



News from the Savannah River National Laboratory

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FOR IMMEDIATE RELEASE

Laboratories, Universities, Unite to Build Radioecology Expertise

AIKEN, S.C. (January 26, 2011) – With the renewed and growing interest in nuclear energy, radioecology experts at the U.S. Department of Energy’s Savannah River National Laboratory recognized an immediate need to build the pool of radioecology expertise both here and abroad. To address this need, they worked with partners from universities across the U.S. and laboratories in France and the Ukraine to form the National Center for Radioecology (NCoRE), a network of excellence for environmental radiation risk reduction and remediation.

Radioecology is the science that investigates the movement and effect of radionuclides released to the environment. It combines expertise in physics, chemistry, mathematics, biology, ecology, and radiation protection. “The growth in new nuclear energy capacity is going to require the ability to realistically assess the health and environmental impacts of nuclear facilities,” said SRNL’s Dr. Wendy Kuhne, one of the lead researchers for NCoRE. “With that knowledge, we can locate, design and operate the facilities in a way that meets our energy needs without increasing the risk to the population or the environment.” Radioecology knowledge is also important for understanding, assessing and managing the impact of other potential sources of radionuclides, including contaminated sites managed by the Department of Energy (DOE), the military and others. In addition, it is an important contributor in preparing responses to acts of terrorism involving radioactive materials.

The increased need for radioecology, however, follows on the heels of many years’ decline in educational opportunities in the field. There is currently no formal graduate program in radioecology in the United States since the retirement of Dr. Ward Whicker from Colorado State University (CSU), who is regarded as one of the founders of radioecology in the United States. Dr. Kuhne was Dr. Whicker’s final PhD candidate to graduate from the program. One of the chief goals of NCoRE will be to work with key partners to establish a training and education program for radioecologists to develop future capability as the existing pool of experts reaches retirement age. NCoRE will serve as faculty for courses offered at some of the partner universities.

In addition to the education component, the NCoRE member institutions will seek out opportunities to collaborate in research projects and development of methods for risk reduction from human exposure to radionuclides and associated chemicals. The partners will leverage their resources and expertise through joint research proposals in areas that include molecular and genetic level effects, synergistic effects, individual and population level studies, ecosystem studies, sequestration and remediation, and homeland security issues related to urban radioecology. A core component of the program will be to make the fundamental connection between environmental health and human health risk assessment.

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So far, two graduate students are pursuing projects at SRNL under the auspices of NCoRE. One is doing work in uncertainty analysis to determine potential errors or ways of enhancing current methods of measurement and analysis of radionuclides in liquid effluent and surface water samples taken at the Savannah River Site. The other, a PhD candidate, is performing work related to how non-radioactive and radioactive elements in contaminated soil are absorbed by specific plant species. .

Member organizations of NCoRE currently include:

- U.S. Department of Energy's Savannah River National Laboratory
- Duke University
- Colorado State University
- Oregon State University
- Clemson University
- University of South Carolina
- University of Georgia – Savannah River Ecology Laboratory
- Institut De Radioprotection Et De Surete Nucleaire (IRSN, France)
- Chernobyl Center's International Radioecology Laboratory (IRL, Ukraine)

The member institutions all bring unique contributions to their participation in NCoRE. The academic and research specialties of each of the member institutions of NCoRE will provide the foundation for training the next generation of radioecologists. SRNL is the lead organization and tasked with managing NCoRE, under the leadership of Dr. Kuhne, Tim Jannik and Dr. Eduardo Farfan. SRNL has a long history of expertise in environmental risk assessments. The Savannah River Ecology Laboratory, operated by the University of Georgia, has a 60-year history of basic ecological research. Duke University has a strong program in ecological toxicology, which studies other chemical contaminants in the environment; this expertise is a valuable component of radioecology, because radioactive materials also include other chemicals whose behavior needs to be understood. Oregon State University has a research reactor, one of fewer than 30 in the nation, and expertise in using it for experimental programs.

Colorado State University has a long history of radioecology research and is only one of five institutions with M.S. and Ph.D. programs in Health Physics to have received full and unconditional accreditation from ABET/Applied Sciences Accreditation Commission. Clemson University has a well established and successful research program in Environmental Engineering and Earth Sciences, which covers the academic focus areas of environmental health physics, radiochemistry, and nuclear environmental engineering. The University of South Carolina is training undergraduate and graduate students in the areas of Environmental Health Sciences, with a research focus on how environmental exposures affect human health and disease, and Nuclear Engineering, to keep up with the ever growing involvement of the state of South Carolina in the nuclear industry.

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One of the partners, IRSN, is part of a European alliance in radioecology called Strategy for Allied Radioecology (STAR) that has just been funded by the European Union, with goals similar to NCoRE. The IRL, located in Ukraine, conducts research in the area surrounding Chernobyl. The accident at the Chernobyl Nuclear Power Plant was the impetus for the last big European emphasis on radioecology research 25 years ago.

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 management, national and homeland security, and energy security. The management and operating contractor for SRS and SRNL is Savannah River Nuclear Solutions, LLC.

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