National Academies Report: Base LAW Regulation on Risk, Not Origin

Regulation of low-activity radioactive wastes (LAW) should be based on their radiological risks, not their origin, according to a report by the National Academies' National Research Council. Currently, such wastes are regulated based on the industry that produces them. The report, "Improving the Regulation and Management of Low-Activity Radioactive Wastes," was issued in March.

LAW is the least radioactive of Class A low-level radioactive wastes. It is produced in hospitals, nuclear utilities, research institutions using nuclear materials, as well as in mining and other industries. LAW from nuclear utilities and other industries licensed by the U.S. Nuclear Regulatory Commission must be disposed of in LLW disposal facilities, even though these wastes may be less radioactive than wastes from other industries that are allowed to use local landfills for disposal, the report noted.

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The U.S. Environmental Protection Agency is looking at a rulemaking that would allow LAW to be disposed of at hazardous waste landfills.

The report recommends that regulators work together to develop integrated strategies to implement risk-informed regulation of LAW. Coordinated leadership by federal agencies will be essential, the report said. Developing an implementation strategy and instituting it may take several years.

The report also recommends that government agencies improve their efforts to gather knowledge and opinions from stakeholders, and that federal and state agencies work to resolve inconsistencies in LAW management.

Finally, the report suggested that the U.S. continue to collaborate with international institutions responsible for controlling LAW, and encouraged the U.S. to give greater consideration of international standards as a basis for regulation. The International Atomic Energy Agency, the report noted, classifies waste based on radiological properties, rather than origins.

The report can be found on the National Academies Press website at http://fermat.nap.edu/catalog/11595.html.

After Nearly Nine Years, PFS Gets NRC License for Spent Fuel Storage Facility

Private Fuel Storage LLC (PFS), the nuclear utility consortium that wants to build an away-from-reactor spent fuel storage installation in the Utah desert on Tribal lands, moved one step closer to realizing its goal on February 21, when the U.S. Nuclear Regulatory Commission issued the company a 20-year license for the site.

The license does not authorize PFS to begin construction of the facility. Instead, the company must first obtain adequate funding for the project, and must also obtain necessary approvals from other agencies, including the Bureau of Land Management, the Bureau of Indian Affairs, and the Surface Transportation Board.

Still, the license represents a major step forward for the company, which maintains that once all outstanding litigation is resolved and once contracts with customers are received, it could get the facility up and running in three years' time.

Whether any utility will want to use the site remains to be seen, however. The utilities in the consortium had agreed to remain with the concern through the licensing phase; now that the license has been issued, some of these utilities may wish to opt out of the consortium, or may simply choose not to use its services. PFS has stated that the site is open to all U.S. nuclear utilities, and the company has even offered (in a December 13, 2005, letter to Congress that became public knowledge only this March) to store spent fuel there for the U.S. Department of Energy, should the DOE need access to an interim storage facility. (The DOE responded in congressional hearings that at this time, it is interested only in opening and operating the Yucca Mountain permanent repository.)

Sandia Selected as Yucca Mountain Lead Laboratory

The U.S. Department of Energy's Office of Civilian Radioactive Waste Management has selected Sandia National Laboratories to be its lead laboratory to integrate repository science work for the Yucca Mountain Project. That work is currently overseen by OCRWM's contractor Bechtel SAIC, which will be working with Sandia on the transition during the remainder of this year.

Sandia was selected because of its experience with repository science issues, the DOE said. Sandia served as scientific advisor to the Waste Isolation Pilot Plant project. The selection builds on the DOE's successful experience at the WIPP, where a single national laboratory coordinated "post-closure" science work while a contractor performed work on the design of "pre-closure" or above-ground facilities. Bechtel SAIC will continue to be responsible for above-ground design efforts, while Sandia will concentrate on integrating all post-closure science.

For more updates on Yucca Mountain, see "What's Next for Yucca Mountain," this issue, page 12.

● In a related move, the DOE has designated the Savannah River National Laboratory as the DOE Office of Environmental Management's corporate laboratory. As the EM corporate laboratory, SRNL will apply its unique expertise and applied technology capabilities to assist DOE sites across the nation in meeting cleanup requirements. The new designation recognizes SRNL as a key resource for EM and its programs at sites around the country, and gives the laboratory a new mandate to provide targeted technical assistance and technology solutions for cleanup efforts at DOE sites. The EM program is involved in projects to stabilize high-level radioactive waste, clean up groundwater and soils, deactivate and decommission legacy facilities, and stabilize and dispose of transuranic, plutonium, and spent fuel wastes.

D&D Updates

● Demolition has begun at Hanford's N Reactor. Dismantling of the 15 500 feet of pipe that once carried steam from the reactor to the Hanford Generating Plant began in mid-February. Once that is completed, work will begin on dismantling about 40 outbuildings and other facilities at the N Reactor complex. Cocooning work on the reactor should begin in 2007.

● Soil cleanup has been completed in the 56 acres in the heart of the Fernald site's former uranium production area. Prior to cleanup, this area contained the buildings used to produce 500 million pounds of uranium metal between 1952 and 1989, and also contained some of the site's most contaminated soils. Pre-remediation levels of uranium contamination ranged from just above the cleanup target level of 20 parts per million to 76 400 ppm, with flashes of uranium product reaching levels of 850 000 ppm. Not only did the project meet the 20 ppm standard, but in most cases, the soil is closer to the average background uranium concentration of 4–6 ppm typically found in the Ohio region around Fernald.

● In mid-January, the U.S. Department of Energy issued its plan for the treatment and stabilization of low-activity salt waste at the Savannah River Site. The approximately 36 million gallons of salt waste, stored in 49 underground tanks, is left over from plutonium production during the Cold War. In the first phase of operations, beginning this year, SRS will treat some of its lowest activity salt waste through a process involving deliquification, dissolution, and adjustment of the waste. Beginning in 2007, SRS will process some additional salt waste having a slightly higher activity level using an Actinide Removal Process and a Modular Caustic Extraction Unit. In a second and longer term phase, high-capacity salt processing will begin in 2011, with the startup of the Salt Waste Processing Facility. This involves the separation and processing of the remaining (and majority) of the salt waste, augmented as necessary by continued use of the Actinide Removal Process.

● Truck drivers at Hanford's River Corridor Closure Project recently logged their 10 millionth mile safely transporting more than 6.3 million tons of contaminated materials for disposal at Hanford. More than 170 truckloads of contaminated soil and debris are transported each day from across the 586-square-mile site to the Environmental Restoration Disposal Facility for permanent disposal. Each truck weighs 40 tons when fully loaded. The material transported come from dozens of demolished buildings, hundreds of remediated waste sites that have been cleaned up, and five nuclear reactors placed in interim safe storage.

Spent Fuel/HLW Transport: National Academies Report Says It's Safe

Spent nuclear fuel and high-level waste can be safely transported in the United States, said a study released in early February by the National Academies. The report, "Going the Distance? The Safe Transport of Spent Nuclear Fuel and High-Level Waste in the United States," is the result of a study conducted by the National Academies' Committee on Transportation of Radioactive Waste.

The bottom line messages of the report are (1) the committee could identify "no fundamental technical barriers" to the safe transport of spent fuel and HLW in the United States; (2) there are a number of social and institutional challenges to the successful initial shipment of large-quantity shipping programs, as might be involved once Yucca Mountain is operational; (3) "malevolent acts" against such shipments are a major technical and societal concern (the committee was unable to perform an in-depth examination of this topic because of security clearance issues among the members); and (4) an independent examination of transportation security should be carried out prior to the commencement of large-quantity shipments to a federal repository or to interim storage.

On waste package performance, the study noted that current international standards and U.S. regulations are adequate to ensure package containment effectiveness over a wide range of transport conditions. The report expressed concern, however, with extreme accident conditions involving very-long-duration fires that could compromise containment effectiveness, and recommended that the U.S. Nuclear Regulatory Commission undertake additional analyses of very-long-duration fire scenarios that bound expected real-world conditions, and implement operational controls and restrictions as necessary to reduce the chances that such conditions might be encountered in service.

The committee endorsed full-scale testing for determining how packages will perform under both regulatory and credible extra-regulatory conditions, and recommended that full-scale testing continue to be used as part of an integrated testing program to validate package performance. It specifically noted that full-scale testing of packages to destruction should not be required.

In its section on improving spent fuel and HLW transport, the report strongly endorsed the U.S. Department of Energy's decisions to ship such materials to a federal repository mostly by rail using dedicated trains, and it recommended that the DOE fully implement these decisions before commencing any large-quantity shipments to the repository. It also recommended that the DOE examine the feasibility of further reducing the need for cross-country truck shipments.

The report recommended that the DOE negotiate with commercial spent fuel owners (utilities) to ship older fuel first, and should these negotiations prove ineffective, it should consider asking Congress to invoke legislative remedies. And it recommended that the DOE initiate transport to a federal repository through a pilot program involving relatively short, logistically simple movements of older fuel from shutdown reactors.

"Malevolent acts" against such shipments are a major technical and societal concern (the committee was unable to perform an in-depth examination of this topic because of security clearance issues among the members).

The report can be read at http://fermat.nap.edu/catalog/11538.html. The final printed version of the report is expected to be available in June.

International Briefs

● A landmark nuclear waste policy act for France was submitted to Parliament in late March, with debate scheduled to begin in April. The legislation establishes deep geologic disposal as the reference solution for management of high-level and long-lived radioactive wastes, and proposes licensing a "reversible" repository by 2015, with operations targeted for 2025. No site has been designated for the repository, although the only current candidate site is

in a clay formation near Bure in eastern France. The legislation does not require a second candidate site.

● Dismantlement of nuclear submarines in northwest Russia is expected to be completed by 2010. There are 71 nuclear subs with 130 reactor cores still to be dismantled; 32 have already been dismantled.

● Most people in Spain's "dialogue group" on the future of nuclear energy in the country favor establishing a central interim storage facility for spent nuclear fuel, as proposed by the state waste agency Enresa. They also agreed that a process must be developed to select candidate sites from interested localities. An underground repository should not be needed for another 40 or 50 years, the group felt.

● In early March, the Superior Administrative Court in the German state of Lower Saxony dismissed all claims filed by intervenors since 2002 against the operation of the former Konrad iron mine as a repository for low- and intermediate-level radioactive wastes. The nuclear industry in Germany declared the verdict to be the final legal hurdle standing in the way of beginning waste disposal at the facility, but because of potential appeals, the government has said it will be "weeks" before the decision can be considered final. Waste producers have spent close to a billion dollars on the facility since 1982.