



RADIOECOLOGY

U.S., international partners come together to form NCoRE

PARTNERS FROM THE United States and abroad have teamed to form the National Center for Radioecology (NCoRE), a network of experts in environmental radiation risk reduction and remediation. The program is led by the Department of Energy's Savannah River National Laboratory (SRNL), in South Carolina.

"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 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."

The first organizational meeting of NCoRE participants was held on February 9. Currently, no funding is being provided by the DOE for NCoRE, according to Kuhne. She said that funding was one of the topics for discussion at the February 9 meeting.

Radioecology, the science that investigates the movement and effect of radionuclides released to the environment, combines expertise in physics, chemistry, mathematics, biology, ecology, and radiation protection. The DOE said that radioecology knowledge is key for understanding, assessing, and managing the impact of potential sources of radionuclides, including contaminated sites managed by the DOE, the military, and others. In addition, the DOE said, it is an important contributor in preparing responses to acts of terrorism involving radioactive materials.

The increased need for radioecology experts, however, follows on the heels of many years of decline in educational opportunities in the field. There currently is no formal graduate program in radioecology in the United States since the retirement of Ward Whicker, of Colorado State University, according to the DOE. Whicker is regarded as one of the founders of radioecology in the United States. SRNL's Kuhne was Whicker's last Ph.D. candidate to graduate from the Colorado State program.

As the lead organization, SRNL is tasked with managing NCoRE under the leadership of Kuhne, Tim Jannik, and Eduardo

An international program has been established to attract students to the field of radioecology.



Kuhne



Whicker

Farfan. SRNL has a long history of expertise in environmental risk assessments, according to the DOE.

In addition to SRNL, NCoRE's member organizations are as follows:

- Duke University, which has a strong program in ecological toxicology, the study of chemical contaminants in the environment. The DOE said that this expertise is a valuable component of radioecology because radioactive materials include other chemicals having behaviors that need to be understood.

- Colorado State University, which has a long history of radioecology research and is one of only five institutions with M.S. and Ph.D. programs in health physics to have received full and unconditional accreditation from the ABET/Applied Sciences Accreditation Commission.

- Oregon State University, which has a research reactor, one of fewer than 30 in the nation, and expertise in using it for experimental programs.

- Clemson University, which has a well-established and successful research program in environmental engineering and earth sciences, covering the academic focus areas of environmental health physics, radiochemistry, and nuclear environmental engineering.

- University of South Carolina, which 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.

- University of Georgia–Savannah River Ecology Laboratory, the DOE's applied research and development laboratory, located at the Savannah River Site (SRS), which works to support the DOE and the nation in the areas of environmental management, national and homeland security, and energy security.

- Institut de Radioprotection et de Sûreté Nucléaire (France), which is part of a European alliance called Strategy for Allied Radioecology that has just been funded by the European Union, with goals similar to NCoRE's.

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■ Chernobyl Center's International Radioecology Laboratory (Ukraine), which conducts research in the area surrounding Chernobyl. The accident at the Chernobyl nuclear power plant in 1986 was the impetus for the last big European emphasis on radioecology research.

One of the main goals of NCoRE will be to work with partners to establish a training and education program for radioecologists to develop future capability as the existing pool of experts reaches retirement age. NCoRE participants 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 and development of methods to reduce the risk to humans of exposure to radionuclides and associated chemicals. The partners will combine 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.

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 SRS. The other, a Ph.D. candidate, is performing work related to how radioactive and nonradioactive elements in contaminated soil are absorbed by specific plant species.

Kuhne said that no target has been set for the number of students that NCoRE will try to recruit for radioecology programs. "This is something that we discussed at our first meeting, and we still have much to iron out regarding the curriculum," she said.