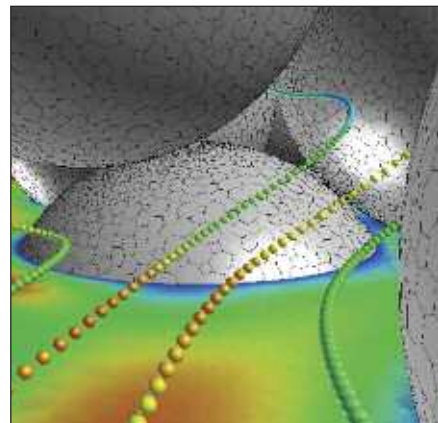


Radwaste Solutions

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Would you believe the gray spheres are grains of sand? Check out the article beginning on page 30 to learn what else is going on here.

Features

Cover Stories—Groundwater Contamination

- 3-D Imaging Gives Hanford Scientists a Better View of Waste Plumes** 14
Surface geophysical exploration technology has been around since the 1970s but was never widely used because of the lack of computing power. Now, all that has changed.
- The Industry Ground Water Protection Initiative: A Watershed Moment** 24
The Ground Water Protection Initiative is an industry-developed voluntary program designed to improve utilities' management of inadvertent releases of radioactive substances to soil and/or water.
- Six Science Secrets of the Subsurface** 30
Today, former nuclear weapons sites in the United States contain 1.7 trillion gallons of contaminated groundwater, an amount equal to about four times the daily U.S. water consumption. In addition, the sites hold an estimated 40 million cubic meters of contaminated soil and debris.

Other Features

- Milestone Reached at Sellafield Primary Separation Plant Decommissioning Project** 36
Work to remove the material of the least radioactive cell of four—the Highly Active South Outer—began in 2006 as part of a pilot program for future decommissioning activities on the Sellafield site.
- GAO: Opening Yucca Mountain Cheaper than Storage Alternatives** 40
Using the Yucca Mountain repository would cost somewhere between \$41 billion and \$67 billion. Sounds like a lot of money—until you compare it to the alternatives.

Waste Management 2009 Best Papers

- Shipping Spent Nuclear Fuel from the Czech Republic's NRI to the Russian Federation for Reprocessing** 48
Preparing and implementing a shipment of HEU spent fuel requires solving very demanding problems requiring the cooperation of a number of organizations.
- Characterizing Solids in Residual Wastes from Single-Shell Tanks at the Hanford Site** 64
Because of the complexity of waste streams and tank-to-tank transfers from Hanford Site operations, contaminant source-term release models for wastes expected to be left in Hanford underground storage tanks cannot be developed by assuming analogies to the limited information available from tank waste simulant studies or from analyses of sludge and supernatant samples taken prior to final waste retrieval.

Meeting Report

- Dry Cask Storage, Stimulus Dollars, Multiple Agency Regulation . . . and TMI Redux** 76
A report from the American Nuclear Society's 2009 Winter Meeting, held November 15–19, 2009, in Washington, D.C.

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On the Cover:

For the first time, scientists at the Hanford Site are able to obtain three-dimensional images of radioactive and chemical waste plumes in the soil using a technique known as surface geophysical exploration. Articles beginning on pages 14, 24, and 30 look at various aspects of groundwater contamination from nuclear activities.

Next Issue:

Low-Level Waste