

rulemakings for the Title I and Title II sites).

These regulations require installation of monitoring systems upgradient of the point of compliance (i.e., in the uppermost aquifer upgradient of the edge of the tailings disposal site) or at some other point adequate to determine background levels of any listed constituents that occur naturally at the site. The disposal should be designed to control, to the extent reasonably achievable for 1000 years and, in any case, for at least 200 years, all listed constituents identified in residual radioactive materials at the site to levels for each constituent derived in accordance with § 192.02(c)(3). Accordingly, the elements of the groundwater protection standard to be specified for each disposal site include a list of relevant constituents, the concentration limits for each such constituent, and the compliance point.

These standards provide for consideration of ACLs if the disposal cannot reasonably be designed to assure conformance to background levels (or those in Table 1) over the required term. ACLs can be granted provided that, after considering practicable corrective actions, a determination can be made that it satisfies the values given by implementing the conditions for ACLs under § 192.02(c)(3)(ii).

The standards for Title II sites require use of a liner under new tailings piles or lateral extensions of existing piles. These standards for remedial action at the inactive Title I sites do not contain a similar provision. EPA assumes that the inactive piles will not need to be enlarged. Several, however, will be relocated. However, unlike tailings at the Title II sites, which generally may contain large amounts of process water, the inactive tailings contain little or no free water. Such tailings, if properly located and stabilized with a cover adequate to ensure an unsaturated zone, are not likely to require a liner in order to protect groundwater.

However, a liner would be needed for an initial drying-out period to meet these groundwater standards if a situation arose where the tailings initially contained water above the level of specific retention. For example, tailings to which water was added to facilitate their removal to a new site (i.e., through slurring), or for compaction during disposal. (It is anticipated that piles will never be moved to areas of high precipitation or situated within a zone of water table fluctuation.) Section 192.20(a)(3) requires the remedial plan to address how any such excess water in tailings would be dealt with. In such

circumstances it will normally be necessary to use a liner or equivalent to assure that groundwater will not be contaminated while the moisture level in the tailings adjusts to its long-term equilibrium value. Currently, however, DOE plans do not include slurring any tailings to move them to new locations. Further, for all but two sites, of which one has already been closed (Canonsburg) and at the other (Falls City) disposal actions are well advanced, the tailings are located in arid areas where annual precipitation is low.

Disposal designs which prevent migration of listed constituents in the groundwater for only a short period of time would not provide appropriate protection. Such approaches simply defer adverse groundwater effects. Therefore, measures which only modify the gradient in an aquifer or create barriers (e.g., slurry walls) would not of themselves provide an adequate disposal.

Section 192.02(d) requires that a site be closed in a manner that minimizes further maintenance. Depending on the physical properties of the sites, candidate disposal systems, and the effects of natural processes over time, measures required to satisfy these standards will vary from site to site. Actual site data, computational models, and prevalent expert judgment may be used in deciding that proposed measures will satisfy the standards. Under the provisions of Section 108(a) of UMTRCA, the adequacy of these judgments is determined by the NRC.

For the post-disposal period, a groundwater monitoring plan is required to be developed and implemented. The plan will require monitoring for a period of time deemed sufficient to verify, with reasonable assurance, the adequacy of the disposal to achieve its design objectives for containment of listed constituents. EPA expects this period of time to be comparable, in most cases, to that required under § 264.117 of Title 40 for waste sites regulated under RCRA (i.e., a few decades). However, there may be situations where longer or shorter periods are appropriate. Installation and commencement of the monitoring required under § 192.03 will satisfy this EPA standard, for the purposes of licensing of the site by the NRC.

With regard to this monitoring, UMTRCA provides that, after remediation is completed and custody is transferred to a Federal agency, NRC may require that the Federal agency having custody of each remediated tailings site “\* \* \* undertake such monitoring, maintenance, and emergency measures \* \* \* and other

actions as [NRC] deems necessary to comply with [EPA’s standards]” (UMTRCA, Section 104(f)(2)). Although it is not intended that routine monitoring be carried out as a requirement for conformance to these standards for the 200- to 1000-year period over which the disposal is designed to be effective, NRC may require more extensive monitoring to comply with EPA’s standards, as NRC deems necessary under § 104(f)(2) of the Act.

During the post-disposal period, if listed constituents from a disposal site are detected in excess of the groundwater standards, these regulations require a corrective action program designed to bring the disposal and the groundwater into compliance with the provisions of § 192.02(c)(3) and subpart B, respectively. In designing such a corrective action program, the implementing agencies may consider all of the provisions available under subparts A, B, and C. A modification of the monitoring program sufficient to demonstrate that the corrective measures will be successful is also required. In designing future corrective action programs, the implementing agencies may also wish to consider the guidance provided by new regulations now being developed for the RCRA program that will be proposed as subpart S to Title 40. However, the requirements of Part 192 will still govern regulatory determinations of acceptability.

#### Additional Regulated Constituents

For the purpose of this regulation only, the Agency is regulating, in addition to the hazardous constituents referenced by § 264.93, molybdenum, nitrate, combined radium-226 and radium-228, and combined uranium-234 and uranium-238. Molybdenum, radium, and uranium were addressed by the Title II standards because these radioactive and/or toxic constituents are found in high concentrations at many mill tailings sites. These regulations add numerical limits for these constituents. Nitrate was added because it had been identified in concentrations far in excess of drinking water standards in groundwater at a number of the inactive sites.

The concentration limit for molybdenum in groundwater from uranium tailings is set at 0.1 milligram per liter. This is the value of the provisional Adjusted Acceptable Daily Intake (AADI) for drinking water developed by EPA under the Safe Drinking Water Act (50 FR 46958). The Agency has established neither a maximum concentration limit goal