SRNL SAVANNAH RIVER NATIONAL LABORATORY
News from the Savannah River National Laboratory

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Journal Focuses on SRNL, Chernobyl Laboratory Collaboration

AIKEN, S.C. (September 22, 2011) – Collaborative work between the U.S. Department of Energy's Savannah River National Laboratory and the Chernobyl Center's International Radioecology Laboratory (IRL) has led to a special issue of the *Health Physics Journal* entitled, "Radiation Monitoring and Radioecology Research in the Chernobyl Exclusion Zone – 25 Years After the Accident," (Vol. 101, No. 4). The journal is found online at http://journals.lww.com/health-physics/pages/default.aspx

Under the auspices of the DOE Office of Environmental Management's (EM) International Program, SRNL and the Ukraine's IRL have collaborated on various research projects, making use of the wealth of knowledge to be gained from research in the region impacted by the 1986 accident at the Chernobyl Nuclear Power Plant. Researchers at IRL use the area around Chernobyl as an extensive laboratory for studying the effects of radioactive contamination and methods of decontamination. DOE-EM sponsored the collaboration both to assist in the Ukrainians' research efforts and to gain valuable information on subjects of mutual interest. One of the key objectives of the collaborators is to make the knowledge gained through this partnership widely available.

Papers published in *Health Physics* in 2010 covering the first few studies led to interest in the special issue, which is sponsored by DOE-EM's International Program and SRNL. The current papers describe research including:

- environmental radiation monitoring of the Chernobyl Exclusion Zone – history and results 25 years later
- a study of the environmental problems associated with decommissioning the Chernobyl Nuclear Power Plant Cooling Pond
- a study of the properties of certain microscopic fungi found in the Chernobyl Exclusion Zone that appear to protect them from the effects of radiation
- a new technique for measuring the radioactive content of live animals in their natural habitat
- a study of Scots pine trees in the Exclusion Zone as a way of understanding the effects of chronic internal and external radiation exposure on vegetation
- a summary of radioactive waste management

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Each of the papers is co-authored by personnel from SRNL and IRL. SRNL's Dr. Eduardo Farfan and Tim Jannik were the editors for the special issue.

Under a new agreement signed in 2010, SRNL and IRL continue to collaborate on radiation ecology research, looking for mutually beneficial projects in a variety of subjects related to radiation ecology.

"Even though Chernobyl is fundamentally different from any U.S. nuclear site, there is much we can learn in the surrounding area," said Eduardo Farfan, co-principal SRNL investigator for interactions with IRL. "As a result of the accident, the nearby area has become a unique laboratory where we can observe how the environment changes and how animals and plants change over time following contamination. The scientists at IRL have unique knowledge since they work with this landscape every day," he added. The Chernobyl Exclusion Zone, which includes the abandoned industrial city of Pripyat, is heavily contaminated as a result of the accident. Unfit for residential or agricultural use, it is uniquely suited for studying radionuclide distribution, movement and effect.

"We share a lot of the same interests with our colleagues at IRL," said Farfan, "They are developing techniques and technologies for cleaning up the environment in the region that might ultimately be useful to DOE," he said. DOE is conducting major programs to clean up and decommission its facilities that are no longer used for nuclear materials production and processing.

In addition to providing a market for IRL's cleanup technologies, the collaboration also provides IRL with the expertise at SRNL and other DOE laboratories. In one project funded by the EM International Program, an SRNL expert in nature-based environmental cleanup techniques, Dr. Miles Denham, is working with IRL to study the potential of engineered soil amendments to enhance natural decontamination processes for cleaning up the area. This project also offers benefits to DOE, as the contaminated soils of the Chernobyl Exclusion Zone provide an excellent analogue to many of DOE's soil contamination problems.

SRNL is DOE's applied research and development national laboratory located at the Savannah River Site. SRNL puts science to work to support DOE and the nation in the areas of environmental stewardship, national and homeland security, and clean energy. The management and operating contractor for SRS and SRNL is Savannah River Nuclear Solutions, LLC.