

residential properties under the Formerly Utilized Sites Remedial Action Program (FUSRAP) and are also found at some Superfund sites. Pre-UMTRCA material has generally been disposed in bulk and shipped by rail car to licensed or permitted disposal facilities. Most is relatively low-activity, because it resulted from the extraction of uranium or thorium from ore material. It has been disposed of at a limited number of RCRA Subtitle C disposal facilities having State permits that allow acceptance of low concentrations of certain radioactive materials (equating generally to "unimportant quantities" as defined by NRC). Materials with concentrations exceeding State RCRA permit conditions have been disposed in NRC or Agreement State licensed facilities.

3. TENORM

"Technologically Enhanced" Naturally Occurring Radioactive Material is material (whether as a waste or product) in which the natural radioactivity has been concentrated or the potential to expose humans has been increased, generally through human activity (TENORM does not include material in its natural setting, such as soil or rocks that emit "background" radiation). TENORM waste can take a variety of forms, including soil, pipe scale, sludges from water treatment, and residues from processing of mineral ores. As the name suggests, some TENORM wastes are highly radioactive because the processes that produce them tend to concentrate the radionuclides. A number of RCRA Subtitle C disposal facilities accept certain types of TENORM waste (e.g., commercial facilities in California, Idaho, and Texas). Only wastes that meet the radionuclide concentration limits derived for the RCRA-C disposal option described here would be candidates for disposal under that approach. Higher-concentration TENORM wastes would not be included.

4. Low-Activity LLRW/Source Material Exempted by NRC

Some wastes under the AEA are exempted from regulation. In particular, NRC deferred "unimportant quantities" of source material containing less than 0.05 % by weight uranium or thorium, from its regulation. Certain consumer products and some mining wastes may contain uranium or thorium originating from ores not meeting the 0.05% criterion. For example, zircon contains minute quantities of uranium and thorium and is used as a glaze for ceramics and metal molds. Thorium is

used to make a more dense glass for prescription glasses. Uranium or thorium may be a side product emanating from certain phosphate extraction operations or rare earth mining.

Low-level radioactive waste that is not mixed waste currently has several disposal options, as noted in section II.H.3 above. However, generators have limited access to one of those facilities, and access to another facility will be limited in a few years. It might be advantageous to provide additional disposal options for low-activity LLRW that may not require the extensive radiation controls of 10 CFR part 61.

As previously noted, NRC held a workshop on May 21–22, 2003, to discuss alternatives for safely controlling solid materials that have no, or very small amounts of, radioactivity. One alternative for that material is placement in a RCRA Subtitle C or RCRA Subtitle D disposal facility. Therefore, some of the issues discussed in that workshop may be similar to some of the approaches discussed in this ANPR. Background materials (including the information collection efforts conducted by NRC) and current activities (including recent documents issued and plans for stakeholder input), as well as transcripts of the workshop, can be found at http://ruleforum.llnl.gov/cgi-bin/rulemake?source=SM_RFC&st=ipcr.

B. What Legal and Regulatory Issues Might Affect Applying the RCRA–C Disposal Concept to Other Low-Activity Radioactive Wastes?

1. Lack of Federal Regulation

As noted above, we believe it is reasonable, given the similarity in radiological characteristics and general similarity in physical attributes (i.e., large volume), to evaluate the applicability of our low-activity mixed waste disposal concept to these other low-activity radioactive wastes. To the extent that such a regulation could cover a large percentage of low-activity pre-UMTRCA byproduct material and TENORM wastes, clarity and consistency in regulation would be achieved for wastes now addressed by a patchwork of regulations. Some of these waste streams are not currently regulated by Federal agencies (with the exception of FUSRAP or other waste generated from CERCLA site cleanups, where the Record of Decision specifies acceptable disposal), and there is no uniform State approach to regulating these wastes. Unfortunately, it is not clear at this time what single Federal authority might be invoked. For

example, NRC has stated that pre-UMTRCA byproduct material and TENORM wastes do not fall under the purview of NRC's AEA authority. (See, e.g., "Issuance of Director's Decision Under 10 CFR 2.206," 65 FR 79909, December 20, 2000.) The logical implication of NRC's position is that the exclusion of "source, special nuclear, and by-product material as defined by the Atomic Energy Act of 1954" from the definition of "solid waste" under RCRA does not apply to pre-UMTRCA byproduct material that does not otherwise contain source material or would otherwise fall within NRC's AEA authority (i.e., pre-UMTRCA byproduct material would be identical to TENORM in that regard). (See 40 CFR 261.4(a)(4).) Thus, EPA could perhaps use its RCRA authority to address these waste streams. However, while these wastes likely fall under RCRA jurisdiction by virtue of being "solid waste" (if not subject to AEA), there is no clear mechanism to regulate them under Subtitle C. There is no RCRA characteristic for radioactivity, and many mineral processing wastes are specifically excluded from regulation as hazardous (40 CFR 261.4(b), "solid wastes which are not hazardous wastes"). While non-hazardous waste can be disposed of in Subtitle C facilities, disposal standards associated with non-RCRA hazardous properties of the waste (in this case, radioactivity) would generally be the purview of State authorities.

2. How They Are Regulated Now

a. *Pre-UMTRCA Byproduct Material (FUSRAP)*. Because concerns over disposal of pre-UMTRCA byproduct material have been most closely associated with FUSRAP, we are focusing our attention on that program. FUSRAP was created to evaluate and remediate wastes generated as a result of activities of the Manhattan Engineer District and the Atomic Energy Commission beginning in the 1940s through the 1960s. These activities were related to the development of nuclear weapons. These wastes were first managed by the Atomic Energy Commission, then, in 1975 by the Energy Research and Development Administration, until 1997 by the Department of Energy, and since 1997 by the U.S. Army Corps of Engineers (USACE). USACE now manages such waste under CERCLA and internal guidance directives.

There has been some discussion of the legal authority under which such wastes should be managed. (See "Corps of Engineers" Progress in Cleaning Up 22 Nuclear Sites," GAO/RCED–99–48,