

**The United States Department of Energy  
announces the availability for public review of a document  
relating to the investigation of the Brookhaven National Laboratory  
Inactive Hazardous Waste Site, Brookhaven Graphite Research Reactor**

The U.S. Department of Energy (DOE) announces the availability for public comment of a Proposed Remedial Action Plan (Proposed Plan or PRAP) relating to the environmental restoration activities at Brookhaven National Laboratory (BNL). The *Proposed Plan for the Brookhaven Graphite Research Reactor* and an accompanying *Feasibility Study* are available for review at the libraries listed below. These documents describe the cleanup alternatives and the proposed cleanup action for the Brookhaven Graphite Research Reactor (BGRR).

The BGRR, which was the first reactor in the U.S. built solely to perform scientific experiments into the peaceful uses of the atom, operated from 1950 to 1968. The BGRR complex consists of several structures and systems that were used to operate and maintain the research reactor. Some parts of the equipment and structures are still contaminated.

During its operation, the BGRR used radioactive fuel to create the chain reactions necessary for research to be performed. The chain reactions occurred within the graphite "pile," which is located inside Building 701. A thick biological shield, which minimized radiation within the building, surrounds the pile.

As the result of its past operations, the BGRR currently contains approximately 8,047 Curies of radioactive contaminants, including hydrogen-3 (tritium) and carbon-14, and fission products cesium-137 and strontium-90. The pile and biological shield contain

over 99 percent of the remaining radiological inventory in the BGRR complex. Interim cleanup actions, completed or currently under way, account for the removal of about 47 Curies of contaminants.

Four cleanup alternatives have been developed. All alternatives include the completion of actions that are currently underway or planned, followed by long-term response actions, including routine inspection and surveillance of the BGRR facility, scheduled upkeep and maintenance of Building 701, infiltration management, groundwater monitoring, and institutional controls.

**Alternative A** relies upon actions already taken and additional actions now in progress or planned. This alternative depends upon infiltration management, surveillance and monitoring, and institutional controls to manage the residual radioactive materials, including the reactor pile and biological shield.

As part of DOE's overall institutional controls, land-use restrictions would help ensure that the pockets of contaminated sub-surface soil would not be brought to the surface, thus eliminating the chance of direct radiation exposure. If these soils were to become accessible they would be managed based on the actual distribution, depth and concentration of the residual radioactive materials encountered.

More than 99 percent of the contamination would remain on the Laboratory's site.

**Alternative B** includes not only the scope within Alternative A, but also the removal of the pile and biological shield.

As in Alternative A, as part of DOE's overall institutional controls, land-use restrictions would ensure that the remaining pockets of contaminated soil would not be brought to the surface, thus eliminating the chance of direct radiation exposure. If these soils were to become accessible then they would be managed based on the actual distribution, depth and concentration of the residual radioactive materials encountered. Institutional controls can be effective in managing this residual contamination.

**Alternative C** includes all of the work within Alternative B, plus the removal of accessible pockets of contaminated soil and the canal structure. This alternative would remove a total of 8,093 Curies from the BGRR complex, including all of the long-lived radioisotopes.

Land-use restrictions would ensure that the remaining inaccessible pockets of contaminated soil would not be brought to the surface, thus eliminating the chance of direct radiation exposure. If these soils were to become accessible, perhaps by the removal of the buildings, then they would be managed based on the actual distribution, depth and concentration of the residual radioactive materials encountered.

Approximately one and a half Curies, which are predominantly cesium-137 and strontium-90, would remain in contaminated structures below Building 701 and within the below-ground ducts. These contaminants are bound within concrete, embedded within steel, or

located within areas that are currently inaccessible and are not considered a groundwater-contamination source term.

**Alternative D** includes the complete removal of the BGRR structure, systems, and components, plus the removal of underlying soils necessary to reach the soil-cleanup levels for industrial land use. Because of the potential for residual radioactivity within deep soils, long-term response actions would include groundwater monitoring and surveillance to ensure the effectiveness of this remedy.

**Alternative C** is the preferred cleanup remedy because it represents the best balance of the EPA's criteria for selecting remedies under CERCLA and it best addresses the overall protection of human health and the environment.

This alternative results in the removal of the pile, the biological shield, and contaminants that pose a threat of exposure through excavation of soils and potential migration to groundwater. It significantly reduces the threat to human health and the environment at a relatively small increase in the cost and schedule compared to only removing the pile and biological shield.

The public is invited to review and comment on the Proposed Plan. The 30-day public comment period for this document is from August 2, 2004, to September 3, 2004. Written comments may be e-mailed to [telIDOE@bnl.gov](mailto:telIDOE@bnl.gov), faxed to 631-344-3444, or mailed to:

Michael D. Holland, Manager  
U.S. Department of Energy  
Brookhaven Site Office  
Bldg. 464

Attn: BGRR  
Brookhaven National Laboratory  
P.O. Box 5000  
Upton, NY 11973-5000

Information sessions will be held on August 17, 2004, from 2 to 4 p.m. and on August 19, 2004, from 7 to 9 p.m., both in Berkner Hall at Brookhaven Lab. A public meeting will be held on August 24, 2004, from 7 to 9 p.m., also in Brookhaven Lab's Berkner Hall.

The BGRR is being addressed as part of a nationwide effort by the U.S. Department of Energy to clean up legacy waste.

Located in Upton, New York, Brookhaven Lab is classified as an Inactive Hazardous Waste Site by the New York State Department of Environmental Conservation. Brookhaven Lab is on the U.S. Environmental Protection Agency's National Priorities List.

The *Proposed Plan for the Brookhaven Graphite Research Reactor* and the *Feasibility Study* are available for review

at <http://www.bnl.gov/bgrr> on the World Wide Web and at the following libraries:

Mastics-Moriches-Shirley Public Library  
301 William Floyd Parkway  
Shirley NY 11967  
(631) 399-1511

BNL Research Library  
Building 477A  
Upton NY 11973  
(631) 344-3483

U.S. EPA, Region II Library  
290 Broadway  
New York NY 10007  
(212) 637-4296

***For more information, please contact:***

Jen Clodius  
Brookhaven National Laboratory  
(631) 344-2489  
clodius@bnl.gov

John Carter  
U.S. Department of Energy  
(631) 344-5195  
jcarter@bnl.gov