydroxides, carbides, halides, and nitrates	0	1E+3	5E-7	2E-9	0	0

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13	Al-26	D: all compounds except those given for W	4E+2	6E+1	3E-8	9E-11	6E-6	6E-5
13	Al-26	W: oxides, hydroxides, carbides, halides, and nitrates	0	9E+1	4E-8	1E-10	0	0
14	Si-31	D: all compounds except those given for W, Y	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
14	Si-31	W: oxides, carbides, hydroxides, and nitrates	0	3E+4	1E-5	5E-8	0	0
14	Si-31	Y: alumosilicate glass	0	3E+4	1E-5	4E-8	0	0
14	Si-32	D: see Si-31	2E+3 LLI wall (3E+3)	2E+2 0	1E-7 0	3E-10 0	0 4E-5	0 4E-4
14	Si-32	W: see Si-31	0	1E+2	5E-8	2E-10	0	0
14	Si-32	Y: see Si-31	0	5E+0	2E-9	7E-12	0	0
15	P-32	D: all compounds except those given for W	6E+2	9E+2	4E-7	1E-9	9E-6	9E-5
15	P-32	W: phosphates of Zn^{2+}, S^{3+}, Mg^{2+}, Fe^{3+}, Bi^{3+}, and lanthanides	0	4E+2	2E-7	5E-10	0	0
15	P-33	D: see P-32	6E+3	8E+3	4E-6	1E-8	8E-5	8E-4
15	P-33	W: see P-32	0	3E+3	1E-6	4E-9	0	0
16	S-35	Vapor		1E+4	6E-6	2E-8	0	0
16	S-35	D: sulfides and sulfates except those given for W	1E+4 LLI wall (8E+3)	2E+4 0	7E-6 0	2E-8 0	0 1E-4	0 1E-3
16	S-35	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	0	2E+3	9E-7	3E-9	0	0
17	Cl-36	D: chlorides of H, Li, Na, K, Rb, Cs, and Fr	2E+3	2E+3	1E-6	3E-9	2E-5	2E-4

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17	Cl-36	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, Hg, Sc, Y, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Tc, and Re	0	2E+2	1E-7	3E-10	0	0
17	Cl-38[2]	D: see Cl-36	2E+4 St. wall (3E+4)	4E+4 0	2E-5 0	6E-8 0	0 3E-4	0 3E-3
17	Cl-38[2]	W: see Cl-36	0	5E+4	2E-5	6E-8	0	0
17	Cl-39[2]	D: see Cl-36	2E+4 St. wall (4E+4)	5E+4 0	2E-5 0	7E-8 0	0 5E-4	0 5E-3
17	Cl-39[2]	W: see Cl-36	0	6E+4	2E-5	8E-8	0	0
18	Ar-37	Submersion[1]	0	0	1E+0	6E-3	0	0
18	Ar-39	Submersion[1]	0	0	2E-4	8E-7	0	0
18	Ar-41	Submersion[1]	0	0	3E-6	1E-8	0	0
19	K-40	D: all compounds	3E+2	4E+2	2E-7	6E-10	4E-6	4E-5
19	K-42	D: all compounds	5E+3	5E+3	2E-6	7E-9	6E-5	6E-4
19	K-43	D: all compounds	6E+3	9E+3	4E-6	1E-8	9E-5	9E-4
19	K-44[2]	D: all compounds	2E+4 St. wall (4E+4)	7E+4 0	3E-5 0	9E-8 0	0 5E-4	0 5E-3
19	K-45[2]	D: all compounds	3E+4 St. wall (5E+4)	1E+5 0	5E-5 0	2E-7 0	 7E-4	0 7E-3
20	Ca-41	W: all compounds	3E+3 Bone Surf (4E+3)	4E+3 Bone Surf (4E+3)	2E-6 0	0 5E-9	0 6E-5	0 6E-4
20	Ca-45	W: all compounds	2E+3	8E+2	4E-7	1E-9	2E-5	2E-4
20	Ca-47	W: all compounds	8E+2	9E+2	4E-7	1E-9	1E-5	1E-4
20	Sc-43	Y: all compounds	7E+3	2E+4	9E-6	3E-8	1E-4	1E-3
21	Sc-44m	Y: all compounds	5E+2	7E+2	3E-7	1E-9	7E-6	7E-5
21	Sc-44	Y: all compounds	4E+3	1E+4	5E-6	2E-8	5E-5	5E-4
21	Sc-46	Y: all compounds	9E+2	2E+2	1E-7	3E-10	1E-5	1E-4
21	Sc-47	Y: all compounds	2E+3 LLI Wall (3E+3)	3E+3 0	1E-6 0	4E-9 0	0 4E-5	0 4E-4
21	Sc-48	Y: all compounds	8E+2	1E+3	6E-7	2E-9	1E-5	1E-4
21	Sc-49[2]	Y: all compounds	2E+4	5E+4	2E-5	8E-8	3E-4	3E-3

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At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
22	Ti-44	D: all compounds except those given for W, Y	3E+2	1E+1	5E-9	2E-11	4E-6	4E-5
22	Ti-44	W: oxides, carbides, halides, nitrates, and hydroxides	0	3E+1	1E-8	4E-11	0	0
22	Ti-44	Y: SrTiO	0	6E+0	2E-9	8E-12	0	0
22	Ti-45	D: see Ti-44	9E+3	3E+4	1E-5	3E-8	1E-4	1E-3
22	Ti-45	W: see Ti-44	0	4E+4	1E-5	5E-8	0	0
22	Ti-45	Y: see Ti-44	0	3E+4	1E-5	4E-8	0	0
23	V-47[2]	D: all compounds except those given for W	3E+4 St. wall (3E+4)	8E+4 0	3E-5 0	1E-7 0	0 4E-4	 4E-3
23	V-47	W: oxides, carbides, hydroxides, and halides	0	1E+5	4E-5	1E-7	0	0
23	V-48	D: see V-47	6E+2	1E+3	5E-7	2E-9	9E-6	9E-5
23	V-48	W: see V-47	0	6E+2	3E-7	9E-10	0	0
23	V-49	D: see V-47	7E+4 LLI wall (9E+4)	3E+4 Bone Surf (3E+4)	1E-5 0	0 5E-8	0 1E-3	 1E-2
23	V-49	W: see V-47	0	2E+4	8E-6	2E-8	0	0
24	Cr-48	D: all compounds except those given for W, Y	6E+3	1E+4	5E-6	2E-8	8E-5	8E-4
24	Cr-48	W: halides and nitrates	0	7E+3	3E-6	1E-8	0	0
24	Cr-48	Y: oxides and hydroxides	0	7E+3	3E-6	1E-8	0	0
24	Cr-49[2]	D: see Cr-48	3E+4	8E+4	4E-5	1E-7	4E-4	4E-3
24	Cr-49[2]	W: see Cr-48	0	1E+5	4E-5	1E-7	0	0
24	Cr-49[2]	Y: see Cr-48	0	9E+4	4E-5	1E-7	0	0
24	Cr-51	D: see Cr-48	4E+4	5E+4	2E-5	6E-8	5E-4	5E-3
24	Cr-51	W: see Cr-48	0	2E+4	1E-5	3E-8	0	0
24	Cr-51	Y: see Cr-48	0	2E+4	8E-6	3E-8	0	0
25	Mn-51[2]	D: all compounds except those given for W	2E+4	5E+4	2E-5	7E-8	3E-4	3E-3
25	Mn-51[2]	W: oxides, halides, hydroxides, and nitrates	0	6E+4	3E-5	8E-8	0	0
25	Mn-52m[2]	D: see Mn-51	3E+4 St. wall (4E+4)	9E+4 0	4E-5 0	1E-7 0	0 5E-4	0 5E-3
25	Mn-52m[2]	W: see Mn-51	0	1E+5	4E-5	1E-7	0	0
25	Mn-52	D: see Mn-51	7E+2	1E+3	5E-7	2E-9	1E-5	1E-4

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At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
25	Mn-52	W: see Mn-51	0	9E+2	4E-7	1E-9	0	0
25	Mn-53	D: see Mn-51	5E+4 0	1E+4 Bone Surf (2E+4)	5E-6 0	0 3E-8	7E-4 0	7E-3 0
25	Mn-53	W: see Mn-51	0	1E+4	5E-6	2E-8	0	0
25	Mn-54	D: see Mn-51	2E+3	9E+2	4E-7	1E-9	3E-5	3E-4
25	Mn-54	W: see Mn-51	0	8E+2	3E-7	1E-9	0	0
25	Mn-56	D: see Mn-51	5E+3	2E+4	6E-6	2E-8	7E-5	7E-4
25	Mn-56	W: see Mn-51	0	2E+4	9E-6	3E-8	0	0
26	Fe-52	D: all compounds except those given for W	9E+2	3E+3	1E-6	4E-9	1E-5	1E-4
26	Fe-52	W: oxides, halides, and hydroxides	0	2E+3	1E-6	3E-9	0	0
26	Fe-55	D: see Fe-52	9E+3	2E+3	8E-7	3E-9	1E-4	1E-3
26	Fe-55	W: see Fe-52	0	4E+3	2E-6	6E-9	0	0
26	Fe-59	D: see Fe-52	8E+2	3E+2	1E-7	5E-10	1E-5	1E-4
26	Fe-59	W: see Fe-52	0	5E+2	2E-7	7E-10	0	0
26	Fe-60	D: see Fe-52	3E+1	6E+0	3E-9	9E-12	4E-7	4E-6
26	Fe-60	W: see Fe-52	0	2E+1	8E-9	3E-11	0	0
27	Co-55	W: all compounds except those given for Y	1E+3	3E+3	1E-6	4E-9	2E-5	2E-4
27	Co-55	Y: oxides, halides, hydroxides, and nitrates	0	3E+3	1E-6	4E-9	0	0
27	Co-56	W: see Co-55	5E+2	3E+2	1E-7	4E-10	6E-6	6E-5
27	Co-56	Y: see Co-55	4E+2	2E+2	8E-8	3E-10	0	0
27	Co-57	W: see Co-55	8E+3	3E+3	1E-6	4E-9	6E-5	6E-4
27	Co-57	Y: see Co-55	4E+3	7E+2	3E-7	9E-10	0	0
27	Co-58m	W: see Co-55	6E+4	9E+4	4E-5	1E-7	8E-4	8E-3
27	Co-58m	Y: see Co-55	0	6E+4	3E-5	9E-8	0	0
27	Co-58	W: see Co-55	2E+3	1E+3	5E-7	2E-9	2E-5	2E-4
27	Co-58	Y: see Co-55	1E+3	7E+2	3E-7	1E-9	0	0
27	Co-60m[2]	W: see Co-55	1E+6 St. wall (1E+6)	4E+6 0	2E-3 0	6E-6 0	0 2E-2	0 2E-1
27	Co-60m[2]	Y: see Co-55	0	3E+6	1E-3	4E-6	0	0
27	Co-60	W: see Co-55	5E+2	2E+2	7E-8	2E-10	3E-6	3E-5
27	Co-60	Y: see Co-55	2E+2	3E+1	1E-8	5E-11	0	0
27	Co-61[2]	W: see Co-55	2E+4	6E+4	3E-5	9E-8	3E-4	3E-3
27	Co-61[2]	Y: see Co-55	2E+4	6E+4	2E-5	8E-8	0	0
27	Co-62m[2]	W: see Co-55	4E+4 St. wall (5E+4)	2E+5 0	7E-5 0	2E-7 0	0 7E-4	0 7E-3
27	Co-62m[2]	Y: see Co-55	0	2E+5	6E-5	2E-7	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
28	Ni-56	D: all compounds except those given for W	1E+3	2E+3	8E-7	3E-9	2E-5	2E-4
28	Ni-56	W: oxides, carbides, and hydroxides	0	1E+3	5E-7	2E-9	0	0
28	Ni-56	Vapor	0	1E+3	5E-7	2E-9	0	0
28	Ni-57	D: see Ni-56	2E+3	5E+3	2E-6	7E-9	2E-5	2E-4
28	Ni-57	W: see Ni-56	0	3E+3	1E-6	4E-9	0	0
28	Ni-57	Vapor	0	6E+3	3E-6	9E-9	0	0
28	Ni-59	D: see Ni-56	2E+4	4E+3	2E-6	5E-9	3E-4	3E-3
28	Ni-59	W: see Ni-56	0	7E+3	3E-6	1E-8	0	0
28	Ni-59	Vapor	0	2E+3	8E-7	3E-9	0	0
28	Ni-63	D: see Ni-56	9E+3	2E+3	7E-7	2E-9	1E-4	1E-3
28	Ni-63	W: see Ni-56	0	3E+3	1E-6	4E-9	0	0
28	Ni-63	Vapor	0	8E+2	3E-7	1E-9	0	0
28	Ni-65	D: see Ni-56	8E+3	2E+4	1E-5	3E-8	1E-4	1E-3
28	Ni-65	W: see Ni-56	0	3E+4	1E-5	4E-8	0	0
28	Ni-65	Vapor	0	2E+4	7E-6	2E-8	0	0
28	Ni-66	D: see Ni-56	4E+2 LLI wall (5E+2)	2E+3 0	7E-7 0	2E-9 0	0 6E-6	0 6E-5
28	Ni-66	W: see Ni-56	0	6E+2	3E-7	9E-10	0	0
28	Ni-66	Vapor	0	3E+3	1E-6	4E-9	0	0
29	Cu-60[2]	D: all compounds except those given for W, Y	3E+4 St. wall (3E+4)	9E+4 0	4E-5 0	1E-7 0	0 4E-4	0 4E-3
29	Cu-60[2]	W: sulfides, halides, and nitrates	0	1E+5	5E-5	2E-7	0	0
29	Cu-60[2]	Y: oxides and hydroxides	0	1E+5	4E-5	1E-7	0	0
29	Cu-61	D: see Cu-60	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3
29	Cu-61	W: see Cu-60	0	4E+4	2E-5	6E-8	0	0
29	Cu-61	Y: see Cu-60	0	4E+4	1E-5	5E-8	0	0
29	Cu-64	D: see Cu-60	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3
29	Cu-64	W: see Cu-60	0	2E+4	1E-5	3E-8	0	0
29	Cu-64	Y: see Cu-60	0	2E+4	9E-6	3E-8	0	0
29	Cu-67	D: see Cu-60	5E+3	8E+3	3E-6	1E-8	6E-5	6E-4
29	Cu-67	W: see Cu-60	0	5E+3	2E-6	7E-9	0	0
29	Cu-67	Y: see Cu-60	0	5E+3	2E-6	6E-9	0	0
30	Zn-62	Y: all compounds	1E+3	3E+3	1E-6	4E-9	2E-5	2E-4
30	Zn-63[2]	Y: all compounds	2E+4 St. wall (3E+4)	7E+4 0	3E-5 0	9E-8 0	0 3E-4	0 3E-3
30	Zn-65	Y: all compounds	4E+2	3E+2	1E-7	4E-10	5E-6	5E-5
30	Zn-69m	Y: all compounds	4E+3	7E+3	3E-6	1E-8	6E-5	6E-4

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
30	Zn-69[2]	Y: all compounds	6E+4	1E+5	6E-5	2E-7	8E-4	8E-3
30	Zn-71m	Y: all compounds	6E+3	2E+4	7E-6	2E-8	8E-5	8E-4
30	Zn-72	Y: all compounds	1E+3	1E+3	5E-7	2E-9	1E-5	1E-4
31	Ga-65[2]	D: all compounds except those given for W	5E+4 St. wall (6E+4)	2E+5 0	7E-5 0	2E-7 0	0 9E-4	0 9E-3
31	Ga-65[2]	W: oxides, carbides, halides, nitrates, and hydroxides	0	2E+5	8E-5	3E-7	0	0
31	Ga-66	D: see Ga-65	1E+3	4E+3	1E-6	5E-9	1E-4	1E-3
31	Ga-66	W: see Ga-65	0	3E+3	1E-6	4E-9	0	0
31	Ga-67	D: see Ga-65	7E+3	1E+4	6E-6	2E-8	2E-4	2E-3
31	Ga-67	W: see Ga-65	0	1E+4	4E-6	1E-8	0	0
31	Ga-68[2]	D: see Ga-65	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
31	Ga-68[2]	W: see Ga-65	0	5E+4	2E-5	7E-8	0	0
31	Ga-70[2]	D: see Ga-65	5E+4 St. wall (7E+4)	2E+5 0	7E-5 0	2E-7 0	0 1E-3	0 1E-2
31	Ga-70[2]	W: see Ga-65	0	2E+5	8E-5	3E-7	0	0
31	Ga-72	D: see Ga-65	1E+3	4E+3	1E-6	5E-9	2E-5	2E-4
31	Ga-72	W: see Ga-65	0	3E+3	1E-6	4E-9	0	0
31	Ga-73	D: see Ga-65	5E+3	2E+4	6E-6	2E-8	7E-5	7E-4
31	Ga-73	W: see Ga-65	0	2E+4	6E-6	2E-8	0	0
32	Ge-66	D: all compounds except those given for W	2E+4	3E+4	1E-5	4E-8	3E-4	3E-3
32	Ge-66	W: oxides, sulfides, and halides	0	2E+4	8E-6	3E-8	0	0
32	Ge-67[2]	D: see Ge-66	4E+4 St. wall (3E+4)	9E+4 0	4E-5 0	1E-7 0	0 6E-4	0 6E-3
32	Ge-67[2]	W: see Ge-66	0	1E+5	4E-5	1E-7	0	0
32	Ge-68	D: see Ge-66	5E+3	4E+3	2E-6	5E-9	6E-5	6E-4
32	Ge-68	W: see Ge-66	0	1E+2	4E-8	1E-10	0	0
32	Ge-69	D: see Ge-66	1E+4	2E+4	6E-6	2E-8	2E-4	2E-3
32	Ge-69	W: see Ge-66	0	8E+3	3E-6	1E-8	0	0
32	Ge-71	D: see Ge-66	5E+5	4E+5	2E-4	6E-7	7E-3	7E-2
32	Ge-71	W: see Ge-66	0	4E+4	2E-5	6E-8	0	0
32	Ge-75[2]	D: see Ge-66	4E+4 St. wall (7E+4)	8E+4 0	3E-5 0	1E-7 0	0 9E-4	0 9E-3
32	Ge-75[2]	W: see Ge-66	0	8E+4	4E-5	1E-7	0	0
32	Ge-77	D: see Ge-66	9E+3	1E+4	4E-6	1E-8	1E-4	1E-3
32	Ge-77	W: see Ge-66	0	6E+3	2E-6	8E-9	0	0
32	Ge-78[2]	D: see Ge-66	2E+4	2E+4	9E-6	3E-8	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
			St. Wall (2E+4)	0	0	0	3E-4	3E-3
32	Ge-78[2]	W: see Ge-66	0	2E+4	9E-6	3E-8	0	0
33	As-69[2]	W: all compounds	3E+4 St. Wall (4E.04)	1E+5 0	5E-5 0	2E-7 0	0 6E-4	0 6E-3
33	As-70[2]	W: all compounds	1E+4	5E+4	2E-5	7E-8	2E-4	2E-3
33	As-71	W: all compounds	4E+3	5E+3	2E-6	6E-9	5E-5	5E-4
33	As-72	W: all compounds	9E+2	1E+3	6E-7	2E-9	1E-5	1E-4
33	As-73	W: all compounds	8E+3	2E+3	7E-7	2E-9	1E-4	1E-3
33	As-74	W: all compounds	1E+3	8E+2	3E-7	1E-9	2E-5	2E-4
33	As-76	W: all compounds	1E+3	1E+3	6E-7	2E-9	1E-5	1E-4
33	As-77	W: all compounds	4E+3 LLI wall (5E+3)	5E+3 0	2E-6 0	7E-9 0	0 6E-5	0 6E-4
33	As-78[2]	W: all compounds	8E+3	2E+4	9E-6	3E-8	1E-4	1E-3
34	Se-70[2]	D: all compounds except those given for W	2E+4	4E+4	2E-5	5E-8	1E-4	1E-3
34	Se-70[2]	W: oxides, carbides, hydroxides, and elemental Se	1E+4	4E+4	2E-5	6E-8	0	0
34	Se-73m[2]	D: see Se-70	6E+4	2E+5	6E-5	2E-7	4E-4	4E-3
34	Se-73m[2]	W: see Se-70	3E+4	1E+5	6E-5	2E-7	0	0
34	Se-73	D: see Se-70	3E+3	1E+4	5E-6	2E-8	4E-5	4E-4
34	Se-73	W: see Se-70	0	2E+4	7E-6	2E-8	0	0
34	Se-75	D: see Se-70	5E+2	7E+2	3E-7	1E-9	7E-6	7E-5
34	Se-75	W: see Se-70	0	6E+2	3E-7	8E-10	0	0
34	Se-79	D: see Se-70	6E+2	8E+2	3E-7	1E-9	8E-6	8E-5
34	Se-79	W: see Se-70	0	6E+2	2E-7	8E-10	0	0
34	Se-81m[2]	D: see Se-70	4E+4	7E+4	3E-5	9E-8	3E-4	3E-3
34	Se-81m[2]	W: see Se-70	2E+4	7E+4	3E-5	1E-7	0	0
34	Se-81[2]	D: see Se-70	6E+4 St. wall (8E+4)	2E+5 0	9E-5 0	3E-7 0	0 1E-3	0 1E-2
34	Se-81[2]	W: see Se-70	0	2E+5	1E-4	3E-7	0	0
34	Se-83[2]	D: see Se-70	4E+4	1E+5	5E-5	2E-7	4E-4	4E-3
34	Se-83[2]	W: see Se-70	3E+4	1E+5	5E-5	2E-7	0	0
35	Br-74m[2]	D: bromides of H, Li, Na, K, Rb, Cs, and Fr	1E+4 St. Wall (2E+4)	4E+4 0	2E-5 0	5E-8 0	0 3E-4	0 3E-3

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
35	Br-74m[2]	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, Hg, Sc, Y, Ti, Zr, Hf, V, Nb, Ta, Mn, Tc, and Re	0	4E+4	2E-5	6E-8	0	0
35	Br-74[2]	D: see Br-74m	2E+4 St. wall (4E+4)	7E+4 0	3E-5 0	1E-7 0	0 5E-4	0 5E-3
35	Br-74[2]	W: see Br-74m	0	8E+4	4E-5	1E-7	0	0
35	Br-75[2]	D: see Br-74m	3E+4 St. wall (4E+4)	5E+4 0	2E-5 0	7E-8 0	0 5E-4	0 5E-3
35	Br-75[2]	W: see Br-74m	0	5E+4	2E-5	7E-8	0	0
35	Br-76	D: see Br-74m	4E+3	5E+3	2E-6	7E-9	5E-5	5E-4
35	Br-76	W: see Br-74m	0	4E+3	2E-6	6E-9	0	0
35	Br-77	D: see Br-74m	2E+4	2E+4	1E-5	3E-8	2E-4	2E-3
35	Br-77	W: see Br-74m	0	2E+4	8E-6	3E-8	0	0
35	Br-80m	D: see Br-74m	2E+4	2E+4	7E-6	2E-8	3E-4	3E-3
35	Br-80m	W: see Br-74m	0	1E+4	6E-6	2E-8	0	0
35	Br-80[2]	D: see Br-74m	5E+4 St. wall (9E+4)	2E+5 0	8E-5 0	3E-7 0	0 1E-3	0 1E-2
35	Br-80[2]	W: see Br-74m	0	2E+5	9E-5	3E-7	0	0
35	Br-82	D: see Br-74m	3E+3	4E+3	2E-6	6E-9	4E-5	4E-4
35	Br-82	W: see Br-74m	0	4E+3	2E-6	5E-9	0	0
35	Br-83	D: see Br-74m	5E+4 St. wall (7E+4)	6E+4 0	3E-5 0	9E-8 0	0 9E-4	0 9E-3
35	Br-83	W: see Br-74m	0	6E+4	3E-5	9E-8	0	0
35	Br-84[2]	D: see Br-74m	2E+4 St. wall (3E+4)	6E+4 0	2E-5 0	8E-8 0	0 4E-4	0 4E-3
35	Br-84[2]	W: see Br-74m	0	6E+4	3E-5	9E-8	0	0
36	Kr-74[2]	Submersion[1]	0	0	3E-6	1E-8	0	0
36	Kr-76	Submersion[1]	0	0	9E-6	4E-8	0	0
36	Kr-77[2]	Submersion[1]	0	0	4E-6	2E-8	0	0
36	Kr-79	Submersion[1]	0	0	2E-5	7E-8	0	0
	Kr-81	Submersion1	0	0	7E-4	3E-6	0	0
36	Kr-83m[2]	Submersion[1]	0	0	1E-2	5E-5	0	0
36	Kr-85m	Submersion[1]	0	0	2E-5	1E-7	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
36	Kr-85	Submersion[1]	0	0	1E-4	7E-7	0	0
36	Kr-87	Submersion1	0	0	5E-6	2E-8	0	0
36	Kr-88	Submersion[1]	0	0	2E-6	9E-9	0	0
37	Rb-79[2]	D: all compounds	4E+4 St. wall (6E+4)	1E+5 0	5E-5 0	2E-7 0	0 8E-4	0 8E-3
37	Rb-81m[2]	D: all compounds	2E+5 St. wall (3E+5)	3E+5 0	1E-4 0	5E-7 0	0 4E-3	0 4E-2
37	Rb-81	D: all compounds	4E+4	5E+4	2E-5	7E-8	5E-4	5E-3
37	Rb-82m	D: all compounds	1E+4	2E+4	7E-6	2E-8	2E-4	2E-3
37	Rb-83	D: all compounds	6E+2	1E+3	4E-7	1E-9	9E-6	9E-5
37	Rb-84	D: all compounds	5E+2	8E+2	3E-7	1E-9	7E-6	7E-5
37	Rb-86	D: all compounds	5E+2	8E+2	3E-7	1E-9	7E-6	7E-5
37	Rb-87	D: all compounds	1E+3	2E+3	6E-7	2E-9	1E-5	1E-4
37	Rb-88[2]	D: all compounds	2E+4 St. wall (3E+4)	6E+4 0	3E-5 0	9E-8 0	0 4E-4	0 4E-3
37	Rb-89[2]	D: all compounds	4E+4 St. wall (6E+4)	1E+5 0	6E-5 0	2E-7 0	0 9E-4	0 9E-3
38	Sr-80[2]	D: all soluble compounds except SrTiO	4E+3	1E+4	5E-6	2E-8	6E-5	6E-4
38	Sr-80[2]	Y: all insoluble compounds and SrTi0	0	1E+4	5E-6	2E-8	0	0
38	Sr-81[2]	D: see Sr-80	3E+4	8E+4	3E-5		3E-4	3E-3
38	Sr-81[2]	Y: see Sr-80	2E+4	8E+4	3E-5		0	0
38	Sr-82	D: see Sr-80	3E+2 LLI wall (2E+2)	4E+2 0	2E-7 0	6E-10 0	0 3E-6	0 3E-5
38	Sr-82	Y: see Sr-80	2E+2	9E+1	4E-8	1E-8	0	0
38	Sr-83	D: see Sr-80	3E+3	7E+3	3E-6	5E-9	3E-5	3E-4
38	Sr-83	Y: see Sr-80	2E+3	4E+3	1E-6	5E-9	0	0
38	Sr-85m[2]	D: see Sr-80	2E+5	6E+5	3E-4	9E-7	3E-3	3E-2
38	Sr-85m[2]	Y: see Sr-80	0	8E+5	4E-4	1E-6	0	0
38	Sr-85	D: see Sr-80	3E+3	3E+3	1E-6	4E-9	4E-5	4E-4
38	Sr-85	Y: see Sr-80	0	2E+3	6E-7	2E-9	0	0
38	Sr-87m	D: see Sr-80	5E+4	1E+5	5E-5	2E-7	6E-4	6E-3
38	Sr-87m	Y: see Sr-80	4E+4	2E+5	6E-5	2E-7	0	0
38	Sr-89	D: see Sr-80	6E+2 LLI wall (6E+2)	8E+2 0	4E-7 0	1E-9 0	0 8E-6	0 5E-5
38	Sr-89	Y: see Sr-80	5E+2	1E+2	6E-8	2E-10	0	0
38	Sr-90	D: see Sr-80	3E+1 Bone surf	2E+1 Bone Surf	8E-9	0	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
			(4E+1)	(2E+1)	0	3E-11	5E-7	5E-6
38	Sr-90	Y: see Sr-80	0	4E+0	2E-9	6E-12	0	0
38	Sr-91	D: see Sr-80	2E+3	6E+3	2E-6	8E-9	2E-5	2E-4
38	Sr-91	Y: see Sr-80	0	4E+3	1E-6	5E-9	0	0
38	Sr-92	D: see Sr-80	3E+3	9E+3	4E-6	1E-8	4E-5	4E-4
38	Sr-92	Y: see Sr-80	0	7E+3	3E-6	9E-9	0	0
39	Y-86m[2]	W: all compounds except those given for Y	2E+4	6E+4	2E-5	8E-8	3E-4	3E-3
39	Y-86m[2]	Y: oxides and hydroxides	0	5E+4	2E-5	8E-8	0	0
39	Y-86	W: see Y-86m	1E+3	3E+3	1E-6	5E-9	2E-5	2E-4
39	Y-86	Y: see Y-86m	0	3E+3	1E-6	5E-9	0	0
39	Y-87	W: see Y-86m	2E+3	3E+3	1E-6	5E-9	3E-5	3E-4
39	Y-87	Y: see Y-86m	0	3E+3	1E-6	5E-9	0	0
39	Y-88	W: see Y-86m	1E+3	3E+2	1E-7	3E-10	1E-5	1E-4
39	Y-88	Y: see Y-86m	0	2E+2	1E-7	3E-10	0	0
39	Y-90m	W: see Y-86m	8E+3	1E+4	5E-6	2E-8	1E-4	1E-3
39	Y-90m	Y: see Y-86m	0	1E+4	5E-6	2E-8	0	0
39	Y-90	W: see Y-86m	4E+2 LLI wall (5E+2)	7E+2 0	3E-7 0	9E-10 0	0 7E-6	0 7E-5
39	Y-90	Y: see Y-86m	0	6E+2	3E-7	9E-10	0	0
39	Y-91m[2]	W: see Y-86m	1E+5	2E+5	1E-4	3E-7	2E-3	2E-2
39	Y-91m[2]	Y: see Y-86m	0	2E+5	7E-5	2E-7	0	0
39	Y-91	W: see Y-86m	5E+2 LLI wall (6E+2)	2E+2 0	7E-8 0	2E-10 0	0 8E-6	0 8E-5
39	Y-91	Y: see Y-86m	0	1E+2	5E-8	2E-10	0	0
39	Y-92	W: see Y-86m	3E+3	9E+3	4E-6	1E-8	4E-5	4E-4
39	Y-92	Y: see Y-86m	0	8E+3	3E-6	1E-8	0	0
39	Y-93	W: see Y-86m	1E+3	3E+3	1E-6	4E-9	2E-5	2E-4
39	Y-93	Y: see Y-86m	0	2E+3	1E-6	3E-9	0	0
39	Y-94[2]	W: see Y-86m	2E+4 St. wall (3E+4)	8E+4 0	3E-5 0	1E-7 0	0 4E-4	0 4E-3
39	Y-94[2]	Y: see Y-86m	0	8E+4	3E-5	1E-7	0	0
39	Y-95[2]	W: see Y-86m	4E+4 St. wall (5E+4)	2E+5 0	6E-6 0	2E-7 0	0 7E-4	0 7E-3
39	Y-95[2]	Y: see Y-86m	0	1E+5	6E-5	2E-7	0	0
40	Zr-86	D: all compounds except those given for W, Y	1E+3	4E+3	2E-6	6E-9	2E-5	2E-4
40	Zr-86	W: oxides, halides, nitrates, and	0	3E+3	1E-6	4E-9	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
		hydroxides						
40	Zr-86	Y: carbide	0	2E+3	1E-6	3E-9	0	0
40	Zr-88	D: see Zr-86	4E+3	2E+2	9E-8	3E-10	5E-5	5E-4
40	Zr-88	W: see Zr-86	0	5E+2	2E-7	7E-10	0	0
40	Zr-88	Y: see Zr-86	0	3E+2	1E-7	4E-10	0	0
40	Zr-89	D: see Zr-86	2E+3	4E+3	1E-6	5E-9	2E-5	2E-4
40	Zr-89	W: see Zr-86	0	2E+3	1E-6	5E-9	0	0
40	Zr-89	Y: see Zr-86	0	2E+3	1E-6	3E-9	0	0
40	Zr-93	D: see Zr-86	1E+3 Bone surf (3E+3)	6E+0 Bone Surf (2E+1)	3E-9 0	0 2E-11	0 4E-5	0 4E-4
40	Zr-93	W: see Zr-86	0	2E+1 Bone Surf (6E+1)	1E-8 0	0 9E-11	0 0	0 0
40	Zr-93	Y: see Zr-86	0	6E+1 Bone Surf (7E+1)	2E-8 0	0 9E-11	0 0	0 0
40	Zr-95	D: see Zr-86	1E+3 0	1E+2 Bone Surf (3E+2)	5E-8 0	0 4E-10	2E-5 0	2E-4 0
40	Zr-95	W: see Zr-86	0	4E+2	2E-7	5E-10	0	0
40	Zr-95	Y: see Zr-86	0	3E+2	1E-7	4E-10	0	0
40	Zr-97	D: see Zr-86	6E+2	2E+3	8E-7	3E-9	9E-6	9E-5
40	Zr-97	W: see Zr-86	0	1E+3	6E-7	2E-9	0	0
40	Zr-97	Y: see Zr-86	0	1E+3	5E-7	2E-9	0	0
41	Nb-88[2]	W: all compounds except those given for Y	5E+4 St. wall (7E+4)	2E+5 0	9E-5 0	3E-7 0	0 1E-3	0 1E-2
41	Nb-88[2]	Y: oxides and hydroxides	0	2E+5	9E-5	3E-7	0	0
41	Nb-89[2] (66 m)	W: see Nb-88	1E+4	4E+4	2E-5	6E-8	1E-3	1E-2
41	Nb-89[2] (66 m)	Y: see Nb-88	0	4E+4	2E-5	5E-8	0	0
41	Nb-89 (122 m)	W: see Nb-88	5E+3	2E+4	8E-6	3E-8	7E-5	7E-4
41	Nb-89 (122 m)	Y: see Nb-88	0	2E+4	6E-6	2E-8	0	0
41	Nb-90	W: see Nb-88	1E+3	3E+3	1E-6	4E-9	1E-5	1E-4
41	Nb-90	Y: see Nb-88	0	2E+3	1E-6	3E-9	0	0
41	Nb-93m	W: see Nb-88	9E+3 LLI wall (1E+1)	2E+3 0	8E-7 0	3E-9 0	0 2E-4	0 2E-3
41	Nb-93m	Y: see Nb-88	0	2E+2	7E-8	2E-10	0	0
41	Nb-94	W: see Nb-88	9E+2	2E+2	8E-8	3E-10	1E-5	1E-4
41	Nb-94	Y: see Nb-88	0	2E+1	6E-9	2E-11	0	0
41	Nb-95m	W: see Nb-88	2E+3 LLI wall (2E+3)	3E+3 0	1E-6 0	4E-9 0	0 3E-5	0 3E-4

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
41	Nb-95m	Y: see Nb-88	0	2E+3	9E-7	3E-9	0	0
41	Nb-95	W: see Nb-88	2E+3	1E+3	5E-7	2E-9	3E-5	3E-4
41	Nb-95	Y: see Nb-88	0	1E+3	5E-7	2E-9	0	0
41	Nb-96	W: see Nb-88	1E+3	3E+3	1E-6	4E-9	2E-5	2E-4
41	Nb-96	Y: see Nb-88	0	2E+3	1E-6	3E-9	0	0
41	Nb-97[2]	W: see Nb-88	2E+4	8E+4	3E-5	1E-7	3E-4	3E-3
41	Nb-97[2]	Y: see Nb-88	0	7E+4	3E-5	1E-7	0	0
41	Nb-98[2]	W: see Nb-88	1E+4	5E+4	2E-5	8E-8	2E-4	2E-3
41	Nb-98[2]	Y: see Nb-88	0	5E+4	2E-5	7E-8	0	0
42	Mo-90	D: all compounds except those given for Y	4E+3	7E+3	3E-6	1E-8	3E-5	3E-4
42	Mo-90	Y: oxides, MoS, and hydroxides	2E+3	5E+3	2E-6	6E-9	0	0
42	Mo-93m	D: see Mo-90	9E+3	2E+4	7E-6	2E-8	6E-5	6E-4
42	Mo-93m	Y: see Mo-90	4E+3	1E+4	6E-6	2E-8	0	0
42	Mo-93	D: see Mo-90	4E+3	5E+3	2E-6	2E-9	5E-5	5E-4
424 2	Mo-93	Y: see Mo-90	2E+4	2E+2	8E-8	2E-10	0	0
42	Mo-99	D: see Mo-90	2E+3 LLI wall (1E+3)	3E+3 0	1E-6 0	4E-9 0	0 2E-5	0 2E-4
42	Mo-99	Y: see Mo-90	1E+3	1E+3	6E-7	2E-9	0	0
42	Mo-101[2]	D: see Mo-90	4E+4 St. wall (5E+4)	1E+5 0	6E-5 0	2E-7 0	0 7E-4	0 7E-3
42	Mo-101[2]	Y: see Mo-90	0	1E+5	6E-5	2E-7	0	0
43	Tc-93m[2]	D: all compounds except those given for W	7E+4	2E+5	6E-5	2E-7	1E-3	1E-2
43	Tc-93m[2]	W: oxides, halides, hydroxides, and nitrates	0	3E+5	1E-4	4E-7	0	0
43	Tc-93	D: see Tc-93m	3E+4	7E+4	3E-5	1E-7	4E-4	4E-3
43	Tc-93	W: see Tc-93m	0	1E+5	4E-5	1E-7	0	0
43	Tc-94m[2]	D: see Tc-93m	2E+4	4E+4	2E-5	6E-8	3E-4	3E-3
43	Tc-94m[2]	W: see Tc-93m	0	6E+4	2E-5	8E-8	0	0
43	Tc-94	D: see Tc-93m	9E+3	2E+4	8E-6	3E-8	1E-4	1E-3
43	Tc-94	W: see Tc-93m	0	2E+4	1E-5	3E-8	0	0
43	Tc-95m	D: see Tc-93m	4E+3	5E+3	2E-6	8E-9	5E-5	5E-4
43	Tc-95m	W: see Tc-93m	0	2E+3	8E-7	3E-9	0	0
43	Tc-95	D: see Tc-93m	1E+4	2E+4	9E-6	3E-8	1E-4	1E-3
43	Tc-95	W: see Tc-93m	0	2E+4	8E-6	3E-8	0	0
43	Tc-96m[2]	D: see Tc-93m	2E+5	3E+5	1E-4	4E-7	2E-3	2E-2
43	Tc-96m[2]	W: see Tc-93m	0	2E+5	1E-4	3E-7	0	0
43	Tc-96	D: see Tc-93m	2E+3	3E+3	1E-6	5E-9	3E-5	3E-4

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
43	Tc-96	W: see Tc-93m	0	2E+3	9E-7	5E-9	0	0
43	Tc-97m	D: see Tc-93m	5E+3 0	7E+3 St wall (7E+3)	3E-6 0	0 1E-8	6E-5 0	6E-4 0
43	Tc-97m	W: see Tc-93m	0	1E+3	5E-7	2E-9	0	0
43	Tc-97	D: see Tc-93m	4E+4	5E+4	2E-5	7E-8	5E-4	5E-3
43	Tc-97	W: see Tc-93m	0	6E+3	2E-6	8E-9	0	0
43	Tc-98	D: see Tc-93m	1E+3	2E+3	7E-7	2E-9	1E-5	1E-4
43	Tc-98	W: see Tc-93m	0	3E+2	1E-7	4E-10	0	0
43	Tc-99m	D: see Tc-93m	8E+4	2E+5	6E-5	2E-7	1E-3	1E-2
43	Tc-99m	W: see Tc-93m	0	2E+5	1E-4	3E-7	0	0
43	Tc-99	D: see Tc-93m	4E+3 0	5E+3 St wall (6E+3)	2E-6 0	0 8E-9	6E-5 0	6E-4 0
43	Tc-99	W: see Tc-93m	0	7E+2	3E-7	9E-10	0	0
43	Tc-101[2]	D: see Tc-93m	9E+4 St. wall (1E+5)	3E+5 0	1E-4 0	5E-7 0	0 2E-3	0 2E-2
43	Tc-101[2]	W: see Tc-93m	0	4E+5	2E-4	5E-7	0	0
43	Tc-104[2]	D: see Tc-93m	2E+4 St. wall (3E+4)	7E+4 0	3E-5 0	1E-7 0	0 4E-4	0 4E-3
43	Tc-104[2]	W: see Tc-93m	0	9E+4	4E-5	1E-7	0	0
44	Ru-94[2]	D: all compounds except those given for W, Y	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
44	Ru-94[2]	W: halides	0	6E+4	3E-5	9E-8	0	0
44	Ru-94[2]	Y: oxides and hydroxides	0	6E+4	2E-5	8E-8	0	0
44	Ru-97	D: see Ru-94	8E+3	2E+4	8E-6	3E-8	1E-4	1E-3
44	Ru-97	W: see Ru-94	0	1E+4	5E-6	2E-8	0	0
44	Ru-97	Y: see Ru-94	0	1E+4	5E-6	2E-8	0	0
44	Ru-103	D: see Ru-94	2E+3	2E+3	7E-7	2E-9	3E-5	3E-4
44	Ru-103	W: see Ru-94	0	1E+3	4E-7	1E-9	0	0
44	Ru-103	Y: see Ru-94	0	6E+2	3E-7	9E-10	0	0
44	Ru-105	D: see Ru-94	5E+3	1E+4	6E-6	2E-8	7E-5	7E-4
44	Ru-105	W: see Ru-94	0	1E+4	6E-6	2E-8	0	0
44	Ru-105	Y: see Ru-94	0	1E+4	5E-6	2E-8	0	0
44	Ru-106	D: see Ru-94	2E+2 LLI wall (2E+2)	9E+1 0	4E-8 0	1E-10 0	0 3E-6	0 3E-5
44	Ru-106	W: see Ru-94	0	5E+1	2E-8	8E-11	0	0
44	Ru-106	Y: see Ru-94	0	1E+1	5E-9	2E-11	0	0
44	Rh-99m	D: all compounds except those given for W, Y	2E+4	6E+4	2E-5	8E-8	2E-4	2E-3

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
45	Rh-99m	W: halides	0	8E+4	3E-5	1E-7	0	0
	Rh-99m	Y: oxides and hydroxides	0	7E+4	3E-5	9E-8	0	0
45	Rh-99	D: see Rh-99m	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
45	Rh-99	W: see Rh-99m	0	2E+3	9E-7	3E-9	0	0
45	Rh-99	Y: see Rh-99m	0	2E+3	8E-7	3E-9	0	0
45	Rh-100	D: see Rh-99m	2E+3	5E+3	2E-6	7E-9	2E-5	2E-4
45	Rh-100	W: see Rh-99m	0	4E+3	2E-6	6E-9	0	0
45	Rh-100	Y: see Rh-99m	0	4E+3	2E-6	5E-9	0	0
45	Rh-101m	D: see Rh-99m	6E+3	1E+4	5E-6	2E-8	8E-5	8E-4
45	Rh-101m	W: see Rh-99m	0	8E+3	4E-6	1E-8	0	0
45	Rh-101m	Y: see Rh-99m	0	8E+3	3E-6	1E-8	0	0
45	Rh-101	D: see Rh-99m	2E+3	5E+2	2E-7	7E-10	3E-5	3E-4
45	Rh-101	W: see Rh-99m	0	8E+2	3E-7	1E-9	0	0
45	Rh-101	Y: see Rh-99m	0	2E+2	6E-8	2E-10	0	0
45	Rh-102m	D: see Rh-99m	1E+3 LLI wall (1E+3)	5E+2 0	2E-7 0	7E-10 0	0 2E-5	0 2E-4
45	Rh-102m	W: see Rh-99m	0	4E+2	2E-7	5E-10	0	0
45	Rh-102m	Y: see Rh-99m	0	1E+2	5E-8	5E-10	0	0
45	Rh-102	D: see Rh-99m	6E+2	9E+1	4E-8	1E-10	8E-6	8E-5
45	Rh-102	W: see Rh-99m	0	2E+2	7E-8	2E-10	0	0
45	Rh-102	Y: see Rh-99m	0	6E+1	2E-8	8E-11	0	0
45	Rh-103m[2]	D: see Rh-99m	4E+5	1E+6	5E-4	2E-6	6E-6	6E-5
45	Rh-103m[2]	W: see Rh-99m	0	1E+6	5E-4	2E-6	0	0
45	Rh-103m[2]	Y: see Rh-99m	0	1E+6	5E-4	2E-6	0	0
45	Rh-105	D: see Rh-99m	4E+3 LLI wall (4E+3)	1E+4 0	5E-6 0	2E-8 0	0 5E-5	0 5E-4
45	Rh-105	W: see Rh-99m	0	6E+3	3E-6	9E-9	0	0
45	Rh-105	Y: see Rh-99m	0	6E+3	2E-6	8E-9	0	0
45	Rh-106m	D: see Rh-99m	8E+3	3E+4	1E-5	4E-8	1E-4	1E-3
45	Rh-106m	W: see Rh-99m	0	4E+4	2E-5	5E-8	0	0
45	Rh-106m	Y: see Rh-99m	0	4E+4	1E-5	5E-8	0	0
45	Rh-107[2]	D: see Rh-99m	7E+4 St. wall (9E+4)	2E+5 0	1E-4 0	3E-7 0	0 1E-3	0 1E-2
45	Rh-107[2]	W: see Rh-99m	0	3E+5	1E-4	4E-7	0	0
45	Rh-107[2]	Y: see Rh-99m	0	3E+5	1E-4	3E-7	0	0
46	Pd-100	D: all compounds except those given for W, Y	1E+3	1E+3	6E-7	2E-9	2E-5	2E-4
	Pd-100	W: nitrates	0	1E+3	5E-7	2E-9	0	0
46	Pd-100	Y: oxides and hydroxides	0	1E+3	6E-7	2E-9	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
46	Pd-101	D: see Pd-100	1E+4	3E+4	1E-5	5E-8	2E-4	2E-3
46	Pd-101	W: see Pd-100	0	3E+4	1E-5	5E-8	0	0
46	Pd-101	Y: see Pd-100	0	3E+4	1E-5	4E-8	0	0
46	Pd-103	D: see Pd-100	6E+3 LLI wall (7E+3)	6E+3 0	3E-6 0	9E-9 0	0 1E-4	0 1E-3
46	Pd-103	W: see Pd-100	0	4E+3	2E-6	6E-9	0	0
46	Pd-103	Y: see Pd-100	0	4E+3	1E-6	5E-9	0	0
46	Pd-107	D: see Pd-100	3E+4 LLI wall (4E+4)	2E+4 Kidneys (2E+4)	9E-6 0	0 3E-8	0 5E-4	0 5E-3
46	Pd-107	W: see Pd-100	0	7E+3	3E-6	1E-8	0	0
46	Pd-107	Y: see Pd-100	0	4E+2	2E-7	6E-10	0	0
46	Pd-109	D: see Pd-100	2E+3	6E+3	3E-6	9E-9	3E-5	3E-4
46	Pd-109	W: see Pd-100	0	5E+3	2E-6	8E-9	0	0
46	Pd-109	Y: see Pd-100	0	5E+3	2E-6	6E-9	0	0
47	Ag-102[2]	D: all compounds except those given for W, Y	5E+4 St. wall (6E+4)	2E+5 0	8E-5 0	2E-7 0	0 9E-4	0 9E-3
	Ag-102[22]	W: nitrates and sulfides	0	2E+5	9E-5	3E-7	0	0
47	Ag-102[2]	Y: oxides and hydroxides	0	2E+5	8E-5	3E-7	0	0
47	Ag-103[2]	D: see Ag-102	4E+4	1E+5	4E-5	1E-7	5E-4	5E-3
47	Ag-103[2]	W: see Ag-102	0	1E+5	5E-5	2E-7	0	0
47	Ag-103[2]	Y: see Ag-102	0	1E+5	5E-5	2E-7	0	0
47	Ag-104m[2]	D: see Ag-102	3E+4	9E+4	4E-5	1E-7	4E-4	4E-3
47	Ag-104m[2]	W: see Ag-102	0	1E+5	5E-5	2E-7	0	0
47	Ag-104m[2]	Y: see Ag-102	0	1E+5	5E-5	2E-7	0	0
47	Ag-104[2]	D: see Ag-102	2E+4	7E+4	3E-5	1E-7	3E-4	3E-3
47	Ag-104[2]	W: see Ag-102	0	1E+5	6E-5	2E-7	0	0
47	Ag-104[2]	Y: see Ag-102	0	1E+5	6E-5	2E-7	0	0
47	Ag-105	D: see Ag-102	3E+3	1E+3	4E-7	1E-9	4E-5	4E-4
47	Ag-105	W: see Ag-102	0	2E+3	7E-7	2E-9	0	0
47	Ag-105	Y: see Ag-102	0	2E+3	7E-7	2E-9	0	0
47	Ag-106m	D: see Ag-102	8E+2	7E+2	3E-7	1E-9	1E-5	1E-4
47	Ag-106m	W: see Ag-102	0	9E+2	4E-7	1E-9	0	0
47	Ag-106m	Y: see Ag-102	0	9E+2	4E-7	1E-9	0	0
47	Ag-106[2]	D: see Ag-102	6E+4 St. wall (6E+4)	2E+5 0	8E-5 0	3E-7 0	0 9E-4	0 9E-3
47	Ag-106[2]	W: see Ag-102	0	2E+5	9E-5	3E-7	0	0
47	Ag-106[2]	Y: see Ag-102	0	2E+5	8E-5	3E-7	0	0
47	Ag-108m	D: see Ag-102	6E+2	2E+2	8E-8	3E-10	9E-6	9E-5
47	Ag-108m	W: see Ag-102	0	3E+2	1E-7	4E-10	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
47	Ag-108m	Y: see Ag-102	0	2E+1	1E-8	3E-11	0	0
47	Ag-110m	D: see Ag-102	5E+2	1E+2	5E-8	2E-10	6E-6	6E-5
47	Ag-110m	W: see Ag-102	0	2E+2	8E-8	3E-10	0	0
47	Ag-110m	Y: see Ag-102	0	9E+1	4E-8	1E-10	0	0
47	Ag-111	D: see Ag-102	9E+2 LLI wall (1E+3)	2E+3 Liver (2E+3)	6E-7 0	0 2E-9	0 2E-5	0 2E-4
47	Ag-111	W: see Ag-102	0	9E+2	4E-7	1E-9	0	0
47	Ag-111	Y: see Ag-102	0	9E+2	4E-7	1E-9	0	0
47	Ag-112	D: see Ag-102	3E+3	8E+3	3E-6	1E-8	4E-5	4E-4
47	Ag-112	W: see Ag-102	0	1E+4	4E-6	1E-8	0	0
47	Ag-112	Y: see Ag-102	0	9E+3	4E-6	1E-8	0	0
47	Ag-115[2]	D: see Ag-102	3E+4 St. wall (3E+4)	9E+4 0	4E-5 0	1E-7 0	0 4E-4	0 4E-3
47	Ag-115[2]	W: see Ag-102	0	9E+4	43E-5	1E-7	0	0
47	Ag-115[2]	Y: see Ag-102	0	8E+4	3E-5	1E-7	0	0
48	Cd-104[2]	D: all compounds except those given for W, Y	2E+4	7E+4	5E-5	9E-8	3E-4	3E-3
48	Cd-104[2]	W: sulfides, halides, and nitrates	0	1E+5	5E-5	2E-7	0	0
48	Cd-104[2]	Y: oxides and hydroxides	0	1E+5	5E-5	2E-7	0	0
48	Cd-107	D: see Cd-104	2E+4	5E+4	2E-5	8E-8	3E-4	3E-3
48	Cd-107	W: see Cd-104	0	6E+4	2E-5	8E-8	0	0
48	Cd-107	Y: see Cd-104	0	5E+4	2E-5	7E-8	0	0
48	Cd-109	D: see Cd-104	2E+2 Kidneys (4E+2)	5E+1 Kidney (5E+1)	1E-8 0	0 7E-11	0 6E-6	0 6E-5
48	Cd-109	W: see Cd-104	0 0	1E+2 Kidney (1E+2)	5E-8 0	0 2E-10	0 0	0 0
48	Cd-109	Y: see Cd-104	0	1E+2	5E-8	2E-10	0	0
48	Cd-113m	D: see Cd-104	2E+1 Kidneys (4E+1)	2E+0 Kidney (4E+0)	1E-9 0	0 5E-12	0 5E-7	0 5E-6
48	Cd-113m	W: see Cd-104	0 0	8E+0 Kidney (1E+0)	4E-9 0	0 2E-11	0 0	0 0
48	Cd-113m	Y: see Cd-104	0	1E+1	5E-9	2E-11	0	0
48	Cd-113	D: see Cd-104	2E+1 Kidneys (3E+1)	2E+0 Kidney (3E+0)	9E-10	0 5E-12	0 4E-7	0 4E-6
48	Cd-113	W: see Cd-104	0 0	8E+0 Kidney (8E+0)	3E-9 0	0 2E-11	0 0	0 0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
48	Cd-113	Y: see Cd-104	0	1E+1	6E-9	2E-11	0	0
48	Cd-115m	D: see Cd-104	3E+2 0	5E+1 Kidney (8E+1)	2E-8 0	0 1E-10	4E-6 0	4E-5 0
48	Cd-115m	W: see Cd-104	0	1E+2	5E-8	2E-10	0	0
48	Cd-115m	Y: see Cd-104	0	1E+2	6E-8	2E-10	0	0
48	Cd-115	D: see Cd-104	9E+2 LLI Wall (1E+3)	1E+3 0	6E-7 0	2E-9 0	0 1E-5	0 1E-4
48	Cd-115	W: see Cd-104	0	1E+3	5E-7	2E-9	0	0
48	Cd-115	Y: see Cd-104	0	1E+3	6E-7	2E-9	0	0
48	Cd-117m	D: see Cd-104	5E+3	1E+4	5E-6	2E-8	6E-5	6E-4
48	Cd-117m	W: see Cd-104	0	2E+4	7E-6	2E-8	0	0
48	Cd-117m	Y: see Cd-104	0	1E+4	6E-6	2E-8	0	0
48	Cd-117	D: see Cd-104	5E+3	1E+4	5E-6	2E-8	3E-4	3E-3
48	Cd-117	W: see Cd-104	0	2E+4	7E-6	2E-8	0	0
48	Cd-117	Y: see Cd-104	0	1E+4	6E-6	2E-8	0	0
49	In-109	D: all compounds except those given for W	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
49	In-109	W: oxides, halides, hydroxides, and nitrates	0	6E+4	3E-5	9E-8	0	0
49	In-110[2] (69.1 m)	D: see In-109	2E+4	4E+4	2E-5	6E-8	0	0
49	In-110[2] (69.1 m)	W: see In-109	0	6E+4	2E-5	8E-8	7E-3	7E-4
49	In-110 (4.9 h)	D: see In-109	5E+3	2E+4	7E-6	2E-8	0	0
49	In-110 (4.9 h)	W: see In-109	0	2E+4	8E-6	3E-8	0	0
49	In-111	D: see In-109	4E+3	6E+3	3E-6	9E-9	6E-3	6E-4
49	In-111	W: see In-109	0	6E+3	3E-6	9E-7	0	0
49	In-112[2]	D: see In-109	2E+5	6E+5	3E-4	9E-7	2E-3	2E-2
49	In-112[2]	W: see In-109	0	7E+5	3E-4	1E-6	0	0
49	In-113m[2]	D: see In-109	5E+4	1E+5	6E-5	2E-7	7E-4	7E-3
49	In-113m[2]	W: see In-109	0	2E+5	8E-5	3E-7	0	0
49	In-114m	D: see In-109	3E+2 LLI Wall (4E+2)	6E+1 0	3E-8 0	9E-11 0	0 5E-6	0 5E-5
49	In-114m	W: see In-109	0	1E+2	4E-8	1E-10	0	0
49	In-115m	D: see In-109	1E+4	4E+4	2E-5	6E-8	2E-4	2E-3
49	In-115m	W: see In-109	0	5E+4	2E-5	7E-8	0	0
49	In-115	D: see In-109	4E+1	1E+0	6E-10	2E-12	5E-7	5E-6
49	In-115	W: see In-109	0	5E+0	2E-9	8E-12	0	0
49	In-116m[2]	D: see In-109	2E+4	8E+4	3E-5	1E-7	3E-4	3E-3
49	In-116m[2]	W: see In-109	0	1E+5	3E-5	2E-7	0	0
49	In-117m[2]	D: see In-109	1E+4	3E+4	1E-5	5E-8	2E-4	3E-3
49	In-117m[2]	W: see In-109	0	4E+4	2E-5	6E-8	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
49	In-117[2]	D: see In-109	6E+4	2E+5	7E-5	2E-7	8E-4	8E-3
49	In-117m[2]	W: see In-109	0	2E+5	9E-5	3E-7	0	0
494 9	In-119m[2]	D: see In-109	4E+4 St Wall (5E+4)	1E+5 0	5E-5 0	2E-7 0	0 7E-4	0 7E-3
49	In-119m[2]	W: see In-109	0	1E+5	6E-5	2E-7	0	0
50	Sn-110	D: all compounds except those given for W	4E+3	1E+4	5E-6	2E-8	5E-5	5E-4
	Sn-110	W: sulfides, oxides, hydroxides, halides, nitrates, and stannic phosphate	0	1E+4	5E-6	2E-8	0	0
50	Sn-111[2]	D: see Sn-110	7E+4	2E+5	9E-5	3E-7	1E-3	1E-2
50	Sn-111[2]	W: see Sn-110	0	3E+5	1E-4	4E-7	0	0
50	Sn-113	D: see Sn-110	2E+3 LLI Wall (2E+3)	1E+3 0	5E-7 0	2E-9 0	0 3E-5	0 3E-4
50	Sn-113	W: see Sn-110	0	5E+2	2E-7	8E-10	0	0
50	Sn-117m	D: see Sn-110	2E+3 LLI Wall (2E+)	1E+3 Bone surf (2E+3)	5E-7 0	0 3E-9	0 3E-5	0 3E-4
50	Sn-117m	W: see Sn-110	0	1E+3	6E-7	2E-9	0	0
50	Sn-119m	D: see Sn-110	3E+3 LLI Wall (4E+3)	2E+3 0	1E-6 0	3E-9 0	0 6E-5	0 6E-4
50	Sn-119m	W: see Sn-110	0	1E+3	4E-7	1E-9	0	0
50	Sn-121m	D: see Sn-110	3E+3 LLI Wall (4E+3)	9E+2 0	4E-7 0	1E-9 0	0 5E-5	0 5E-4
50	Sn-121m	W: see Sn-110	0	5E+2	2E-7	8E-10	0	0
50	Sn-121	D: see Sn-110	6E+3 LLI Wall (6E+3)	2E+4 0	6E-6 0	2E-8 0	0 8E-5	0 8E-4
50	Sn-121	W: see Sn-110	0	1E+4	5E-6	2E-8	0	0
50	Sn-123m[2]	D: see Sn-110	5E+4	1E+5	5E-5	2E-7	7E-4	7E-3
50	Sn-123m[2]	W: see Sn-110	0	1E+5	6E-5	2E-7	0	0
50	Sn-123	D: see Sn-110	5E+2 LLI Wall (6E+2)	6E+2 0	3E-7 0	9E-10 0	0 9E-6	0 9E-5
50	Sn-123	W: see Sn-110	0	2E+2	7E-8	2E-10	0	0
50	Sn-125	D: see Sn-110	4E+2 LLI Wall (5E+2)	9E+2 0	4E-7 0	1E-9 0	0 6E-6	0 6E-5
50	Sn-125	W: see Sn-110	0	4E+2	1E-7	5E-10	0	0
50	Sn-126	D: see Sn-110	3E+2	6E+1	2E-8	8E-11	4E-6	4E-5

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
50	Sn-126	W: see Sn-110	0	7E+1	3E-8	9E-11	0	0
50	Sn-127	D: see Sn-110	7E+3	2E+4	8E-6	3E-8	9E-4	9E-4
50	Sn-127	W: see Sn-110	0	2E+4	8E-6	3E-8	0	0
50	Sn-128[2]	D: see Sn-110	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
50	Sn-128[2]	W: see Sn-110	0	4E+4	1E-5	5E-8	0	0
51	Sb-115[2]	D: all compounds except those given for W	8E+4	2E+5	1E-4	3E-7	1E-3	1E-2
51	Sb-115[2]	W: oxides, halides, sulfides, sulfates, nitrates, and hydroxides,	0	3E+5	1E-4	4E-7	0	0
51	Sb-116m[2]	D: see Sb-115	2E+4	7E+4	3E-5	1E-7	3E-4	3E-3
51	Sb-116m[2]	W: see Sb-115	0	1E+5	6E-5	2E-7	0	0
51	Sb-116[2]	D: see Sb-115	7E+4 St Wall (9E+4)	3E+5 0	1E-4 0	4E-7 0	0 3E-4	0 3E-3
51	Sb-116[2]	W: see Sb-115	0	3E+5	1E-4	5E-7	0	0
51	Sb-117	D: see Sb-115	7E+4	2E+5	9E-5	3E-7	9E-4	9E-3
51	Sb-117	W: see Sb-115	0	3E+5	1E-4	4E-7	0	0
51	Sb-118m[2]	D: see Sb-115	6E+3	2E+4	8E-6	3E-8	7E-5	7E-4
51	Sb-118m[2]	W: see Sb-115	5E+3	2E+4	9E-6	3E-8	0	0
51	Sb-119	D: see Sb-115	2E+4	5E+4	2E-5	6E-8	2E-4	2E-3
51	Sb-119	W: see Sb-115	2E+4	3E+4	1E-5	4E-8	0	0
51	Sb-120[2] (16 m)	D: see Sb-115	1E+5 St Wall (2E+5)	4E+5 0	2E-4 0	6E-7 0	0 2E-3	0 2E-2
51	Sb-120[2] (16 m)	W: see Sb-115	0	5E+5	2E-4	7E-7	0	0
51	Sb-120 (5.76 d)	D: see Sb-115	1E+3	2E+3	9E-7	3E-9	1E-5	1E-4
51	Sb-120 (5.76 d)	W: see Sb-115	9E+2	1E+3	5E-7	2E-9	0	0
51	Sb-122	D: see Sb-115	8E+2 LLI Wall (8E+2)	2E+3 0	1E-6 0	3E-9 0	0 1E-5	0 1E-4
51	Sb-122	W: see Sb-115	7E+2	1E+3	4E-7	2E-9	0	0
51	Sb-124m[2]	D: see Sb-115	3E+5	8E+5	2E-4	1E-6	3E-3	2E-2
51	Sb-124m[2]	W: see Sb-115	2E+5	6E+5	4E-4	8E-7	0	0
51	Sb-124	D: see Sb-115	6E+2	9E+2	4E-7	1E-9	7E-6	7E-5
51	Sb-124	W: see Sb-115	5E+2	2E+2	1E-7	3E-10	0	0
51	Sb-125	D: see Sb-115	2E+3	2E+3	1E-6	3E-9	3E-5	3E-4
51	Sb-125	W: see Sb-115	0	5E+2	2E-7	7E-10	0	0
51	Sb-126m[2]	D: see Sb-115	5E+4 St Wall (7E+4)	2E+5 0	8E-5 0	3E-7 0	0 9E-4	0 9E-3
51	Sb-126m[2]	W: see Sb-115	0	2E+5	8E-5	3E-7	0	0
51	Sb-126	D: see Sb-115	6E+2	1E+3	5E-7	2E-9	7E-6	7E-5

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
51	Sb-126	W: see Sb-115	5E+2	5E+2	2E-7	7E-10	0	0
51	Sb-127	D: see Sb-115	8E+2 LLI Wall (8E+2)	2E+3 0	9E-7 0	3E-9 0	0 1E-5	0 1E-4
51	Sb-127	W: see Sb-115	7E+2	9E+2	4E-7	1E-9	0	0
51	Sb-128[2] (10.4 m)	D: see Sb-115	8E+4 St Wall (1E+5)	4E+5 0	2E-4 0	5E-7 0	0 1E-3	0 1E-2
51	Sb-128[2] (10.4 m)	W: see Sb-115	0	4E+5	2E-4	6E-7	0	0
51	Sb-128 (9.01 h)	D: see Sb-115	1E+3	4E+3	2E-6	6E-9	2E-5	2E-4
51	Sb-128 (9.01 h)	W: see Sb-115	0	3E+3	1E-6	5E-9	0	0
51	Sb-129	D: see Sb-115	3E+3	9E+3	4E-6	1E-8	4E-5	4E-4
51	Sb-129	W: see Sb-115	0	9E+3	4E-6	1E-8	0	0
51	Sb-130[2]	D: see Sb-115	2E+4	6E+4	3E-5	9E-8	3E-4	3E-3
51	Sb-130[2]	W: see Sb-115	0	8E+4	3E-5	1E-7	0	0
51	Sb-131[2]	D: see Sb-115	1E+4 Thyroid (2E+4)	2E+4 Thyroid (4E+4)	1E-5	0 6E-8	0 2E-4	0 2E-3
51	Sb-131[2]	W: see Sb-115	0 0	2E+4 Thyroid (4E+4)	1E-5 0	0 6E-8	0 0	0 0
52	Te-116	D: all compounds except those given for W	8E+3	2E+4	9E-6	3E-8	1E-4	1E-3
52	Te-116	W: oxides, nitrates, and hydroxides	0	3E+4	1E-5	4E-8	0	0
52	Te-121m	D: see Te-116	5E+2 Bone Surf (7E+2)	2E+2 Bone surf (4E+2)	8E-8 0	0 5E-10	0 1E-5	0 1E-4
52	Te-121m	W: see Te-116	0	4E+2	2E-7	6E-10	0	0
52	Te-121	D: see Te-116	3E+3	4E+3	2E-6	6E-9	4E-5	4E-4
52	Te-121	W: see Te-116	0	3E+3	1E-6	4E-9	0	0
52	Te-123m	D: see Te-116	6E+2 Bone Surf (1E+3)	2E+2 Bone surf (5E+2)	9E-8 0	0 8E-10	0 1E-5	0 1E-4
52	Te-123m	W: see Te-116	0	2E+2	2E-7	8E-10	0	0
52	Te-123	D: see Te-116	5E+2 Bone Surf (1E+3)	2E+2 Bone surf (5E+2)	8E-8	0 7E-10	0 2E-5	0 2E-4
52	Te-123	W: see Te-116	0 0	4E+2 Bone surf (1E+3)	2E-7 0	0 2E-9	0 0	0 0
52	Te-125m	D: see Te-116	1E+3 Bone Surf (1E+3)	4E+2 Bone surf (1E+3)	2E-7 0	0 1E-9	2E-5 0	2E-4 0
52	Te-125m	W: see Te-116	0	7E+2	3E-7	1E-9	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
52	Te-127m	D: see Te-116	6E+2 0	3E+2 Bone surf (4E+2)	1E-7 0	0 6E-10	9E-6 0	9E-5 0
52	Te-127m	W: see Te-116	0	3E+2	1E-7	4E-10	0	0
52	Te-127	D: see Te-116	7E+3	2E+4	9E-6	3E-8	1E-4	1E-3
52	Te-127	W: see Te-116	0	2E+4	7E-6	2E-8	0	0
52	Te-129m	D: see Te-116	5E+2	6E+2	3E-7	9E-10	7E-6	7E-6
52	Te-129m	W: see Te-116	0	2E+2	1E-7	3E-10	0	0
52	Te-129[2]	D: see Te-116	3E+4	6E+4	3E-5	9E-8	4E-4	4E-3
52	Te-129[2]	W: see Te-116	0	7E+4	3E-5	1E-7	0	0
52	Te-131m	D: see Te-116	3E+2 Thyroid (6E+2)	4E+2 Thyroid (1E+3)	2E-7 0	0 2E-9	0 8E-6	0 8E-5
52	Te-131m	W: see Te-116	0 0	4E+2 Thyroid (9E+2)	2E-7 0	0 1E-9	0 0	0 0
52	Te-131[2]	D: see Te-116	3E+3 Thyroid (6E+3)	5E+3 Thyroid (1E+4)	2E-6 0	0 2E-8	0 8E-5	0 8E-4
52	Te-131[2]	W: see Te-116	0 0	5E+3 Thyroid (1E+4)	2E-6 0	0 2E-8	0 0	0 0
52	Te-132	D: see Te-116	2E+2 Thyroid (7E+2)	2E+2 Thyroid (2E+2)	9E-8 0	0 1E-9	0 9E-6	0 9E-5
52	Te-132	W: see Te-116	0 0	2E+2 Thyroid (6E+2)	9E-8 0	0 9E-10	0 0	0 0
52	Te-133m[2]	D: see Te-116	3E+3 Thyroid (6E+3)	5E+3 Thyroid (1E+4)	2E-6 0	0 2E-8	0 9E-3	0 9E-4
52	Te-133m[2]	W: see Te-116	0 0	5E+3 Thyroid (1E+4)	2E-6 0	0 2E-8	0 0	0 0
52	Te-133[2]	D: see Te-116	1E+4 Thyroid (3E+4)	2E+4 Thyroid (6E+4)	9E-6	0 8E-8	0 4E-4	0 4E-3
52	Te-133[2]	W: see Te-116	0 0	2E+4 Thyroid (6E+4)	9E-6 0	0 8E-8	0 0	0 0
52	Te-134[2]	D: see Te-116	2E+4 Thyroid (2E+4)	2E+4 Thyroid (5E+4)	1E-5	0 7E-8	0 3E-4	0 3E-3
52	Te-134[2]	W: see Te-116	0 0	2E+4 Thyroid (5E+4)	1E-5 0	0 7E-8	0 0	0 0
53	I-120m[2]	D: all compounds	1E+4 Thyroid (1E+4)	2E+4 0	9E-6 0	3E-8 0	0 2E-4	0 2E-3

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
53	I-120[2]	D: all compounds	4E+3 Thyroid (8E+3	9E+3 Thyroid (1E+4)	4E-6 0	0 2E-8	0 1E-4	0 1E-3
53	I-121	D: all compounds	1E+4 Thyroid (3E+4)	2E+4 Thyroid (5E+4)	8E-6 0	0 7E-8	0 4E-4	0 4E-3
53	I-123	D: all compounds	3E+3 Thyroid (1E+4)	6E+3 Thyroid (2E+4)	3E-6 0	0 2E-8	0 1E-4	0 1E-3
53	I-124	D: all compounds	5E+1 Thyroid (2E+2)	8E+1 Thyroid (3E+2)	3E-8 0	0 4E-10	0 2E-6	0 2E-5
53	I-125	D: all compounds	4E+1 Thyroid (1E+2)	6E+1 Thyroid (2E+2)	3E-8 0	0 3E-10	0 2E-6	0 2E-5
53	I-126	D: all compounds	2E+1 Thyroid (7E+1)	4E+1 Thyroid (1E+2)	1E-8 0	0 2E-10	0 1E-6	0 1E-5
53	I-128[2]	D: all compounds	4E+4 St Wall (6E+4)	1E+5 0	5E-5 0	2E-7 0	0 8E-4	0 8E-3
53	I-129	D: all compounds	5E+0 Thyroid (2E+1)	9E+0 Thyroid (3E+1)	4E-9 0	0 4E-11	0 2E-7	0 2E-6
53	I-130	D: all compounds	4E+2 Thyroid (1E+3)	7E+2 Thyroid (7E+2)	3E-7 0	0 3E-9	0 2E-5	0 2E-4
53	I-131	D: all compounds	3E+1 Thyroid (9E+1)	5E+1 Thyroid (2E+2)	2E-8 0	0 2E-9	0 1E-6	0 1E-5
53	I-132m[2]	D: all compounds	4E+3 Thyroid (1E+4)	8E+3 Thyroid (2E+4)	4E-6 0	0 3E-8	0 1E-4	0 1E-3
53	I-132	D: all compounds	4E+3 Thyroid (9E+3)	8E+3 Thyroid (1E+4)	3E-6 0	0 2E-8	0 1E-4	0 1E-3
53	I-133	D: all compounds	1E+2 Thyroid (5E+2)	3E+2 Thyroid (9E+2)	1E-7 0	0 1E-9	0 7E-6	0 7E-5
53	I-134[2]	D: all compounds	2E+4 Thyroid (3E+4)	5E+4 0	2E-5	6E-8 0	0 4E-4	0 4E-3
53	I-135	D: all compounds	8E+2 Thyroid (3E+3)	2E+3 Thyroid (4E+3)	7E-7 0	0 6E-9	0 3E-5	0 3E-4
54	Xe-120[2]	Submersion1	0	0	1E-5	4E-8	0	0
54	Xe-121[2]	Submersion1	0	0	2E-6	1E-8	0	0
54	Xe-122	Submersion1	0	0	7E-5	3E-7	0	0
54	Xe-123	Submersion1	0	0	6E-6	3E-8	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
54	Xe-125	Submersion1	0	0	2E-5	7E-8	0	0
54	Xe-127	Submersion1	0	0	1E-5	6E-8	0	0
54	Xe-129m	Submersion1	0	0	2E-4	9E-7	0	0
54	Xe-131m	Submersion1	0	0	4E-4	2E-6	0	0
54	Xe-133m	Submersion1	0	0	1E-4	6E-7	0	0
54	Xe-133	Submersion1	0	0	1E-4	5E-7	0	0
54	Xe-135m[2]	Submersion1	0	0	9E-6	4E-8	0	0
54	Xe-135	Submersion1	0	0	1E-5	7E-8	0	0
54	Xe-138[2]	Submersion1	0	0	4E-6	2E-8	0	0
55	Cs-125[2]	D: all compounds	5E+4 St Wall (9E+4)	1E+5	6E-5	2E-7 0	0 1E-3	0 1E-2
55	Cs-127	D: all compounds	6E+4	9E+4	4E-5	1E-7	9E-4	9E-3
55	Cs-129	D: all compounds	2E+4	3E+4	1E-5	5E-8	3E-4	3E-3
55	Cs-130[2]	D: all compounds	6E+4 St Wall (1E+5)	2E+5 0	8E-5 0	3E-7 0	0 1E-3	0 1E-2
55	Cs-131	D: all compounds	2E+4	3E+4	1E-5	4E-8	3E-4	3E-3
55	Cs-132	D: all compounds	3E+3	4E+3	2E-6	6E-9	4E-5	4E-4
55	Cs-134m	D: all compounds	1E+5 St Wall (1E+5)	1E+5 0	6E-5 0	2E-7 0	0 2E-3	0 2E-2
55	Cs-134	D: all compounds	7E+1	1E+2	4E-8	2E-10	9E-7	9E-6
55	Cs-135m[2]	D: all compounds	1E+5	2E+5	8E-5	3E-7	1E-3	1E-2
55	Cs-135	D: all compounds	7E+2	1E+3	5E-7	2E-9	1E-5	1E-4
55	Cs-136	D: all compounds	4E+2	7E+2	3E-7	9E-10	6E-6	6E-5
55	Cs-137	D: all compounds	1E+2	2E+2	6E-8	2E-10	1E-6	1E-5
55	Cs-138[2]	D: all compounds	2E+4 St Wall (3E+4)	6E+4 0	2E-5 0	8E-8 0	0 4E-4	0 4E-3
56	Ba-126[2]	D: all compounds	6E+3	2E+4	6E-6	2E-8	8E-5	8E-4
56	Ba-128	D: all compounds	5E+2	2E+3	7E-7	2E-9	7E-6	7E-5
56	Ba-131m[2]	D: all compounds	4E+5 St Wall (5E+5)	1E+6 0	6E-4 0	2E-6 0	0 7E-3	0 7E-2
56	Ba-131	D: all compounds	3E+3	8E+3	3E-6	1E-8	4E-5	4E-4
56	Ba-133m	D: all compounds	2E+3 LLI Wall (3E+3)	9E+3 0	4E-6 0	1E-8 0	0 4E-5	0 4E-4
56	Ba-133	D: all compounds	2E+3	7E+2	3E-7	9E-10	2E-5	2E-4
56	Ba-135m	D: all compounds	3E+3	1E+4	5E-6	2E-8	4E-5	4E-4
56	Ba-139[2]	D: all compounds	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3
56	Ba-140	D: all compounds	5E+2 LLI Wall (6E+2)	1E+3 0	6E-7 0	2E-9 0	0 8E-6	0 8E-5
56	Ba-141[2]	D: all compounds	2E+4	7E+4	3E-5	1E-7	4E-4	4E-3

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
56	Ba-142[2]	D: all compounds	5E+4	1E+5	6E-5	2E-7	7E-4	7E-3
57	La-131[2]	D: all compounds except those given for W	5E+4	1E+5	5E-5	2E-7	6E-4	6E-3
	La-131[2]	W: oxides and hydroxides	0	2E+5	7E-5	2E-7	0	0
57	La-132	D: see La-131	3E+3	1E+4	4E-6	1E-8	4E-5	4E-4
57	La-132	W: see La-131	0	1E+4	5E-6	2E-8	0	0
57	La-135	D: see La-131	4E+4	1E+5	4E-5	1E-7	5E-4	5E-3
57	La-135	W: see La-131	0	9E+4	4E-5	1E-7	0	0
57	La-137	D: see La-131	1E+4 0	6E+1 Liver (7E+1)	3E-8 0	0 1E-10	2E-4 0	2E-3 0
57	La-137	W: see La-131	0	3E+2 Liver (3E+2)	1E-7 0	0 4E-10	0 0	0 0
57	La-138	D: see La-131	9E+2	4E+0	1E-9	5E-12	1E-5	1E-4
57	La-138	W: see La-131	0	1E+1	6E-9	2E-11	0	0
57	La-140	D: see La-131	6E+2	1E+3	6E-7	2E-9	9E-6	9E-5
57	La-140	W: see La-131	0	1E+3	5E-7	2E-9	0	0
57	La-141	D: see La-131	4E+3	9E+3	4E-6	1E-8	5E-5	5E-4
57	La-141	W: see La-131	0	1E+4	5E-6	2E-8	0	0
57	La-142[2]	D: see La-131	8E+3	2E+4	9E-6	3E-8	1E-4	1E-3
57	La-142[2]	W: see La-131	0	3E+4	1E-5	5E-8	0	0
57	La-143[2]	D: see La-131	4E+4 St Wall (4E+4)	1E+5 0	4E-5 0	1E-7 0	0 5E-4	0 5E-3
57	La-143[2]	W: see La-131	0	9E+4	4E-5	1E-7	0	0
58	Ce-134	W: all compounds except those given for Y	5E+2 LLI Wall (6E+2)	7E+2 0	3E-7 0	1E-9 0	0 5E-4	0 5E-3
58	Ce-134	Y: fluorides, oxides, and hydroxides	0	7E+2	3E-7	9E-10	0	0
58	Ce-135	W: see Ce-134	2E+3	4E+3	2E-6	5E-9	2E-5	2E-4
58	Ce-135	Y: see Ce-134	0	4E+3	1E-6	5E-9	0	0
58	Ce-137m	W: see Ce-134	2E+3 LLI Wall (2E+3)	4E+3 0	2E-6 0	6E-9 0	0 3E-5	0 3E-4
58	Ce-137m	Y: see Ce-134	0	4E+3	2E-6	5E-9	0	0
58	Ce-137	W: see Ce-134	5E+4	1E+5	6E-5	2E-7	7E-4	7E-3
58	Ce-137	Y: see Ce-134	0	1E+5	5E-5	2E-7	0	0
58	Ce-139	W: see Ce-134	5E+3	8E+2	3E-7	1E-9	7E-5	7E-4
58	Ce-139	Y: see Ce-134	0	7E+2	3E-7	9E-10	0	0
58	Ce-141	W: see Ce-134	2E+3 LLI Wall (2E+3)	7E+2 0	3E-7 0	1E-9 0	0 3E-5	0 3E-4

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
58	Ce-141	Y: see Ce-134	0	6E+2	2E-7	8E-10	0	0
58	Ce-143	W: see Ce-134	1E+3 LLI Wall (1E+3)	2E+3 0	8E-7 0	3E-9 0	0 2E-5	0 2E-4
58	Ce-143	Y: see Ce-134	0	2E+3	7E-7	2E-9	0	0
58	Ce-144	W: see Ce-134	2E+2 LLI Wall (3E+2)	3E+1 0	1E-8 0	4E-11 0	0 3E-6	0 3E-5
58	Ce-144	Y: see Ce-134	0	1E+1	6E-9	2E-11	0	0
59	Pr-136[2]	W: all compounds except those given for Y	5E+4 St Wall (7E+4)	2E+5 0	1E-4 0	3E-7 0	0 1E-3	0 1E-2
59	Pr-136[2]	Y: carbides, oxides, hydroxides, and fluorides	0	2E+5	9E-5	3E-7	0	0
59	Pr-137[2]	W: see Pr-136	4E+4	2E+5	6E-5	2E-7	5E-4	5E-3
59	Pr-137[2]	Y: see Pr-136	0	1E+5	6E-5	2E-7	0	0
59	Pr-138m	W: see Pr-136	1E+4	5E+4	2E-5	8E-8	1E-4	1E-3
59	Pr-138m	Y: see Pr-136	0	4E+4	2E-5	6E-8	0	0
59	Pr-139	W: see Pr-136	4E+4	1E+5	5E-5	2E-7	6E-4	6E-3
59	Pr-139	Y: see Pr-136	0	1E+5	5E-5	2E-7	0	0
59	Pr-142m[2]	W: see Pr-136	8E+4	2E+5	7E-5	2E-7	1E-3	1E-2
59	Pr-142m[2]	Y: see Pr-136	0	1E+5	5E-5	2E-7	0	0
59	Pr-142	W: see Pr-136	1E+3	2E+3	9E-7	3E-9	1E-5	1E-5
59	Pr-142	Y: see Pr-136	0	2E+3	8E-7	3E-9	0	0
59	Pr-143	W: see Pr-136	9E+2 LLI Wall (1E+3)	8E+2 0	3E-7 0	1E-9 0	0 2E-5	0 2E-4
59	Pr-143	Y: see Pr-136	0	7E+2	3E-7	9E-10	0	0
59	Pr-144	W: see Pr-136	3E+4 St Wall (4E+4)	1E+5 0	5E-5 0	2E-7 0	0 6E-4	0 6E-3
59	Pr-144	Y: see Pr-136	0	1E+5	5E-5	2E-7	0	0
59	Pr-145	W: see Pr-136	3E+3	9E+3	4E-6	1E-8	4E-5	4E-4
59	Pr-145	Y: see Pr-136	0	8E+3	3E-6	1E-8	0	0
59	Pr-147[2]	W: see Pr-136	5E+4 St Wall (8E+4)	2E+5 0	8E-5 0	3E-7 0	0 1E-3	0 1E-2
59	Pr-147[2]	Y: see Pr-136	0	2E+5	8E-5	3E-7	0	0
60	Nd-136[2]	W: all compounds except those given for Y	1E+4	6E+4	2E-5	8E-8	2E-4	2E-3
60	Nd-136[2]	Y: oxides, carbides, hydroxides, and fluorides	0	5E+4	2E-5	8E-8	0	0
60	Nd-138	W: see Nd-136	2E+3	6E+3	3E-6	9E-9	3E-5	3E-4

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
60	Nd-138	Y: see Nd-136	0	5E+3	2E-6	7E-9	0	0
60	Nd-139m[2]	W: see Nd-136	5E+3	2E+4	7E-6	2E-8	7E-5	7E-4
60	Nd-139m[2]	Y: see Nd-136	0	1E+4	6E-6	2E-8	0	0
60	Nd-139	W: see Nd-136	9E+4	3E+5	1E-4	5E-7	1E-3	1E-2
60	Nd-139	Y: see Nd-136	0	3E+5	1E-4	4E-7	0	0
60	Nd-141	W: see Nd-136	2E+5	7E+5	3E-4	1E-6	2E-3	2E-2
60	Nd-141	Y: see Nd-136	0	6E+5	3E-4	9E-7	0	0
60	Nd-147	W: see Nd-136	1E+3 LLI Wall (1E+3)	9E+2 0	4E-7 0	1E-9 0	0 2E-5	0 2E-4
60	Nd-147	Y: see Nd-136	0	8E+2	4E-7	1E-9	0	0
60	Nd-149[2]	W: see Nd-136	1E+4	3E+4	1E-5	4E-8	1E-4	1E-3
60	Nd-149[2]	Y: see Nd-136	0	2E+4	1E-5	3E-8	0	0
60	Nd-151[2]	W: see Nd-136	7E+4	2E+5	8E-5	3E-7	9E-4	9E-3
60	Nd-151[2]	Y: see Nd-136	0	2E+5	8E-5	3E-7	0	0
61	Pm-141[2]	W: all compounds except those given for Y	5E+4 St Wall (6E+4)	2E+5 0	8E-5 0	3E-7 0	0 8E-4	0 8E-3
61	Pm-141[2]	Y: carbides, oxides, fluorides, and hydroxides,	0	2E+5	7E-5	2E-7	0	0
61	Pm-143	W: see Pm-141	5E+3	6E+2	2E-7	8E-10	7E-5	7E-4
61	Pm-143	Y: see Pm-141	0	7E+2	3E-7	1E-9	0	0
61	Pm-144	W: see Pm-141	1E+3	1E+2	5E-8	2E-10	2E-5	2E-4
61	Pm-144	Y: see Pm-141	0	1E+2	5E-8	2E-10	0	0
61	Pm-145	W: see Pm-141	1E+4 0	2E+2 Bone surf (2E+2)	7E-8 0	0 3E-10	1E-4 0	1E-3 0
61	Pm-145	Y: see Pm-141	0	2E+2	8E-8	3E-10	0	0
61	Pm-146	W: see Pm-141	2E+3	5E+1	2E-8	7E-11	2E-5	2E-4
61	Pm-146	Y: see Pm-141	0	4E+1	2E-8	6E-11	0	0
61	Pm-147	W: see Pm-141	4E+3 LLI Wall (5E+3)	1E+2 Bone surf (2E+2)	5E-8 0	0 3E-10	0 7E-5	0 7E-4
61	Pm-147	Y: see Pm-141	0	1E+2	6E-8	2E-10	0	0
61	Pm-148m	W: see Pm-141	7E+2	3E+2	1E-7	4E-10	1E-5	1E-4
61	Pm-148m	Y: see Pm-141	0	3E+2	1E-7	5E-10	0	0
61	Pm-148	W: see Pm-141	4E+2 LLI Wall (5E+2)	5E+2 0	2E-7 0	8E-10 0	0 7E-6	0 7E-5
61	Pm-148	Y: see Pm-141	0	5E+2	2E-7	7E-10	0	0
61	Pm-149	W: see Pm-141	1E+3 LLI Wall (1E+3)	2E+3 0	8E-7 0	3E-9 0	0 2E-5	0 2E-4
61	Pm-149	Y: see Pm-141	0	2E+3	8E-7	2E-9	0	0
61	Pm-150	W: see Pm-141	5E+3	2E+4	8E-6	3E-8	7E-5	7E-4

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
61	Pm-150	Y: see Pm-141	0	2E+4	7E-6	2E-8	0	0
61	Pm-151	W: see Pm-141	2E+3	4E+3	1E-6	5E-9	2E-5	2E-4
61	Pm-151	Y: see Pm-141	0	3E+3	1E-6	4E-9	0	0
62	Sm-141m[2]	W: all compounds	3E+4	1E+5	4E-5	1E-7	4E-4	4E-3
62	Sm-141[2]	W: all compounds	5E+4 St Wall (6E+4)	2E+5 0	8E-5 0	2E-7 0	0 8E-4	0 8E-3
62	Sm-142[2]	W: all compounds	8E+3	3E+4	1E-5	4E-8	1E-4	1E-3
62	Sm-145	W: all compounds	6E+3	5E+2	2E-7	7E-10	8E-5	8E-4
62	Sm-146	W: all compounds	1E+1 Bone Surf (3E+1)	4E+2 Bone surf (6E-2)	1E-11 0	0 9E-14	0 3E-7	0 3E-6
62	Sm-147	W: all compounds	2E+1 Bone Surf (3E+1)	4E+2 Bone surf (7E-2)	2E-11 0	0 1E-13	0 4E-7	0 4E-6
62	Sm-151	W: all compounds	1E+4 LLI Wall (1E+4)	1E+2 Bone surf (7E+2)	4E-8 0	0 2E-10	0 2E-4	0 2E-3
62	Sm-153	W: all compounds	2E+3 LLI Wall (2E+3)	3E+3 0	1E-6 0	4E-9 0	0 3E-5	0 3E-4
62	Sm-155[2]	W: all compounds	6E+4 St Wall (8E+4)	2E+5	9E-5	3E-7 0	0 1E-3	0 1E-2
62	Sm-156	W: all compounds	5E+3	9E+3	4E-6	1E-8	7E-5	7E-4
63	Eu-145	W: all compounds	2E+3	2E+3	8E-7	3E-9	2E-5	2E-4
63	Eu-146	W: all compounds	1E+3	1E+3	5E-7	2E-9	1E-5	1E-4
63	Eu-147	W: all compounds	3E+3	2E+3	7E-7	2E-9	4E-5	4E-4
63	Eu-148	W: all compounds	1E+3	4E+2	1E-7	5E-10	1E-5	1E-4
63	Eu-149	W: all compounds	1E+4	3E+3	1E-6	4E-9	2E-4	2E-3
63	Eu-150 (12.62 h)	W: all compounds	3E+3	8E+3	4E-6	1E-8	4E-5	4E-4
63	Eu-150 (34.2 y)	W: all compounds	8E+2	2E+1	8E-9	3E-11	1E-5	1E-4
63	Eu-152m	W: all compounds	3E+3	6E+3	3E-6	9E-9	4E-5	4E-4
63	Eu-152	W: all compounds	8E+2	2E+1	1E-8	3E-11	1E-5	1E-4
63	Eu-154	W: all compounds	5E+2	2E+1	8E-9	3E-11	7E-6	7E-5
63	Eu-155	W: all compounds	4E+3 0	9E+1 Bone surf (1E+2)	4E-8 0	0 2E-10	5E-5 0	5E-4 0
63	Eu-156	W: all compounds	6E+2	5E+2	2E-7	6E-10	0	0
63	Eu-157	W: all compounds	2E+3	5E+3	2E-6	7E-9	8E-6	8E-5
63	Eu-158[2]	W: all compounds	2E+4	6E+4	2E-5	8E-8	3E-5	3E-4
64	Gd-145	D: all compounds except those given for W	5E+4 St Wall (5E+4)	2E+5 0	6E-5 0	2E-7 0	3E-4 0	3E-3 0
64	Gd-145	W: fluorides, oxides, and hydroxides	0	2E+5	7E-5	2E-7	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
64	Gd-146	D: see Gd-145	1E+3	1E+2	5E-8	2E-10	2E-5	2E-4
64	Gd-146	W: see Gd-145	0	3E+2	1E-7	4E-10	0	0
64	Gd-147	D: see Gd-145	2E+3	4E+3	2E-6	6E-9	3E-5	3E-4
64	Gd-147	W: see Gd-145	0	4E+3	1E-6	5E-9	0	0
64	Gd-148	D: see Gd-145	1E+1 Bone Surf (2E+1)	8E+3 Bone surf (2E-2)	3E-12 0	0 2E-14	0 3E-7	0 3E-6
64	Gd-148	W: see Gd-145	0 0	3E-2 Bone surf (6E-2)	1E-11 0	0 8E-14	0 0	0 0
64	Gd-149	D: see Gd-145	3E+3	2E+3	9E-7	3E-9	4E-5	4E-4
64	Gd-149	W: see Gd-145	0	2E+3	1E-6	3E-9	0	0
64	Gd-151	D: see Gd-145	6E+3 0	4E+2 Bone surf (6E+2)	2E-7 0	0 9E-10	9E-5 0	9E-4 0
64	Gd-151	W: see Gd-145	0	1E+3	5E-7	2E-9	0	0
64	Gd-152	D: see Gd-145	2E+1 Bone Surf (3E+1)	1E-2 Bone surf (2E-2)	4E-12	0 3E-14	0 4E-7	0 4E-6
64	Gd-152	W: see Gd-145	0 0	4E-2 Bone surf (1E+2)	2E-11 0	0 1E-13	0 0	0 0
64	Gd-153	D: see Gd-145	5E+3 Bone Surf (2E+2)	1E+2 0	6E-8 0	0 3E-10	6E-5 0	6E-4 0
64	Gd-153	W: see Gd-145	0	6E+2	2E-7	8E-10	0	0
64	Gd-159	D: see Gd-145	3E+3	8E+3	3E-6	1E-8	4E-5	4E-4
64	Gd-159	W: see Gd-145	0	6E+3	2E-6	8E-9	0	0
65	Tb-147[2]	W: all compounds	9E+3	3E+4	1E-5	5E-8	1E-4	1E-3
64	Tb-149	W: all compounds	5E+3	7E+2	3E-7	1E-9	7E-5	7E-4
65	Tb-150	W: all compounds	5E+3	2E+4	9E-6	3E-8	7E-5	7E-4
65	Tb-151	W: all compounds	4E+3	9E+3	4E-6	1E-8	5E-5	5E-4
65	Tb-153	W: all compounds	5E+3	7E+3	3E-6	1E-8	7E-5	7E-4
65	Tb-154	W: all compounds	2E+3	4E+3	2E-6	6E-9	2E-5	2E-4
65	Tb-155	W: all compounds	6E+3	8E+3	3E-6	1E-8	8E-5	8E-4
65	Tb-156m (5.0 h)	W: all compounds	2E+4	3E+4	1E-5	4E-8	2E-4	2E-3
65	Tb-156m (24.4 h)	W: all compounds	7E+3	8E+3	3E-6	1E-8	1E-4	1E-3
65	Tb-156	W: all compounds	1E+3	1E+3	6E-7	2E-9	1E-5	1E-4
65	Tb-157	W: all compounds	5E+4 LLI Wall (5E+4)	3E+2 Bone surf (6E+2)	1E-7 0	0 8E-10	0 7E-4	0 7E-3
65	Tb-158	W: all compounds	1E+3	2E+1	8E-9	3E-11	2E-5	2E-4
65	Tb-160	W: all compounds	8E+2	2E+2	9E-8	3E-10	1E-5	1E-4
65	Tb-161	W: all compounds	2E+3 LLI Wall (2E+3)	2E+3 0	7E-7 0	2E-9 0	0 3E-5	0 3E-4
66	Dy-155	W: all compounds	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
66	Dy-157	W: all compounds	2E+4	6E+4	3E-5	9E-8	3E-4	3E-3
66	Dy-159	W: all compounds	1E+4	2E+3	1E-6	3E-9	2E-4	2E-3
66	Dy-165	W: all compounds	1E+4	5E+4	2E-5	6E-8	2E-4	2E-3
66	Dy-166	W: all compounds	6E+2 LLI Wall (8E+2)	7E+2 0	3E-7 0	1E-9 0	0 1E-5	0 1E-4
67	Ho-155[2]	W: all compounds	4E+4	2E+5	6E-5	2E-7	6E-4	6E-3
67	Ho-157[2]	W: all compounds	3E+5	1E+6	6E-4	2E-6	4E-3	4E-2
67	Ho-159[2]	W: all compounds	2E+5	1E+6	4E-4	1E-6	3E-3	3E-2
67	Ho-161	W: all compounds	1E+5	4E+5	2E-4	6E-7	1E-3	1E-2
67	Ho-162m[2]	W: all compounds	5E+4	3E+5	1E-4	4E-7	7E-4	7E-3
67	Ho-162[2]	W: all compounds	5E+5 St Wall (1E+5)	2E+6 0	1E-3 0	3E-6 0	0 1E-2	0 1E-1
67	Ho-164m[2]	W: all compounds	1E+5	3E+5	1E-4	4E-7	1E-3	1E-2
67	Ho-164[2]	W: all compounds	2E+5 St Wall (2E+5)	6E+5 0	3E-4 0	9E-7 0	0 3E-3	0 3E-2
67	Ho-166m	W: all compounds	6E+2	7E+0	3E-9	9E-12	9E-6	9E-5
67	Ho-166	W: all compounds	9E+2 LLI Wall (9E+2)	2E+3 0	7E-7 0	2E-9 0	0 1E-5	0 1E-4
67	Ho-167	W: all compounds	2E+4	6E+4	2E-5	8E-8	2E-4	2E-3
68	Er-161	W: all compounds	2E+4	6E+4	3E-5	9E-8	2E-4	2E-3
68	Er-165	W: all compounds	6E+4	2E+5	8E-5	3E-7	9E-4	9E-3
68	Er-169	W: all compounds	3E+3 LLI Wall (4E+3)	3E+3 0	1E-6 0	4E-9 0	0 5E-5	0 5E-4
68	Er-171	W: all compounds	4E+3	1E+4	4E-6	1E-8	5E-5	5E-4
68	Er-172	W: all compounds	1E+3 LLI Wall (1E+3)	1E+3 0	6E-7 0	2E-9 0	0 2E-5	0 2E-4
69	Tm-162[2]	W: all compounds	7E+4 St Wall (7E+4)	3E+5 0	1E-4 0	4E-7 0	0 1E-3	0 1E-2
69	Tm-166	W: all compounds	4E+3	1E+4	6E-6	2E-8	6E-5	6E-4
69	Tm-167	W: all compounds	2E+3 LLI Wall (2E+3)	2E+3 0	8E-7 0	3E-9 0	0 3E-5	0 3E-4
69	Tm-170	W: all compounds	8E+2 LLI Wall (1E+3)	2E+2 0	9E-8 0	3E-10 0	0 1E-5	0 1E-4
69	Tm-171	W: all compounds	1E+4 LLI Wall (1E+4)	3E+2 Bone surf (6E+2)	1E-7 0	0 8E-10	0 2E-4	0 2E-3
69	Tm-172	W: all compounds	7E+2 LLI Wall (8E+2)	1E+3 0	5E-7 0	2E-9 0	0 1E-5	0 1E-4

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
69	Tm-173	W: all compounds	4E+3	1E+4	5E-6	2E-8	6E-5	6E-4
69	Tm-175[2]	W: all compounds	7E+4 St Wall (9E+4)	3E+5 0	1E-4 0	4E-7 0	0 1E-3	0 1E-2
70	Yb-162[2]	W: all compounds except those given for Y	7E+4	3E+5	1E-4	4E-7	1E-3	1E-2
70	Yb-162[2]	Y: fluorides, oxides, and hydroxides	0	3E+5	1E-4	4E-7	0	0
70	Yb-166	W: see Yb-162	1E+3	2E+3	8E-7	3E-9	2E-5	2E-4
70	Yb-166	Y: see Yb-162	0	2E+3	8E-7	3E-9	0	0
70	Yb-167[2]	W: see Yb-162	3E+5	8E+5	3E-4	1E-6	4E-3	4E-2
70	Yb-167[2]	Y: see Yb-162	0	7E+5	3E-4	1E-6	0	0
70	Yb-169	W: see Yb-162	2E+3	8E+2	4E-7	1E-9	2E-5	2E-4
70	Yb-169	Y: see Yb-162	0	7E+2	3E-7	1E-9	0	0
70	Yb-175	W: see Yb-162	3E+3 LLI Wall (3E+3)	4E+3 0	1E-6 0	5E-9 0	0 4E-5	0 4E-4
70	Yb-175	Y: see Yb-162	0	3E+3	1E-6	5E-9	0	0
70	Yb-177[2]	W: see Yb-162	2E+4	5E+4	2E-5	7E-8	2E-4	2E-3
70	Yb-177[2]	Y: see Yb-162	0	5E+4	2E-5	6E-8	0	0
70	Yb-178[2]	W: see Yb-162	1E+4	4E+4	2E-5	6E-8	2E-4	2E-3
70	Yb-178[2]	Y: see Yb-162	0	4E+4	2E-5	5E-8	0	0
71	Lu-169	W: all compounds except those given for Y	3E+3	4E+3	2E-6	6E-9	3E-5	3E-4
71	Lu-169	Y: fluorides, oxides, and hydroxides	0	4E+3	2E-6	6E-9	0	0
71	Lu-170	W: see Lu-169	1E+3	2E+3	9E-7	3E-9	2E-5	2E-4
71	Lu-170	Y: see Lu-169	0	2E+3	8E-7	3E-9	0	0
71	Lu-171	W: see Lu-169	2E+3	2E+3	8E-7	3E-9	3E-5	3E-4
71	Lu-171	Y: see Lu-169	0	2E+3	8E-7	3E-9	0	0
71	Lu-172	W: see Lu-169	1E+3	1E+3	5E-7	2E-9	1E-5	1E-4
71	Lu-172	Y: see Lu-169	0	1E+3	5E-7	2E-9	0	0
71	Lu-173	W: see Lu-169	5E+3 0	3E+2 Bone surf (5E+2)	1E-7 0	0 6E-10	7E-5 0	7E-4 0
71	Lu-173	Y: see Lu-169	0	3E+2	1E-7	4E-10	0	0
71	Lu-174m	W: see Lu-169	2E+3 LLI Wall (3E+3)	2E+2 Bone surf (3E+2)	1E-7 0	0 5E-10	0 4E-5	0 4E-4
71	Lu-174m	Y: see Lu-169	0	2E+2	9E-8	3E-10	0	0
71	Lu-174	W: see Lu-169	5E+3	1E+2 Bone surf (2E+2)	5E-8 0	0 3E-10	7E-5 0	7E-4 0
71	Lu-174	Y: see Lu-169	0	2E+2	6E-8	2E-10	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
71	Lu-176m	W: see Lu-169	8E+3	3E+4	1E-5	3E-8	1E-4	1E-3
71	Lu-176m	Y: see Lu-169	0	2E+4	9E-6	3E-8	0	0
71	Lu-176	W: see Lu-169	7E+2 0	5E+0 Bone surf (1E+1	2E-9 0	0 2E-11	1E-5 0	1E-4 0
71	Lu-176	Y: see Lu-169	0	8E+0	3E-9	1E-11	0	0
71	Lu-177m	W: see Lu-169	7E+2 0	1E+2 Bone surf (1E+2)	5E-8 0	0 2E-10	1E-5 0	1E-4
71	Lu-177m	Y: see Lu-169	0	8E+1	3E-8	1E-10	0 0	0
71	Lu-177	W: see Lu-169	2E+3 LLI Wall (3E+3)	2E+3 0	9E-7 0	3E-9 0	4E-5 0	4E-4 0
71	Lu-177	Y: see Lu-169	0	2E+3	9E-7	3E-9	0	0
71	Lu-178m[2]	W: see Lu-169	5E+4 St Wall (6E+4)	2E+5 0	8E-5 0	3E-7 0	0 8E-4	0 8E-3
71	Lu-178m[2]	Y: see Lu-169	0	2E+5	7E-5	2E-7	0	0
71	Lu-178[2]	W: see Lu-169	4E+4 St Wall (4E+4)	1E+5 0	5E-5 0	2E-7 0	0 6E-4	0 6E-3
71	Lu-178[2]	Y: see Lu-169	0	1E+5	5E-5	2E-7	0	0
71	Lu-179	W: see Lu-169	6E+3	2E+4	8E-6	3E-8	9E-5	9E-4
71	Lu-179	Y: see Lu-169	0	2E+4	6E-6	3E-8	0	0
72	Hf-170	D: all compounds except those given for W	3E+3	6E+3	2E-6	8E-9	4E-5	4E-4
72	Hf-170	W: nitrates, oxides, hydroxides, and carbides	0	5E+3	2E-6	6E-9	0	0
72	Hf-172	D: see Hf-170	1E+3	9E+0 Bone surf (2E+1)	4E-9 0	0 3E-11	2E-5 0	2E-4 0
72	Hf-172	W: see Hf-170	0 0	4E+1 Bone surf (6E+1	2E-8 0	0 8E-11	0 0	0 0
72	Hf-173	D: see Hf-170	5E+3	1E+4	5E-6	2E-8	7E-5	7E-4
72	Hf-173	W: see Hf-170	0	1E+4	5E-6	2E-8	0	0
72	Hf-175	D: see Hf-170	3E+3 0	9E+2 Bone surf (1E+3)	4E-7 0	0 1E-9	4E-5 0	4E-4 0
72	Hf-175	W: see Hf-170	0	1E+3	5E-7	2E-9	0	0
72	Hf-177m[2]	D: see Hf-170	2E+4	6E+4	2E-5	8E-8	3E-4	3E-4
72	Hf-177m[2]	W: see Hf-170	0	9E+4	4E-5	1E-7	0	0
72	Hf-178m	D: see Hf-170	3E+2	1E+0	5E-10	0	3E-6	3E-5

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
			0	Bone surf (2E+0)	0	3E-12	0	0
72	Hf-178m	W: see Hf-170	0 0	5E+0 Bone surf (9E+0)	2E-9 0	0 1E-11	0 0	0 0
72	Hf-179m	D: see Hf-170	1E+3	3E+2 Bone surf (6E+2)	1E-7 0	0 8E-10	1E-5 0	1E-4 0
72	Hf-179m	W: see Hf-170	0	6E+2	3E-7	8E-10	0	0
72	Hf-180m	D: see Hf-170	7E+3	2E+4	9E-6	3E-8	1E-4	1E-3
72	Hf-180m	W: see Hf-170	0	3E+4	1E-5	4E-8	0	0
72	Hf-181	D: see Hf-170	1E+3 0	2E+2 Bone surf (4E+2)	7E-8 0	0 6E-10	2E-5 0	2E-4 0
72	Hf-181	W: see Hf-170	0	4E+2	2E-7	6E-10	0	0
72	Hf-182m[2]	D: see Hf-170	4E+4	9E+4	4E-5	1E-7	5E-4	5E-3
72	Hf-182m[2]	W: see Hf-170	0	1E+5	6E-5	2E-7	0	0
72	Hf-182	D: see Hf-170	2E+2 Bone Surf (4E+2)	8E-1 Bone surf (2E+0)	3E-10 0	0 2E-12	0 5E-6	0 5E-5
72	Hf-182	W: see Hf-170	0 0	3E+0 Bone surf (7E+0)	1E-9 0	0 1E-11	0 0	0 0
72	Hf-183[2]	D: see Hf-170	2E+4	5E+4	2E-5	6E-8	3E-4	3E-3
72	Hf-183[2]	W: see Hf-170	0	6E+4	2E-5	8E-8	0	0
72	Hf-184	D: see Hf-170	2E+3	8E+3	3E-6	1E-8	3E-5	3E-4
72	Hf-184	W: see Hf-170	0	6E+3	3E-6	9E-9	0	0
73	Ta-172[2]	W: all compounds except those given for Y	4E+4	1E+5	5E-5	2E-7	5E-4	5E-3
73	Ta-172[2]	Y: elemental Ta, halides, oxides, hydroxides, carbides, nitrates, and nitrides	0	1E+5	4E-5	1E-7	0	0
73	Ta-173	W: see Ta-172	7E+3	2E+4	8E-6	3E-8	9E-5	9E-4
73	Ta-173	Y: see Ta-172	0	2E+4	7E-6	2E-8	0	0
73	Ta-174[2]	W: see Ta-172	3E+4	1E+5	4E-5	1E-7	4E-4	4E-3
73	Ta-174[2]	Y: see Ta-172	0	9E+4	4E-5	1E-7	0	0
73	Ta-175	W: see Ta-172	6E+3	2E+4	7E-6	2E-8	8E-5	8E-4
73	Ta-175	Y: see Ta-172	0	1E+4	6E-6	2E-8	0	0
73	Ta-176	W: see Ta-172	4E+3	1E+4	5E-6	2E-8	5E-5	5E-4
73	Ta-176	Y: see Ta-172	0	1E+4	5E-6	2E-8	0	0
73	Ta-177	W: see Ta-172	1E+4	2E+4	8E-6	3E-8	2E-4	2E-3
73	Ta-177	Y: see Ta-172	0	2E+4	7E-6	2E-8	0	0
73	Ta-178	W: see Ta-172	2E+4	9E+4	4E-5	1E-7	2E-4	2E-3

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
73	Ta-178	Y: see Ta-172	0	7E+4	3E-5	1E-7	0	0
73	Ta-179	W: see Ta-172	2E+4	5E+3	2E-6	8E-9	3E-4	3E-3
73	Ta-179	Y: see Ta-172	0	9E+2	4E-7	1E-9	0	0
73	Ta-180m	W: see Ta-172	2E+4	7E+4	3E-5	9E-8	3E-4	3E-3
73	Ta-180m	Y: see Ta-172	0	6E+4	2E-5	8E-8	0	0
73	Ta-180	W: see Ta-172	1E+3	4E+2	2E-7	6E-10	2E-5	2E-4
73	Ta-180	Y: see Ta-172	0	2E+1	1E-8	3E-11	0	0
73	Ta-182m[2]	W: see Ta-172	2E+5 St Wall (2E+5)	5E+5 0	2E-4 0	8E-7 0	0 3E-3	0 3E-2
73	Ta-182m[2]	Y: see Ta-172	0	4E+5	2E-4	6E-7	0	0
73	Ta-182	W: see Ta-172	8E+2	3E+2	1E-7	5E-10	1E-5	1E-4
73	Ta-182	Y: see Ta-172	0	1E+2	6E-8	2E-10	0	0
73	Ta-183	W: see Ta-172	9E+2 LLI Wall (1E+3)	1E+3 0	5E-7 0	2E-9 0	0 2E-5	0 2E-4
73	Ta-183	Y: see Ta-172	0	1E+3	4E-7	1E-9	0	0
73	Ta-184	W: see Ta-172	2E+3	5E+3	2E-6	8E-9	3E-5	3E-4
73	Ta-184	Y: see Ta-172	0	5E+3	2E-6	7E-9	0	0
73	Ta-185[2]	W: see Ta-172	3E+4	7E+4	3E-5	1E-7	4E-4	4E-3
73	Ta-185[2]	Y: see Ta-172	0	6E+4	3E-5	9E-8	0	0
73	Ta-186[2]	W: see Ta-172	5E+4 (St Wall (7E+4)	2E+5 0	1E-4 0	3E-7 0	0 1E-3	0 1E-2
73	Ta-186[2]	Y: see Ta-172	0	2E+5	9E-5	3E-7	0	0
74	W-176	D: all compounds	1E+4	5E+4	2E-5	7E-8	1E-4	1E-3
74	W-177	D: all compounds	2E+4	9E+4	4E-5	1E-7	3E-4	3E-3
74	W-178	D: all compounds	5E+3	2E+4	8E-6	3E-8	7E-5	7E-4
74	W-179[2]	D: all compounds	5E+5	2E+6	7E-4	2E-6	7E-3	7E-2
74	W-181	D: all compounds	2E+4	3E+4	1E-5	5E-8	2E-4	2E-3
74	W-185	D: all compounds	2E+3 LLI Wall (3E+3)	7E+3 0	3E-6 0	9E-9 0	0 4E-5	0 4E-4
74	W-187	D: all compounds	2E+3	9E+3	4E-6	1E-8	3E-5	3E-4
74	W-188	D: all compounds	4E+2 LLI Wall (5E+2)	1E+3 0	5E-7 0	2E-9 0	0 6E-6	0 6E-5
75	Re-177[2]	D: all compounds except those given for W	9E+4 St Wall (1E+5)	3E+5 0	1E-4 0	4E-7 0	0 2E-3	0 2E-2
75	Re-177[2]	W: nitrates, oxides, and hydroxides	0	4E+5	1E-4	5E-7	0	0
75	Re-178[2]	D: see Re-177	7E+4 St Wall (1E+5)	3E+5 0	1E-4 0	4E-7 0	0 1E-3	0 1E-2
75	Re-178[2]	W: see Re-177	0	3E+5	1E-4	4E-7	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
75	Re-181	D: see Re-177	5E+3	9E+3	4E-6	1E-8	7E-5	7E-4
75	Re-181	W: see Re-177	0	9E+3	4E-6	1E-8	0	0
75	Re-182 (12.7 h)	D: see Re-177	7E+3	1E+4	5E-6	2E-8	9E-5	9E-4
75	Re-182 (12.7 h)	W: see Re-177	0	2E+4	6E-6	2E-8	0	0
75	Re-182 (64.0 h)	D: see Re-177	1E+3	2E+3	1E-6	3E-9	2E-5	2E-4
75	Re-182 (64.0 h)	W: see Re-177	0	2E+3	9E-7	3E-9	0	0
75	Re-184m	D: see Re-177	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
75	Re-184m	W: see Re-177	0	4E+2	2E-7	6E-10	0	0
75	Re-184	D: see Re-177	2E+3	4E+3	1E-6	5E-9	3E-5	3E-4
75	Re-184	W: see Re-177	0	1E+3	6E-7	2E-9	0	0
75	Re-186m	D: see Re-177	1E+3 St Wall (2E+3)	2E+3 St wall (2E+3)	7E-7 0	0 3E-9	0 2E-5	0 2E-4
75	Re-186m	W: see Re-177	0	2E+2	6E-8	2E-10	0	0
75	Re-186	D: see Re-177	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
75	Re-186	W: see Re-177	0	2E+3	7E-7	2E-9	0	0
75	Re-187	D: see Re-177	6E+5 0	8E+5 St wall (9E+5)	4E-4 0	0 1E-6	8E-3 0	8E-2 0
75	Re-187	W: see Re-177	0	1E+5	4E-5	1E-7	0	0
75	Re-188m[2]	D: see Re-177	8E+4	1E+5	6E-5	2E-7	1E-3	1E-2
75	Re-188m[2]	W: see Re-177	0	1E+5	6E-5	2E-7	0	0
75	Re-188	D: see Re-177	2E+3	3E+3	1E-6	4E-9	2E-5	2E-4
75	Re-188	W: see Re-177	0	3E+3	1E-6	4E-9	0	0
75	Re-189	D: see Re-177	3E+3	5E+3	2E-6	7E-9	4E-5	4E-4
75	Re-189	W: see Re-177	0	4E+3	2E-6	6E-9	0	0
76	Os-180[2]	D: all compounds except those given for W, Y	1E+5	4E+5	2E-4	5E-7	1E-3	1E-2
76	Os-180[2]	W: halides and nitrates	0	5E+5	2E-4	7E-7	0	0
76	Os-180[2]	Y: oxides and hydroxides	0	5E+5	2E-4	6E-7	0	0
76	Os-181[2]	D: see Os-180	1E+4	4E+4	2E-5	6E-8	2E-4	2E-3
76	Os-181[2]	W: see Os-180	0	5E+4	2E-5	6E-8	0	0
76	Os-181[2]	Y: see Os-180	0	4E+4	2E-5	6E-8	0	0
76	Os-182	D: see Os-180	2E+3	6E+3	2E-6	8E-9	3E-5	3E-4
76	Os-182	W: see Os-180	0	4E+3	2E-6	6E-9	0	0
76	Os-182	Y: see Os-180	0	4E+3	2E-6	6E-9	0	0
76	Os-185	D: see Os-180	2E+3	5E+2	2E-7	7E-10	3E-5	3E-4
76	Os-185	W: see Os-180	0	8E+2	3E-7	1E-9	0	0
76	Os-185	Y: see Os-180	0	8E+2	3E-7	1E-9	0	0
76	Os-189m	D: see Os-180	8E+4	2E+5	1E-4	3E-7	1E-3	1E-2
76	Os-189m	W: see Os-180	0	2E+5	9E-5	3E-7	0	0
76	Os-189m	Y: see Os-180	0	2E+5	7E-5	2E-7	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
76	Os-191m	D: see Os-180	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3
76	Os-191m	W: see Os-180	0	2E+4	8E-6	3E-8	0	0
76	Os-191m	Y: see Os-180	0	2E+4	7E-6	2E-8	0	0
76	Os-191	D: see Os-180	2E+3 LLI Wall (3E+3)	2E+3 0	9E-7 0	3E-9 0	0 3E-5	0 3E-4
76	Os-191	W: see Os-180	0	2E+3	7E-7	2E-9	0	0
76	Os-191	Y: see Os-180	0	1E+3	6E-7	2E-9	0	0
76	Os-193	D: see Os-180	2E+3 LLI Wall (2E+3)	5E+3 0	2E-6 0	6E-9 0	0 2E-5	0 2E-4
76	Os-193	W: see Os-180	0	3E+3	1E-6	4E-9	0	0
76	Os-193	Y: see Os-180	0	3E+3	1E-6	4E-9	0	0
76	Os-194	D: see Os-180	4E+2 LLI Wall (6E+2)	4E+1 0	2E-8 0	6E-11 0	0 8E-6	0 8E-5
76	Os-194	W: see Os-180	0	6E+1	2E-8	6E-11	0	0
76	Os-194	Y: see Os-180	0	8E+0	3E-9	1E-11	0	0
77	Ir-182[2]	D: all compounds except those given for W, Y	4E+4 St Wall (4E+4)	1E+5 0	6E-5 0	2E-7 0	0 6E-4	0 6E-3
77	Ir-182[2]	W: halides, nitrates, and metallic Ir	0	2E+5	6E-5	2E-7	0	0
77	Ir-182[2]	Y: oxides and hydroxides	0	1E+5	5E-5	2E-7	0	0
77	Ir-184	D: see Ir-182	8E+3	2E+4	1E-5	3E-8	1E-4	1E-3
77	Ir-184	W: see Ir-182	0	3E+4	1E-5	5E-8	0	0
77	Ir-184	Y: see Ir-182	0	3E+4	1E-5	4E-8	0	0
77	Ir-185	D: see Ir-182	5E+3	1E+4	5E-6	2E-8	7E-5	7E-4
77	Ir-185	W: see Ir-182	0	1E+4	5E-6	2E-8	0	0
77	Ir-185	Y: see Ir-182	0	1E+4	4E-6	1E-8	0	0
77	Ir-186	D: see Ir-182	2E+3	8E+3	3E-6	1E-8	3E-5	3E-5
77	Ir-186	W: see Ir-182	0	6E+3	3E-6	9E-9	0	0
77	Ir-186	Y: see Ir-182	0	6E+3	2E-6	8E-9	0	0
77	Ir-187	D: see Ir-182	1E+4	3E+4	1E-5	5E-8	1E-4	1E-3
77	Ir-187	W: see Ir-182	0	3E+4	1E-5	4E-8	0	0
77	Ir-187	Y: see Ir-182	0	3E+4	1E-5	4E-8	0	0
77	Ir-188	D: see Ir-182	2E+3	5E+3	2E-6	6E-9	3E-5	3E-4
77	Ir-188	W: see Ir-182	0	4E+3	1E-6	5E-9	0	0
77	Ir-188	Y: see Ir-182	0	3E+3	1E-6	5E-9	0	0
77	Ir-189	D: see Ir-182	5E+3 LLI Wall (5E+3)	5E+3 0	2E-6 0	7E-9 0	0 7E-5	0 7E-4
77	Ir-189	W: see Ir-182	0	4E+3	2E-6	5E-9	0	0
77	Ir-189	Y: see Ir-182	0	4E+3	1E-6	5E-9	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
77	Ir-190m[2]	D: see Ir-182	2E+5	2E+5	8E-5	3E-7	2E-3	2E-2
77	Ir-190m[2]	W: see Ir-182	0	2E+5	9E-5	3E-7	0	0
77	Ir-190m[2]	Y: see Ir-182	0	2E+5	8E-5	3E-7	0	0
77	Ir-190	D: see Ir-182	1E+3	9E+2	4E-7	1E-9	1E-5	1E-4
77	Ir-190	W: see Ir-182	0	1E+3	4E-7	1E-9	0	0
77	Ir-190	Y: see Ir-182	0	9E+2	4E-7	1E-9	0	0
77	Ir-192m	D: see Ir-182	3E+3	9E+1	4E-8	1E-10	4E-5	4E-4
77	Ir-192m	W: see Ir-182	0	2E+2	9E-8	3E-10	0	0
77	Ir-192m	Y: see Ir-182	0	2E+1	6E-9	2E-11	0	0
77	Ir-192	D: see Ir-182	9E+2	3E+2	1E-7	4E-10	1E-5	1E-4
77	Ir-192	W: see Ir-182	0	4E+2	2E-7	6E-10	0	0
77	Ir-192	Y: see Ir-182	0	2E+2	9E-8	3E-10	0	0
77	Ir-194m	D: see Ir-182	6E+2	9E+1	4E-8	1E-10	9E-6	9E-5
77	Ir-194m	W: see Ir-182	0	2E+2	7E-8	2E-10	0	0
77	Ir-194m	Y: see Ir-182	0	1E+2	4E-8	1E-10	0	0
77	Ir-194	D: see Ir-182	1E+3	3E+3	1E-6	4E-9	1E-5	1E-4
77	Ir-194	W: see Ir-182	0	2E+3	9E-7	3E-9	0	0
77	Ir-194	Y: see Ir-182	0	2E+3	8E-7	3E-9	0	0
77	Ir-195m	D: see Ir-182	8E+3	2E+4	1E-5	3E-8	1E-4	1E-3
77	Ir-195m	W: see Ir-182	0	3E+4	1E-5	4E-8	0	0
77	Ir-195m	Y: see Ir-182	0	2E+4	9E-6	3E-8	0	0
77	Ir-195	D: see Ir-182	1E+4	4E+4	2E-5	6E-8	2E-4	2E-3
77	Ir-195	W: see Ir-182	0	5E+4	2E-5	7E-8	0	0
77	Ir-195	Y: see Ir-182	0	4E+4	2E-5	6E-8	0	0
78	Pt-186	D: all compounds	1E+4	4E+4	2E-5	5E-8	2E-4	2E-3
78	Pt-188	D: all compounds	2E+3	2E+3	7E-7	2E-9	2E-5	0
78	Pt-189	D: all compounds	1E+4	3E+4	1E-5	4E-8	1E-4	0
78	Pt-191	D: all compounds	4E+3	8E+3	4E-6	1E-8	5E-5	5E-4
78	Pt-193m	D: all compounds	3E+3 LLI Wall (3E+4)	6E+3 0	3E-6 0	8E-9 0	0 4E-5	0 4E-4
78	Pt-193	D: all compounds	4E+4 LLI Wall (5E+4)	2E+4 0	1E-5 0	3E-8 0	0 6E-4	0 6E-3
78	Pt-195m	D: all compounds	2E+3 LLI Wall (2E+3)	4E+3 0	2E-6 0	6E-9 0	0 3E-5	0 3E-4
78	Pt-197m[2]	D: all compounds	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
78	Pt-197	D: all compounds	3E+3	1E+4	4E-6	1E-8	4E-5	4E-4
78	Pt-199[2]	D: all compounds	5E+4	1E+5	6E-5	2E-7	7E-4	7E-3
78	Pt-200	D: all compounds	1E+3	3E+3	1E-6	5E-9	2E-5	2E-4
79	Au-193	D: all compounds except those given for W, Y	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
79	Au-193	W: halides and	0	2E+4	9E-6	3E-8	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
		nitrates						
79	Au-193	Y: oxides and hydroxides	0	2E+4	8E-6	3E-8	0	0
79	Au-194	D: see Au-193	3E+3	8E+3	3E-6	1E-8	4E-5	4E-4
79	Au-194	W: see Au-193	0	5E+3	2E-6	8E-9	0	0
79	Au-194	Y: see Au-193	0	5E+3	2E-6	7E-9	0	0
79	Au-195	D: see Au-193	5E+3	1E+4	5E-6	2E-8	7E-5	7E-4
79	Au-195	W: see Au-193	0	1E+3	6E-7	2E-9	0	0
79	Au-195	Y: see Au-193	0	4E+2	2E-7	6E-10	0	0
79	Au-198m	D: see Au-193	1E+3	3E+3	1E-6	4E-9	1E-5	1E-4
79	Au-198m	W: see Au-193	0	1E+3	5E-7	2E-9	0	0
79	Au-198m	Y: see Au-193	0	1E+3	5E-7	2E-9	0	0
79	Au-198	D: see Au-193	1E+3	4E+3	2E-6	5E-9	2E-5	2E-4
79	Au-198	W: see Au-193	0	2E+3	8E-7	3E-9	0	0
79	Au-198	Y: see Au-193	0	2E+3	7E-7	2E-9	0	0
79	Au-199	D: see Au-193	3E+3 LLI Wall (3E+3)	9E+3 0	4E-6 0	1E-8 0	0 4E-5	0 4E-4
79	Au-199	W: see Au-193	0	4E+3	2E-6	6E-9	0	0
79	Au-199	Y: see Au-193	0	4E+3	2E-6	5E-9	0	0
79	Au-200m	D: see Au-193	1E+3	4E+3	1E-6	5E-9	2E-5	2E-4
79	Au-200m	W: see Au-193	0	3E+3	1E-6	4E-9	0	0
79	Au-200m	Y: see Au-193	0	2E+4	1E-6	3E-9	0	0
79	Au-200[2]	D: see Au-193	3E+4	6E+4	3E-5	9E-8	4E-4	4E-3
79	Au-200[2]	W: see Au-193	0	8E+4	3E-5	1E-7	0	0
79	Au-200[2]	Y: see Au-193	0	7E+4	3E-5	1E-7	0	0
79	Au-201[2]	D: see Au-193	7E+4 St Wall (9E+4)	2E+5 0	9E-5 0	3E-7 0	0 1E-3	0 1E-2
79	Au-201[2]	W: see Au-193	0	2E+5	1E-4	3E-7	0	0
79	Au-201[2]	Y: see Au-193	0	2E+5	9E-5	3E-7	0	0
80	Hg-193m	Vapor	0	8E+3	4E-6	1E-8	0	0
80	Hg-193m	Organic D	4E+3	1E+4	5E-6	2E-8	6E-5	6E-4
80	Hg-193m	D: sulfates	3E+3	9E+3	4E-6	1E-8	4E-5	4E-4
80	Hg-193m	W: halides, nitrates, sulfides, oxides, and hydroxides	0	8E+3	3E-6	1E-8	0	0
80	Hg-193	Vapor	0	3E+4	1E-5	4E-8	0	0
80	Hg-193	Organic D	2E+4	6E+4	3E-5	9E-8	3E-4	3E-3
80	Hg-193	D: see Hg-193m	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
80	Hg-193	W: see Hg-193m	0	4E+4	2E-5	6E-8	0	0
80	Hg-194	Vapor	0	3E+1	1E-8	4E-11	0	0
80	Hg-194	Organic D	2E+1	3E+1	1E-8	4E-11	2E-7	2E-6
80	Hg-194	D: see Hg-193m	8E+2	4E+1	2E-8	6E-11	1E-5	1E-4
80	Hg-194	W: see Hg-193m	0	1E+2	5E-8	2E-10	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
80	Hg-195m	Vapor	0	4E+3	2E-6	6E-9	0	0
80	Hg-195m	Organic D	3E+3	6E+3	3E-6	8E-9	4E-5	4E-4
80	Hg-195m	D: see Hg-193m	2E+3	5E+3	2E-6	7E-9	3E-5	3E-4
80	Hg-195m	W: see Hg-193m	0	4E+3	2E-6	5E-9	0	0
80	Hg-195	Vapor	0	3E+4	1E-5	4E-8	0	0
80	Hg-195	Organic D	2E+4	5E+4	2E-5	6E-8	2E-4	2E-3
80	Hg-195	D: see Hg-193m	1E+4	4E+4	1E-5	5E-8	2E-4	2E-3
80	Hg-195	W: see Hg-193m	0	3E+4	1E-5	5E-8	0	0
80	Hg-197m	Vapor	0	5E+3	2E-6	7E-9	0	0
80	Hg-197m	Organic D	4E+3	9E+3	4E-6	1E-8	5E-5	5E-4
80	Hg-197m	D: see Hg-193m	3E+3	7E+3	3E-6	1E-8	4E-5	4E-4
80	Hg-197m	W: see Hg-193m	0	5E+3	2E-6	7E-9	0	0
80	Hg-197	Vapor	0	8E+3	4E-6	1E-8	0	0
80	Hg-197	Organic D	7E+3	1E+4	6E-6	2E-8	9E-5	9E-4
80	Hg-197	D: see Hg-193m	6E+3	1E+4	5E-6	2E-8	8E-5	8E-4
80	Hg-197	W: see Hg-193m	0	9E+3	4E-6	1E-8	0	0
80	Hg-199m[2]	Vapor	0	8E+4	3E-5	1E-7	0	0
80	Hg-199m[2]	Organic D	6E+4 St Wall (1E+5)	2E+5 0	7E-5 0	1E-7 0	0 1E-3	0 1E-2
80	Hg-199m[2]	D: see Hg-193m	6E+4	1E+5	6E-5	2E-7	8E-4	8E-3
80	Hg-199m[2]	W: see Hg-193m	0	2E+5	7E-5	2E-7	0	0
80	Hg-203	Vapor	0	8E+2	4E-7	1E-9	0	0
80	Hg-203	Organic D	5E+2	8E+2	3E-7	1E-9	7E-6	7E-5
80	Hg-203	D: see Hg-193m	2E+3	1E+3	5E-7	2E-9	3E-5	3E-4
80	Hg-203	W: see Hg-193m	0	1E+3	5E-7	2E-9	0	0
81	Tl-194m[2]	D: all compounds	5E+4 St Wall (7E+4)	2E+5 0	6E-5 0	2E-7 0	0 1E-3	0 1E-2
81	Tl-194[2]	D: all compounds	3E+5 St Wall (3E+5)	6E+5 0	2E-4 0	8E-7 0	0 4E-2	0 4E-1
81	Tl-195[2]	D: all compounds	6E+4	1E+5	5E-5	2E-7	9E-4	9E-3
81	Tl-197	D: all compounds	7E+4	1E+5	5E-5	2E-7	1E-3	1E-2
81	Tl-198m[2]	D: all compounds	3E+4	5E+4	2E-5	8E-8	4E-4	4E-3
81	Tl-198	D: all compounds	2E+4	3E+4	1E-5	5E-8	3E-4	3E-3
81	Tl-199	D: all compounds	6E+4	8E+4	4E-5	1E-7	9E-4	9E-3
81	Tl-200	D: all compounds	8E+3	1E+4	5E-6	2E-8	1E-4	1E-3
81	Tl-201	D: all compounds	2E+4	2E+4	9E-6	3E-8	2E-4	2E-3
81	Tl-202	D: all compounds	4E+3	5E+3	2E-6	7E-9	5E-5	5E-4
81	Tl-204	D: all compounds	2E+3	2E+3	9E-7	3E-9	2E-5	2E-4
82	Pb-195m[2]	D: all compounds	6E+4	2E+5	8E-5	3E-7	8E-4	8E-3
82	Pb-198	D: all compounds	3E+4	6E+4	3E-5	9E-8	4E-4	4E-3
82	Pb-199[2]	D: all compounds	2E+4	7E+4	3E-5	1E-7	3E-4	3E-3
82	Pb-200	D: all compounds	3E+3	6E+3	3E-6	9E-9	4E-5	4E-4

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
82	Pb-201	D: all compounds	7E+3	2E+4	8E-6	3E-8	1E-4	1E-3
82	Pb-202m	D: all compounds	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
82	Pb-202	D: all compounds	1E+2	5E+1	2E-8	7E-11	2E-6	2E-5
82	Pb-203	D: all compounds	5E+3	9E+3	4E-6	1E-8	7E-5	7E-4
82	Pb-205	D: all compounds	4E+3	1E+3	6E-7	2E-9	5E-5	5E-4
82	Pb-209	D: all compounds	2E+4	6E+4	2E-5	8E-8	3E-4	3E-3
82	Pb-210	D: all compounds	6E-1 Bone Surf (1E+0)	2E+1 Bone surf (4E-1)	1E-10 0	0 6E-13	0 1E-8	0 1E-7
82	Pb-211[2]	D: all compounds	1E+4	6E+2	3E-7	9E-10	2E-4	2E-3
82	Pb-212	D: all compounds	8E+1 Bone Surf (1E+2)	3E+1 0	1E-8 0	5E-11 0	0 2E-6	0 2E-5
82	Pb-214[2]	D: all compounds	9E+3	8E+2	3E-7	1E-9	1E-4	1E-3
83	Bi-200[2]	D: nitrates	3E+4	8E+4	4E-5	1E-7	4E-4	4E-3
83	Bi-200[2]	W: all other compounds	0	1E+5	4E-5	1E-7	0	0
83	Bi-201[2]	D: see Bi-200	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3
83	Bi-201[2]	W: see Bi-200	0	4E+4	2E-5	5E-8	0	0
83	Bi-202[2]	D: see Bi-200	1E+4	4E+4	2E-5	6E-8	2E-4	2E-3
83	Bi-202[2]	W: see Bi-200	0	8E+4	3E-5	1E-7	0	0
83	Bi-203	D: see Bi-200	2E+3	7E+3	3E-6	9E-9	3E-5	3E-4
83	Bi-203	W: see Bi-200	0	6E+3	3E-6	9E-9	0	0
83	Bi-205	D: see Bi-200	1E+3	3E+3	1E-6	3E-9	2E-5	2E-4
83	Bi-205	W: see Bi-200	0	1E+3	5E-7	2E-9	0	0
83	Bi-206	D: see Bi-200	6E+2	1E+3	6E-7	2E-9	9E-6	9E-5
83	Bi-206	W: see Bi-200	0	9E+2	4E-7	1E-9	0	0
83	Bi-207	D: see Bi-200	1E+3	2E+3	7E-7	2E-9	1E-5	1E-4
83	Bi-207	W: see Bi-200	0	4E+2	1E-7	5E-10	0	0
83	Bi-210m	D: see Bi-200	4E+1 Kidneys (6E+1)	5E+0 Kidney (6E+0)	2E-9 0	0 9E-12	0 8E-7	0 8E-6
83	Bi-210m	W: see Bi-200	0	7E-1	3E-10	9E-13	0	0
83	Bi-210	D: see Bi-200	8E+2 0	2E+2 Kidney (4E+2)	1E-7 0	0 5E-10	1E-5 0	1E-4 0
83	Bi-210	W: see Bi-200	0	3E+1	1E-8	4E-11	0	0
83	Bi-212[2]	D: see Bi-200	5E+3	2E+2	1E-7	3E-10	7E-5	7E-4
83	Bi-212[2]	W: see Bi-200	0	3E+2	1E-7	4E-10	0	0
83	Bi-213[2]	D: see Bi-200	7E+3	3E+2	1E-7	4E-10	1E-4	1E-3
83	Bi-213[2]	W: see Bi-200	0	4E+2	1E-7	5E-10	0	0
83	Bi-214[2]	D: see Bi-200	2E+4 St Wall (2E+4)	8E+2 0	3E-7 0	1E-9 0	0 3E-4	0 3E-3
83	Bi-214[2]	W: see Bi-200	0	9E-2	4E-7	1E-9	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
84	Po-203[2]	D: all compounds except those given for W	3E+4	6E+4	3E-5	9E-8	3E-4	3E-3
84	Po-203[2]	W: nitrates, oxides, and hydroxides	0	9E+4	4E-5	1E-7	0	0
84	Po-205[2]	D: see Po-203	2E+4	4E+4	2E-5	5E-8	3E-4	3E-3
84	Po-205[2]	W: see Po-203	0	7E+4	3E-5	1E-7	0	0
84	Po-207	D: see Po-203	8E+3	3E+4	1E-5	3E-8	1E-4	1E-4
84	Po-207	W: see Po-203	0	3E+4	1E-5	4E-8	0	0
84	Po-210	D: see Po-203	3E+0	6E-1	3E-10	9E-13	4E-8	4E-7
84	Po-210	W: see Po-203	0	6E-1	3E-10	9E-13	0	0
85	At-207[2]	D: halides	6E+3	3E+3	1E-6	4E-9	8E-5	8E-4
85	At-207[2]	W: all compounds except those given in D	0	2E+3	9E-7	3E-9	0	0
85	At-211	D: halides	1E+2	8E+1	3E-8	1E-10	2E-6	2E-5
85	At-211	W: all compounds except those given in D	0	5E+1	2E-8	8E-11	0	0
86	Rn-220	With daughters removed	0	2E+4	7E-6	2E-8	0	0
86	Rn-220	With daughters present	0	2E+1 (or 12 working level months)	9E-9	3E-11 (or 1.0 working level)	0	0
86	Rn-222	With daughters removed	0	1E+4	4E-6	1E-8	0	0
86	Rn-222	With daughters present	0	1E+2 (or 12 working level months)	3E-8	1E-10 (or 0.33 working level)	0	0
87	Fr-222[2]	D: all compounds	2E+3	5E+2	2E-7	6E-10	3E-5	3E-4
87	Fr-232[2]	D: all compounds	6E+2	8E+2	3E-7	1E-9	8E-6	8E-5
88	Ra-223	W: all compounds	5E+0 Bone Surf (9E+0)	7E-1 0	3E-10 0	9E-13 0	0 1E-7	0 1E-6
88	Ra-224	W: all compounds	8E+0 Bone Surf (2E+1)	2E+0 0	7E-10 0	2E-12 0	0 2E-7	0 2E-6
88	Ra-225	W: all compounds	8E+0 Bone Surf (2E+1)	7E-1 0	3E-10 0	9E-13 0	0 2E-7	0 2E-6
88	Ra-226	W: all compounds	2E+0 Bone Surf (5E+0)	6E-1	3E-10 0	9E-13 0	0 6E-8	0 6E-7

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
88	Ra-227[2]	W: all compounds	2E+4 Bone Surf (2E+4)	1E+4 Bone surf (2E+4)	6E-6 0	0 3E-8	0 3E-4	0 3E-3
88	Ra-228	W: all compounds	2E+0 Bone Surf (4E+0)	1E+0 0	5E-10 0	2E-12 0	0 6E-8	0 6E-7
89	Ac-224	D: all compounds except those given for W, Y	2E+3 LLI Wall 2E+3	3E+1 Bone surf (4E+1)	1E-8 0	0 5E-11	0 3E-5	0 3E-4
89	Ac-224	W: halides and nitrates	0	5E+1	2E-8	7E-11	0	0
89	Ac-224	Y: oxides and hydroxides	0	5E+1	2E-8	6E-11	0	0
89	Ac-225	D: see Ac-224	5E+1 LLI Wall (5E+)	3E-1 Bone surf (5E-1)	1E-10 0	0 7E-13	0 7E-7	0 7E-6
89	Ac-225	W: see Ac-224	0	6E-1	3E-10	9E-13	0	0
89	Ac-225	Y: see Ac-224	0	6E-1	3E-10	9E-13	0	0
89	Ac-225	D: see Ac-224	1E+2 LLI Wall (1E+2)	3E+0 Bone surf (4E+0)	1E-9 0	0 5E-12	0 2E-6	0 2E-5
89	Ac-225	W: see Ac-224	0	5E+0	2E-9	7E-12	0	0
89	Ac-225	Y: see Ac-224	0	5E+0	2E-9	6E-12	0	0
89	Ac-227	D: see Ac-224	2E-1 Bone Surf (4E-1)	4E-4 Bone surf (8E-4)	2E-13 0	0 1E-15	0 5E-9	0 5E-8
89	Ac-227	W: see Ac-224	0 0	2E-3 Bone surf (3E-3)	7E-13 0	0 4E-15	0 0	0 0
89	Ac-227	Y: see Ac-224	0	4E-3	2E-12	6E-15	0	0
89	Ac-228	D: see Ac-224	2E+3 0	9E+0 Bone surf (4E+1)	4E-9 0	0 2E-11	3E-5 0	3E-4 0
89	Ac-228	W: see Ac-224	0 0	4E+1 Bone surf (6E+1)	2E-8 0	0 8E-11	0 0	0 0
89	Ac-228	Y: see Ac-224	0	4E+1	2E-8	6E-11	0	0
90	Th-226	W: all compounds except those given for Y	5E+3 St Wall (5E+3)	2E+2 0	6E-8 0	2E-10 0	0 7E-5	0 7E-4
90	Th-226[2]	Y: oxides and hydroxides	0	1E+2	6E-8	2E-10	0	0
90	Th-227	W: see Th-226	1E+2	3E-1	1E-10	5E-13	2E-6	2E-5
90	Th-227	Y: see Th-226	0	3E-1	1E-10	5E-13	0	0
90	Th-228	W: see Th-226	6E+0 Bone Surf (1E+1)	1E-2 Bone surf (2E-2)	4E-12 0	0 3E-14	0 2E-7	0 2E-6
90	Th-228	Y: see Th-226	0	2E-2	7E-12	2E-14	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
90	Th-229	W: see Th-226	6E-1 Bone Surf (1E+0)	9E-4 Bone surf (2E-3)	4E-13 0	0 3E-15	0 2E-8	0 2E-7
90	Th-229	Y: see Th-226	0 0	2E-3 Bone surf (3E-3)	1E-12 0	0 4E-15	0 0	0 0
90	Th-230	W: see Th-226	4E+0 Bone Surf (9E+0)	6E-3 Bone surf (2E-2)	3E-12 0	0 2E-14	0 1E-7	0 1E-6
90	Th-230	Y: see Th-226	0 0	2E-2 Bone surf (2E-2)	6E-12	0 3E-14	0 0	0 0
90	Th-231	W: see Th-226	4E+3	6E+3	3E-6	9E-9	5E-5	5E-4
90	Th-231	Y: see Th-226	0	6E+3	3E-6	9E-9	0	0
90	Th-232	W: see Th-226	7E-1 Bone Surf (2E+0)	1E-3 Bone surf (3E-3)	5E-13 0	0 4E-15	0 3E-8	0 3E-7
90	Th-232	Y: see Th-226	0	3E-3 Bone surf (4E-3)	1E-12	0 6E-15	0 0	0 0
90	Th-234	W: see Th-226	3E+2 LLI Wall (4E+2)	2E+2 0	8E-8 0	3E-10 0	0 5E-6	0 5E-5
90	Th-234	Y: see Th-226	0	2E+2	6E-8	2E-10	0	0
91	Pa-227[2]	W: all compounds except those given for Y	4E+3	1E+2	5E-8	2E-10	5E-5	5E-4
91	Pa-227[2]	Y: oxides and hydroxides	0	1E+2	4E-8	1E-10	0	0
91	Pa-228	W: see Pa-227	1E+3 0	1E+1 Bone surf (2E+1)	5E-9 0	0 3E-11	2E-5 0	2E-4 0
91	Pa-228	Y: see Pa-227	0	1E+1	5E-9	2E-11	0	0
91	Pa-230	W: see Pa-227	6E+2 Bone Surf (9E+2)	5E+0 0	2E-9 0	7E-12 0	0 1E-5	0 1E-4
91	Pa-230	Y: see Pa-227	0	4E+0	1E-9	5E-12	0	0
91	Pa-231	W: see Pa-227	2E-1 Bone Surf (5E-1)	3E-3 Bone surf (4E-3)	6E-13 0	0 6E-15	0 6E-9	0 6E-8
91	Pa-231	Y: see Pa-227	0 0	4E-3 Bone surf (6E-3)	2E-12 0	0 8E-15	0 0	0 0
91	Pa-232	W: see Pa-227	1E+3 0	2E+1 Bone surf (6E+1)	9E-9 0	0 8E-11	2E-5 0	2E-4 0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
91	Pa-232	Y: see Pa-227	0 0	6E+1 Bone surf (7E+0)	2E-8 0	0 1E-10	0 0	0 0
91	Pa-233	W: see Pa-227	1E+3 LLI Wall (2E+3)	7E+2 0	2E-7 0	1E-9 0	0 2E-5	0 2E-4
91	Pa-233	Y: see Pa-227	0	6E+2	3E-7	8E-10	0	0
91	Pa-234	W: see Pa-227	2E+3	8E+3	3E-6	1E-8	3E-5	3E-4
91	Pa-234	Y: see Pa-227	0	7E+3	3E-6	9E-9	0	0
92	U-230	D: UF_6, UO_2F_2, $UO_2(NO_3)_2$	4E+0 Bone Surf (6E+0)	4E-1 Bone surf (6E-1)	2E-10 0	0 8E-13	0 8E-8	0 8E-7
92	U-230	W: UO_3, UF_4, UCl_4	0	4E-1	1E-10	5E-13	0	0
92	U-230	Y: UO_2, U_3O_8	0	3E-1	1E-10	4E-13	0	0
92	U-231	D: see U-230	5E+3 LLI Wall (4E+3)	8E+3 0	3E-6 0	1E-8 0	0 6E-5	0 6E-4
92	U-231	W: see U-230	0	6E+3	2E-6	8E-9	0	0
92	U-231	Y: see U-230	0	5E+3	2E-6	6E-9	0	0
92	U-232	D: see U-230	2E+0 Bone Surf (4E+0)	2E-1 Bone surf (4E-1)	9E-11 0	0 6E-13	0 6E-8	0 6E-7
92	U-232	W: see U-230	0	4E-1	2E-10	5E-13	0	0
92	U-232	Y: see U-230	0	8E-3	3E-12	1E-14	0	0
92	U-233	D: see U-230	1E+1 Bone Surf (2E+1)	1E+0 Bone surf (2E+0)	5E-10 0	0 3E-12	0 3E-7	0 3E-6
92	U-233	W: see U-230	0	7E-1	3E-10	1E-12	0	0
92	U-233	Y: see U-230	0	4E-2	2E-11	5E-14	0	0
92	U-234[3]	D: see U-230	1E+1 Bone Surf (2E+1)	1E+0 Bone surf (2E+0)	5E-10 0	0 3E-12	0 3E-7	0 3E-6
92	U-234[3]	W: see U-230	0	7E-1	3E-10	1E-12	0	0
92	U-234[3]	Y: see U-230	0	4E-2	2E-11	5E-14	0	0
92	U-235[3]	D: see U-230	1E+1 Bone Surf (2E+1)	1E+0 Bone surf (2E+0)	6E-10 0	0 3E-12	0 3E-7	0 3E-7
92	U-235[3]	W: see U-230	0	8E-1	3E-10	1E-12	0	0
92	U-235[3]	Y: see U-230	0	4E-2	2E-11	6E-14	0	0
92	U-236	D: see U-230	1E+1 Bone Surf (2E+1)	1E+0 Bone surf (2E+0)	5E-10 0	0 3E-12	0 3E-7	0 3E-6
92	U-236	W: see U-230	0	8E-1	3E-10	1E-12	0	0
92	U-236	Y: see U-230	0	4E-2	2E-11	6E-14	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
92	U-237	D: see U-230	2E+3 LLI Wall (2E+3)	3E+3 0	1E-6 0	4E-9 0	0 3E-5	0 3E-4
92	U-237	W: see U-230	0	2E+3	7E-7	2E-9	0	0
92	U-237	Y: see U-230	0	2E+3	6E-7	2E-9	0	0
92	U-238[3]	D: see U-230	1E+1 Bone Surf (2E+1)	1E+0 Bone surf (2E+0)	6E-10 0	0 3E-12	0 3E-7	0 3E-6
92	U-237	W: see U-230	0	8E-1	3E-10	1E-12	0	0
92	U-237	Y: see U-230	0	4E-2	2E-11	6E-14	0	0
92	U-239[2]	D: see U-230	7E+4	2E+5	8E-5	3E-7	9E-4	9E-3
92	U-239[2]	W: see U-230	0	2E+5	7E-5	2E-7	0	0
92	U-239[2]	Y: see U-230	0	2E+5	6E-5	2E-7	0	0
92	U-240	D: see U-230	1E+3	4E+3	2E-6	5E-9	2E-5	2E-4
92	U-240	W: see U-230	0	3E+3	1E-6	4E-9	0	0
92	U-240	Y: see U-230	0	2E+3	1E-6	3E-9	0	0
92	U-Nat[3]	D: see U-230	1E+1 Bone Surf (2E+1)	1E+0 Bone surf (2E+0)	5E-10 0	0 3E-12	0 3E-7	0 3E-6
92	U-Nat[3]	W: see U-230	0	8E-1	3E-10	9E-13	0	0
92	U-Nat[3]	Y: see U-230	0	5E-2	2E-11	9E-14	0	0
93	Np-232[2]	W: all compounds	1E+5 0	2E+3 Bone surf (5E+2)	7E-7 0	0 6E-9	2E-3 0	2E-2 0
93	Np-233[2]	W: all compounds	8E+5	3E+6	1E-3	4E-6	1E-2	1E-1
93	Np-234	W: all compounds	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
93	Np-235	W: all compounds	2E+4 LLI Wall 2E+4	8E+2 Bone surf (1E+3)	3E-7 0	0 2E-9	0 3E-4	0 3E-3
93	Np-236 (1E+5 y)	W: all compounds	3E+0 Bone Surf (6E+0)	2E-2 Bone surf (5E-2)	9E-12 0	0 8E-14	0 9E-8	0 9E-7
93	Np-236: (22.5 h)	W: all compounds	3E+3 Bone Surf (4E+3)	3E+1 Bone surf (7E+1)	1E-8 0	0 1E-10	0 5E-5	0 5E-4
93	Np-237	W: all compounds	5E-1 Bone Surf (1E+0)	4E-3 Bone surf (1E-2)	2E-12 0	0 1E-14	0 2E-8	0 2E-7
93	Np-238	W: all compounds	1E+3	6E+1 Bone surf (2E+2)	3E-8 0	0 2E-10	2E-5 0	2E-4 0
93	Np-239	W: all compounds	2E+3 LLI Wall (2E+3)	2E+3 0	9E-7 0	3E-9 0	0 2E-5	0 2E-4
93	Np-240[2]	W: all compounds	2E+4	8E+4	3E-5	1E-7	3E-4	3E-3
94	Pu-234	W: all compounds except PuO_2	8E+3	2E+2	9E-8	3E-10	1E-4	1E-3

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
94	Pu-234	Y: PuO_2	0	2E+2	8E-8	3E-10	0	0
94	Pu-235[2]	W: see Pu-234	9E+5	3E+6	1E-3	4E-6	1E-2	1E-1
94	Pu-235	Y: see Pu-234	0	3E+6	1E-3	3E-6	0	0
94	Pu-236	W: see Pu-234	2E+0 Bone Surf (4E+0)	2E-2 Bone surf (4E-2)	8E-12	0 5E-14	0 6E-8	0 6E-7
94	Pu-236	Y: see Pu-234	0	4E-2	2E-11	6E-14	0	0
94	Pu-237	W: see Pu-234	1E+4	3E+3	1E-6	5E-9	2E-4	2E-3
94	Pu-237	Y: see Pu-234	0	3E+3	1E-6	4E-9	0	0
94	Pu-238	W: see Pu-234	9E-1 Bone Surf (2E+0)	7E-3 Bone surf (1E-2)	3E-12 0	0 2E-14	0 2E-8	0 2E-7
94	Pu-238	Y: see Pu-234	0	2E-2	8E-12	2E-14	0	0
94	Pu-239	W: see Pu-234	8E-1 Bone Surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12 0	0 2E-14	0 2E-8	0 2E-7
94	Pu-239	Y: see Pu-234	0 0	2E-2 Bone surf (2E-2)	7E-12 0	0 2E-14	0 0	0 0
94	Pu-240	W: see Pu-234	8E-1 Bone Surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	0 2E-14	0 2E-8	0 2E-7
94	Pu-240	Y: see Pu-234	0 0	2E-2 Bone surf (2E-2)	7E-12 0	0 2E-14	0 0	0 0
94	Pu-241	W: see Pu-234	4E+1 Bone Surf (7E+1)	3E-1 Bone surf (6E-1)	1E-10 0	0 8E-13	0 2E-6	0 2E-5
94	Pu-241	Y: see Pu-234	0 0	8E-1 Bone surf (1E+0)	3E-10 0	0 1E-12	0 0	0 0
94	Pu-242	W: see Pu-234	8E-1 Bone Surf (1E+0)	7E-3 Bone surf (1E-2)	3E-12 0	0 2E-14	0 2E-8	0 2E-7
94	Pu-242	Y: see Pu-234	0 0	2E-2 Bone surf (2E-2)	7E-12 0	0 2E-14	0 0	0 0
94	Pu-243	W: see Pu-234	2E+4	4E+4	2E-5	5E-8	2E-4	2E-3
94	Pu-243	Y: see Pu-234	0	4E+4	2E-5	5E-8	0	0
94	Pu-244	W: see Pu-234	8E-1 Bone Surf (2E+0)	7E-3 Bone surf (1E-2)	3E-12 0	0 2E-14	0 2E-8	0 2E-7
94	Pu-244	Y: see Pu-234	0	2E-2 Bone surf (2E-2)	7E-12 0	0 2E-14	0 0	0 0
94	Pu-245	W: see Pu-234	2E+3	5E+3	2E-6	6E-9	3E-5	3E-4
94	Pu-245	Y: see Pu-234	0	4E+3	2E-6	6E-9	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
94	Pu-246	W: see Pu-234	4E+2 LLI Wall (4E+2)	3E+2 0	1E-7 0	4E-10 0	0 6E-6	0 6E-5
94	Pu-246	Y: see Pu-234	0	3E+2	1E-7	4E-10	0	0
95	Am-237[2]	W: all compounds	8E+4	3E+5	1E-4	4E-7	1E-3	1E-2
95	Am-238[2]	W: all compounds	4E+4	3E+3 Bone surf (6E+3)	1E-6 0	0 9E-9	5E-4 0	5E-3 0
95	Am-239	W: all compounds	5E+3	1E+4	5E-6	2E-8	7E-5	7E-4
95	Am-240	W: all compounds	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
95	Am-241	W: all compounds	8E-1 Bone Surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12 0	0 2E-14	0 2E-8	0 2E-7
95	Am-242m	W: all compounds	8E-1 Bone Surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12 0	0 2E-14	0 2E-8	0 2E-7
95	Am-242	W: all compounds	4E+3	8E+1 Bone surf (9E+1)	4E-8 0	0 1E-10	5E-5 0	5E-4 0
95	Am-243	W: all compounds	8E-1 Bone Surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12 0	0 2E-14	0 2E-8	0 2E-7
95	Am-244m[2]	W: all compounds	6E+4 St Wall (8E+4)	4E+3 Bone surf (7E+3)	2E-6 0	0 1E-8	0 1E-3	0 1E-2
95	Am-244	W: all compounds	3E+3 0	2E+2 Bone surf (3E+2)	8E-8 0	0 4E-10	4E-5 0	4E-4 0
95	Am-245	W: all compounds	3E+4	8E+4	3E-5	1E-7	4E-4	4E-3
95	Am-246m[2]	W: all compounds	5E+4 St Wall (6E+4)	2E+5 0	8E-5 0	3E-7 0	0 8E-4	0 8E-3
95	Am-246[2]	W: all compounds	3E+4	1E+5	4E-5	1E-7	4E-4	4E-3
96	Cm-238	W: all compounds	2E+4	1E+3	5E-7	2E-9	2E-4	2E-3
96	Cm-240	W: all compounds	6E+1 Bone Surf (8E+1)	6E- Bone surf (6E-1)	2E-10 0	0 9E-13	0 1E-6	0 1E-5
96	Cm-241	W: all compounds	1E+3 0	3E+1 Bone surf (4E+1)	1E-8 0	0 5E-11	2E-5 0	2E-4 0
96	Cm-242	W: all compounds	3E+1 Bone Surf (5E+1)	3E-1 Bone surf (3E-1)	1E-10 0	0 4E-13	0 7E-7	0 7E-6
96	Cm-243	W: all compounds	1E+0 Bone Surf (2E+0)	9E-3 Bone surf (2E-2)	4E-12 0	0 2E-14	0 3E-8	0 3E-7

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
96	Cm-244	W: all compounds	1E+0 Bone Surf (2E+0)	1E-2 Bone surf (2E-2)	5E-12 0	0 3E-14	0 3E-8	0 3E-7
96	Cm-245	W: all compounds	7E-1 Bone Surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12 0	0 2E-14	0 2E-8	0 2E-7
96	Cm-246	W: all compounds	7E-1 Bone Surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	0 2E-14	0 2E-8	0 2E-7
96	Cm-247	W: all compounds	8E-1 Bone Surf (1E+0)	6E-3 Bone surf (1E-2)	3E-102 0	0 2E-14	0 2E-8	0 2E-7
96	Cm-248	W: all compounds	2E-1 Bone Surf (4E-1)	2E-3 Bone surf (3E-3)	7E-13 0	0 4E-15	0 5E-9	0 5E-8
96	Cm-249[2]	W: all compounds	5E+4 0	2E+4 Bone surf (3E+4)	7E-6 0	0 4E-8	7E-4 0	7E-3 0
96	Cm-250	W: all compounds	4E-2 Bone Surf (6E-2)	3E-4 Bone surf (5E-4)	1E-13	0 8E-16	0 9E-10	0 9E-9
97	Bk-245	W: all compounds	2E+3	1E+3	5E-7	2E-9	3E-5	3E-4
97	Bk-246	W: all compounds	3E+3	3E+3	1E-6	4E-9	4E-5	4E-4
97	Bk-247	W: all compounds	5E-1 Bone Surf (1E+0)	4E-3 Bone surf (9E-3)	2E-12 0	0 1E-14	0 2E-8	0 2E-7
97	Bk-249	W: all compounds	2E+2 Bone Surf (5E+2)	2E+0 Bone surf (4E+0)	7E-10 0	0 5E-12	0 6E-6	0 6E-5
97	Bk-250	W: all compounds	9E+3 0	3E+2 Bone surf (7E+2)	1E-7 0	0 1E-9	1E-4 0	1E-3 0
98	Cf-244[2]	W: all compounds except those given for Y	3E+4 St Wall (3E+4)	6E+2 0	2E-7 0	8E-10	0 4E-4	0 4E-3
98	Cf-244[2]	Y: oxides and hydroxides	0	6E+2	2E-7	8E-10	0	0
98	Cf-246	W: see Cf-244	4E+2	9E+0	4E-9	1E-11	5E-6	5E-5
98	Cf-246	Y: see Cf-244	0	9E+0	4E-9	1E-11	0	0
98	Cf-248	W: see Cf-244	8E+0 Bone Surf (2E+1)	6E-2 Bone surf (1E-1)	3E-11 0	0 2E-13	0 2E-7	0 2E-6
98	Cf-248	Y: see Cf-244	0	1E-1	4E-11	1E-13	0	0
98	Cf-249	W: see Cf-244	5E-1 Bone Surf (1E+0)	4E-3 Bone surf (9E-3)	2E-12 0	0 1E-14	0 2E-8	0 2E-7

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
98	Cf-249	Y: see Cf-244	0 0	1E-2 Bone surf (1E-2)	4E-12 0	0 2E-14	0 0	0 0
98	Cf-250	W: see Cf-244	1E+0 Bone Surf (2E+0)	9E-3 Bone surf (2E-2)	4E-12 0	0 3E-14	0 3E-8	0 3E-8
98	Cf-250	Y: see Cf-244	0	3E-2	1E-11	4E-14	0	0
98	Cf-251	W: see Cf-244	5E-1 Bone Surf (1E+0)	4E-3 Bone surf (9E-3)	2E-12	0 1E-14	0 2E-8	0 2E-7
98	Cf-251	Y: see Cf-244	0 0	1E-2 Bone surf (1E-2)	4E-12 0	0 2E-14	0 0	0 0
98	Cf-252	W: see Cf-244	2E+0 Bone Surf (5E+0)	2E-2 Bone surf (4E-2)	8E-12 0	0 5E-14	0 7E-8	0 7E-7
98	Cf-252	Y: see Cf-244	0	3E-2	1E-11	5E-14	0	0
98	Cf-253	W: see Cf-244	2E+2 Bone Surf (4E+2)	2E+0 0	8E-10 0	2E-12 0	0 5E-6	0 5E-4
98	Cf-253	Y: see Cf-244	0	2E+0	7E-10	2E-12	0	0
98	Cf-254	W: see Cf-244	2E+0	2E-2	9E-12	3E-14	3E-8	3E-7
98	Cf-254	Y: see Cf-244	0	2E-2	7E-12	2E-14	0	0
99	Es-250	W: all compounds	4E+4 0	5E+2 Bone surf (12E+3)	2E-7 0	0 2E-9	0 0	0 0
99	Es-251	W: all compounds	7E+3 0	9E+2 Bone surf (1E+3)	4E-7 0	0 2E-9	1E-4 0	1E-3 0
99	Es-253	W: all compounds	2E+2	1E+0	6E-10	2E-12	2E-6	2E-5
99	Es-254m	W: all compounds	3E+2 LLI Wall (3E+2)	1E+1 0	4E-9 0	1E-11 0	0 4E-6	0 4E-5
99	Es-254	W: all compounds	8E+0 Bone Surf (2E+1)	7E-2 Bone surf (1E-1)	3E-11 0	0 2E-13	0 2E-7	0 2E-6
100	Fm-252	W: all compounds	5E+2	1E+1	5E-9	2E-11	6E-6	6E-5
100	Fm-253	W: all compounds	1E+3	1E+1	4E-9	1E-11	1E-5	1E-4
100	Fm-254	W: all compounds	3E+3	9E+1	4E-8	1E-10	4E-5	4E-4
100	Fm-255	W: all compounds	5E+2	2E+1	9E-9	3E-11	7E-6	7E-5
100	Fm-257	W: all compounds	2E+1 Bone Surf (4E+1)	2E-1 Bone surf (2E-1)	7E-11 0	0 3E-13	0 5E-7	0 5E-6
101	Md-257	W: all compounds	7E+3 0	8E+1 Bone surf (9E+1)	4E-8 0	0 1E-10	1E-4 0	1E-3 0
101	Md-258	W: all compounds	3E+1 Bone Surf	2E-1 Bone surf	1E-10	0	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
			(5E+1)	(3E-1)	0	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[1]	0	2E+2	1E-7	1E-9	0	0
---	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		0	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		0	4E-4	2E-13	1E-15	2E-9	2E-8
	If it is known that Ac-227-D and Cm-250-W are not present		0	7E-4	3E-13	0	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
	If, in addition, it is known that Ac-227-W,Y, Th-229-W,Y, Th-230-W,Y, Pa-231-W,Y, Np-237-W, Pu-239-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		0	7E-3	3E-12	0	0	0
	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-233-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-252-W,Y, are not present		0	7E-2	3E-11	0	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
	If, in addition, it is known that Pb-210-D, Bi-210m-W, Po-210-D,W Ra-223-W, Ra-226-W, Ac-225-D,W,Y, Th-227-W,Y, U-230-D,W,Y, C-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		0	7E-1	3E-10	0	0	0
	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, La-138-D, Lu-176-W, Hf-178m-D,W, Bi-210m-D, Ra-224-W, Ra-228-W, Ac-226-D,W,Y, Pa-230-W,Y, 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		0	7E+0	3E-9	0	0	0
	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		0	0	0	1E-14	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
	If, in addition , it is known that Sm-146-W, Gd-148-D, Gd-152-D, Th-228-W,Y, Th-230-W,Y, U-232-Y, U-2333-Y, U-234-Y, U-235-Y, U-236-Y, U-238-Y, U-Nat-Y, Np-236-W, Np-237-W, Pu-236-,Y, 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-247-2, Cf-249-W,Y, Cf-250-W,Y, Cf-251-W,Y, Cf-252-W,Y, and Cf-254-W,Y are not present		0	0	0	1E-13	0	0
	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		0	0	0	1E-12	0	0

			TABLE I Occupational Values			TABLE II Effluent Concentrations		TABLE III Release to Sewers
At. No.	Radionuclide	Class	COL. 1 Oral Ingestion ALI (µCi)	COL. 2 Inhalation ALI (µCi)	COL. 3 Inhalation DAC (µCi/ml)	COL. 1 Air (µCi/ml)	COL. 2 Water (µCi/ml)	Monthly Average Concen-tration (µCi/ml)
	If, in addition it is known that Fe-60, Sr-90, Cd-113m, Cd-113, In-115, I-129, Cs-134, Sm-145, 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, Ex-254, Fm-257, and Md-258 are not present		0	0	0	0	1E-6	1E-5

FOOTNOTES:

1 ”Submersion” means that values given are for submersion in a hemispherical semi-infinite cloud of airborne material.

2 These radionuclieds 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/ml for the listed DAC to account for the submersion dose prospectively, but should use individual monitoring devices or other measuring instruments that measure external exposure to demonstrate compliance with the limits.

3 For soluble mixtures, of U-238, U-234, and U-235 in air, chemical toxicity may be the limiting factor. If the percent by weight)enrichment) or 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/ml, 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 curies/gram U U-depleted

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

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

NOTE:

1. If the identify of each radionuclide in a mixture is known but the concentration of one or more or 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 radionuclieds 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 present from the mixture; or

3. If the mixture of radionuclieds consists of uranium and its daughters in ore dust (10 µm 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 µCi of gross alpha activity from uranium 238, uranium 234, thorium 230, and radium 226 per milliliter of air; 3E-11 µCi of natural uranium of air; or 45 micrograms or natural uranium per cubic meter of air.

4. 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 ration between the concentration present in the mixture and the concentration otherwise established State of Florida Bureau of Radiation Control ALIs, DACs, and Effluent Concentrations, July 1993 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 DAC_A, DAC_B, and DAC_C, respectively, then the concentrations shall be limited so that the following relationship exists:

$$\frac{C_A}{DAC_A} + \frac{C_B}{DAC_B} + \frac{C_C}{DAC_C} \leq 1$$