

TABLE II—BENEFITS OF ALTERNATIVE STANDARDS FOR TAILINGS CONTROL TO THE YEAR 2000 (*)

Alternative standard	Stabilization		Maximum risk(%) of lung cancer (percent reduction)	Radon Control		Water protection longevity (y)
	Chance of misuse	Erosion avoided (y)		Deaths avoided		
				First 100 years	Total	
A.....	Very likely.....	0.....	2 in 10 ⁶ (0).....	0	0	0
B1.....	Likely.....	Hundreds.....	1 in 10 ⁶ (50).....	300	1,000	100
B2.....	Less likely.....	do.....	4 in 10 ⁶ (80).....	480	1,500	100
B3.....	do.....	do.....	1 in 10 ⁶ (85).....	570	2,000	100
C1.....	Likely.....	Thousands.....	1 in 10 ⁶ (50).....	300	Thousands.....	100
C2.....	Less likely.....	do.....	4 in 10 ⁶ (80).....	480	Many thousands.....	Hundreds
C3.....	Unlikely.....	do.....	1 in 10 ⁶ (95).....	570	Tens of thousands.....	1,000
C4.....	Very unlikely.....	Many thousands.....	3 in 10 ⁶ (98.5).....	590	do.....	> 1,000
C5.....	do.....	do.....	1 in 10 ⁶ (99.5).....	597	do.....	> 1,000
D2.....	Unlikely.....	Thousands.....	4 in 10 ⁶ (80).....	480	Several thousands.....	1,000
D3.....	do.....	Many thousands.....	1 in 10 ⁶ (95).....	570	Tens of thousands.....	> 1,000
D4.....	Very unlikely.....	do.....	3 in 10 ⁶ (98.5).....	590	do.....	> 1,000
D6.....	do.....	do.....	1 in 10 ⁶ (99.5).....	597	do.....	> 1,000

(*) These estimates include the benefits resulting from control of 26 existing piles and 9 projected new piles. No credit is taken for any engineering safety factors incorporated to provide the required "reasonable assurance" of conformance.

(*) Lifetime risk of fatal cancer to an individual assumed to be living 600 meters from center of a model tailings pile.

This standard is promulgated on the date signed.

List of Subjects in 40 CFR Part 192

Air pollution control, Radiation protection, Hazardous materials, Uranium, Environmental protection, Hazardous constituents, Groundwater protection, Radon, Radium, and Thorium.

Dated: September 30, 1983.
William D. Ruckelshaus,
Administrator.

In 40 CFR Chapter I, Part 192 is amended by adding Subparts D and E as follows:

PART 192—HEALTH AND ENVIRONMENTAL PROTECTION STANDARDS FOR URANIUM AND THORIUM MILL TAILINGS

Subpart D—Standards for Management of Uranium Byproduct Materials Pursuant to Section 84 of the Atomic Energy Act of 1954, as Amended

- Sec.
- 192.30 Applicability.
- 192.31 Definitions and Cross-references.
- 192.32 Standards.
- 192.33 Corrective Action Programs.
- 192.34 Effective Date.

Subpart E—Standards for Management of Thorium Byproduct Materials Pursuant to Section 84 of the Atomic Energy Act of 1954, as Amended

- 192.40 Applicability.
- 192.41 Provisions.
- 192.42 Substitute Provisions.
- 192.43 Effective Date.

Authority: Sec. 275 of the Atomic Energy Act of 1954, 42 U.S.C. 2022, as added by the

Uranium Mill Tailings Radiation Control Act of 1978, Pub. L. 95-604, as amended.

Subpart D—Standards for Management of Uranium Byproduct Materials Pursuant to Section 84 of the Atomic Energy Act of 1954, as Amended

§ 192.30 Applicability.

This subpart applies to the management of uranium byproduct materials under Section 84 of the Atomic Energy Act of 1954 (henceforth designated "the Act"), as amended, during and following processing of uranium ores, and to restoration of disposal sites following any use of such sites under Section 83(b)(1)(B) of the Act.

§ 192.31 Definitions and Cross-references.

References in this subpart to other parts of the Code of Federal Regulations are to those parts as codified on January 1, 1983.

(a) Unless otherwise indicated in this subpart, all terms shall have the same meaning as in Title II of the Uranium Mill Tailings Radiation Control Act of 1978, Subparts A and B of this part, or Parts 190, 260, 261, and 264 of this chapter. For the purposes of this subpart, the terms "waste," "hazardous waste," and related terms, as used in Parts 260, 261, and 264 of this chapter shall apply to byproduct material.

(b) *Uranium byproduct material* means the tailings or wastes produced by the extraction or concentration of uranium from any ore processed primarily for its source material content. Ore bodies depleted by uranium solution extraction operations and which remain underground do not constitute "byproduct material" for the

purpose of this Subpart.

(c) *Control* means any action to stabilize, inhibit future misuse of, or reduce emissions or effluents from uranium byproduct materials.

(d) *Licensed site* means the area contained within the boundary of a location under the control of persons generating or storing uranium byproduct materials under a license issued pursuant to Section 84 of the Act. For purposes of this subpart, "licensed site" is equivalent to "regulated unit" in Subpart F of Part 264 of this chapter.

(e) *Disposal site* means a site selected pursuant to Section 83 of the Act.

(f) *Disposal area* means the region within the perimeter of an impoundment or pile containing uranium by product materials to which the post-closure requirements of § 192.32(b)(1) of this subpart apply.

(g) *Regulatory agency* means the U.S. Nuclear Regulatory Commission.

(h) *Closure period* means the period of time beginning with the cessation, with respect to a waste impoundment, of uranium ore processing operations and ending with completion of requirements specified under a closure plan.

(i) *Closure plan* means the plan required under § 264.112 of this chapter.

(j) *Existing portion* means that land surface area of an existing surface impoundment on which significant quantities of uranium byproduct materials have been placed prior to promulgation of this standard.

§ 192.32 Standards.

(a) *Standards for application during processing operations and prior to the end of the closure period.* (1) Surface impoundments (except for an existing portion) subject to this subpart must be designed, constructed, and installed in such manner as to conform to the requirements of § 264.221 of this chapter.

except that at sites where the annual precipitation falling on the impoundment and any drainage area contributing surface runoff to the impoundment is less than the annual evaporation from the impoundment, the requirements of § 264.228(a)(2)(iii)(E) referenced in § 264.221 do not apply.

(2) Uranium byproduct materials shall be managed so as to conform to the ground water protection standard in § 264.92 of this chapter, except that for the purposes of this subpart:

(i) To the list of hazardous constituents referenced in § 264.93 of this chapter are added the chemical elements molybdenum and uranium,
 (ii) To the concentration limits provided in Table 1 of § 264.94 of this chapter are added the radioactivity limits in Table A of this subpart,

(iii) Detection monitoring programs required under § 264.98 to establish the standards required under § 264.92 shall be completed within one (1) year of promulgation,

(iv) The regulatory agency may establish alternate concentration limits (to be satisfied at the point of compliance specified under § 264.95) under the criteria of § 264.94(b), provided that, after considering practicable corrective actions, these limits are as low as reasonably achievable, and that, in any case, the standards of § 264.94(a) are satisfied at all points at a greater distance than 500 meters from the edge of the disposal area and/or outside the site boundary, and

(v) The functions and responsibilities designated in Part 264 of this chapter as those of the "Regional Administrator" with respect to "facility permits" shall be carried out by the regulatory agency, except that exemptions of hazardous constituents under § 264.93 (b) and (c) of this chapter and alternate concentration limits established under § 264.94 (b) and (c) of this chapter (except as otherwise provided in § 192.32(a)(2)(iv)) shall not be effective until EPA has concurred therein.

(3) Uranium byproduct materials shall be managed so as to conform to the provisions of:

(a) Part 190 of this chapter, "Environmental Radiation Protection Standards for Nuclear Power Operations" and

(b) Part 440 of this chapter, "Ore Mining and Dressing Point Source Category: Effluent Limitations Guidelines and New Source Performance Standards, Subpart C, Uranium, Radium, and Vanadium Ores, Subcategory."

(4) The regulatory agency, in conformity with Federal Radiation Protection Guidance (FR, May 18, 1960, pgs. 4402-3), shall make every effort to maintain radiation doses from radon emissions from surface impoundments of uranium byproduct materials as far below the Federal Radiation Protection Guides as is practicable at each licensed site.

(b) *Standards for application after the closure period.* At the end of the closure period:

(1) Disposal areas shall each comply with the closure performance standard in § 264.111 of this chapter with respect to nonradiological hazards and shall be designed ¹ to provide reasonable assurance of control of radiological hazards to

(i) Be effective for one thousand years, to the extent reasonably achievable, and, in any case, for at least 200 years, and,

(ii) Limit releases of radon-222 from uranium byproduct materials to the atmosphere so as to not exceed an average ² release rate of 20 picocuries per square meter per second (pCi/m²s).

(2) The requirements of Section 192.32(b)(1) shall not apply to any portion of a licensed and/or disposal site which contains a concentration of radium-226 in land, averaged over areas of 100 square meters, which, as a result of uranium byproduct material, does not exceed the background level by more than:

(i) 5 picocuries per gram (pCi/g), averaged over the first 15 centimeters (cm) below the surface, and

(ii) 15 pCi/g, averaged over 15 cm thick layers more than 15 cm below the surface.

§ 192.33 Corrective Action Programs.

If the ground water standards established under provisions of Section 192.32(a)(2) are exceeded at any licensed site, a corrective action program as specified in 264.100 of this chapter shall be put into operation as soon as is practicable, and in no event later than eighteen (18) months after a finding of exceedance.

¹ The standard applies to design. Monitoring for radon-222 after installation of an appropriately designed cover is not required.

² This average shall apply to the entire surface of each disposal area over periods of at least one year, but short compared to 100 years. Radon will come from both uranium byproduct materials and from covering materials. Radon emissions from covering materials should be estimated as part of developing a closure plan for each site. The standard, however, applies only to emissions from uranium byproduct materials to the atmosphere.

§ 192.34 Effective date.

Subpart D shall be effective December 6, 1983.

TABLE A

	pCi/liter
Combined radium-226 and radium-228.....	5
Gross alpha-particle activity (excluding radon and uranium).....	15

Subpart E—Standards for Management of Thorium Byproduct Materials Pursuant to Section 84 of the Atomic Energy Act of 1954, as Amended

§ 192.40 Applicability.

This subpart applies to the management of thorium byproduct materials under Section 84 of the Atomic Energy Act of 1954, as amended, during and following processing of thorium ores, and to restoration of disposal sites following any use of such sites under Section 83(b)(1)(B) of the Act.

§ 192.41 Provisions.

The provisions of Subpart D of this part, including §§ 192.31, 192.32, and 192.33, shall apply to thorium byproduct material and:

(a) Provisions applicable to the element uranium shall also apply to the element thorium;

(b) Provisions applicable to radon-222 shall also apply to radon-220; and

(c) Provisions applicable to radium-226 shall also apply to radium-228.

(d) Operations covered under § 192.32(a) shall be conducted in such a manner as to provide reasonable assurance that the annual dose equivalent does not exceed 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ of any member of the public as a result of exposures to the planned discharge of radioactive materials, radon-220 and its daughters excepted, to the general environment.

§ 192.42 Substitute provisions.

The regulatory agency may, with the concurrence of EPA, substitute for any provisions of § 192.41 of this subpart alternative provisions it deems more practical that will provide at least an equivalent level of protection for human health and the environment.

§ 192.43 Effective date.

Subpart E shall be effective December 6, 1983.

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