

NEWS

TAMUG researchers receive more than \$1 million to study interactions between radioactive and biological materials.

(Galveston—November 20, 2011) — Texas A&M University at Galveston (TAMUG) researchers recently received more than \$1.2 million from the U.S. Department of Energy (DOE) for two different projects to investigate the impact of organic matter in soils and wetlands on potentially toxic radioactive iodine-129 and plutonium colloids or “nano-particles” (nano-meter sized particles much smaller than a human hair). Determining how radio-isotopes interact with organic substances, both underground and on the surface, could ultimately help shield humans from health risks related to storage and dispersion of radioactive materials.

The awards are titled “Collaborative Research: The Importance of Organo-Iodine and Iodate In Iodine-127,129 Speciation, Mobility and Microbial Activity in Groundwater at DOE Sites,” and “Plutonium Speciation and Mobility through the Subsurface Environment: Nature of Organic Colloidal Carriers.”

Dr. Peter H. Santschi, Regents Professor of Marine Sciences at Galveston and oceanography professor at Texas A&M University at College Station, is the principal investigator (PI) of both projects says the projects focus on interactions between radioactive elements, microorganisms, water and soil within natural biological cycles.

According to Dr. Santschi, this molecular-level research will isolate molecules, which transport plutonium. The research will also identify the molecular-level composition of colloidal substances (elements microscopically dispersed through water and soil) that could carry radioactive materials from contaminated sites through the water into wetland systems.

"Elements, chemical compounds, and other forms of matter are passed from one organism to another and from one part of the ecosystem to another through biological and chemical cycles," he says. These processes regulate radioisotope behavior underground and on the surface.

“Radioisotopes can be transported via groundwater and distributed to the ocean through soil erosion. When contaminants move through groundwater, there are processes that make them ‘slippery. But, there’s another process that makes elements more “sticky.” This prevents them from migrating. These processes control how radioactive materials bind to nano-particles that either migrate or stay put.”

Dr. Santschi says not only does this DOE-funded research provide a testing ground to solve problems affecting human health and the environment, but they also provide a training ground for state-of-the-art experimental approaches in marine and environmental sciences for TAMUG undergraduate and graduate students.

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TAMUG researchers obtaining both grants include Marine Science Regents Professor Peter H. Santschi (PI) and Dr. Kathleen A. Schwehr co-principal investigator (co-PI) and TAMUG associate research scientist. The grant focusing on iodine-129, which is the radioactive form of the element, also includes TAMUG Assistant Professor Robin Brinkmeyer (co-PI).

Collaborating scientists include Dr. Dan Kaplan, Fellow Scientist of the Savannah River National Laboratory and Dr. Chris Yeager from Los Alamos National Laboratory. Together, they received additional funding totaling more than \$600,000 for the project related to iodine-129. Dr. Patrick G. Hatcher, Old Dominion University Batten Endowed Chair in Physical Sciences and Professor of Chemistry and Biochemistry obtained additional funding exceeding \$140,000 for the project related to plutonium.

Additional TAMUG researchers on both projects include Drs. Saijin Zhang and Chen Xu and TAMUG graduate student Erin Hsiu-Ping Li as well as TAMUG research associate Yi-Fang Ho.

To arrange an interview with Dr. Santschi, contact Cathy Cashio at (409) 740-4830 or cashioc@tamug.edu

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