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News Release

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New RFID technology tracks and monitors nuclear materials

Advancement has applications in many areas involving remote sensing

ARGONNE, Ill. (March 24, 2009) — Radio frequency identification (RFID) devices have been widely used for tracking for years; recently, scientists from U.S. Department of Energy's (DOE) Argonne National Laboratory have developed a unique tracking technology that also monitors the environmental and physical conditions of containers of nuclear materials in storage and transportation.

"RFID technology is ideally suited for management of nuclear materials during both storage and transportation," said Yung Liu, Argonne senior nuclear engineer and RFID project manager. "Key information about the nuclear materials is acquired in real-time."

Data on the status and history of each individual container are available with a click of the mouse and can be used to augment and modernize DOE's existing management systems for nuclear materials.

"The Argonne system," Liu said, "can simultaneously monitor thousands of drums 24 hours a day, seven days a week. Any abnormal situation, such a loss of seal, a sudden shock, a rise in temperature or humidity, can trigger an alarm for immediate action."

The monitoring of tens of thousands of radioactive and fissile material packages has been a challenge for DOE to ensure accountability, safety, security and worker and public health.

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"The RFID system that Liu and his group developed with collaborators will help DOE overcome this challenge," said James Shuler, Manager of DOE Packaging Certification Program, Office of Environmental Management.

The system comprises active transponders, or tags with long-life batteries (more than 10 years), on each package, readers that collect information from the tags, control computer and application software. The information is constantly updated and communicated via a secured network, thus decreasing the need for manned surveillance. "Information," Liu said, "can be retrieved promptly by local and authorized off-site users via a secured network for action."

This RFID technology also has applications outside the nuclear field and may be used for other hazardous materials or any valued material, according to Liu.

"This new Argonne RFID technology," Liu said, "is expected to be patented, has applications in many industries, and as the technology is further developed, its usefulness is bound to grow."

An RFID video is online at www.media.anl.gov/TechnicalServices/DIS/RFID.wmv.

Funding for this project was made by the U.S. Department of Energy, Office of Environmental Management. The Office of Environmental Management (EM) is responsible for the risk reduction and safe cleanup of the environmental legacy of the nation's nuclear weapons program and government-sponsored nuclear energy research and is one of the largest, most diverse, and technically complex environmental programs in the world. For more information about EM go to http://www.em.doe.gov.

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