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NNSA Surpasses Congressional Target Of Recovering Orphaned Radioactive Sources

NNSA has surpassed a congressional target of recovering and securing 5,000 radioactive sources domestically within an 18-month time period, Secretary of Energy Spencer Abraham announced. The radioactive materials could be used in a radiological dispersal device, also known as a "dirty bomb." During the specified time period, 5,529 high-risk sources were recovered and secured.

RADIOACTIVE SEALED SOURCES: RTGs being placed in an underground storage shaft at Los Alamos National Laboratory.

As a key part of Secretary Abraham's efforts to strengthen DOE's activities to address the threats posed by radiological materials, he established the Nuclear and Radiological Threat Reduction Task Force in November 2003. The task force consolidated three existing DOE programs to address international and domestic radiological materials into one office, and accelerated and expanded these efforts.

"We are continuing to work overtime to secure and recover radioactive materials that can be used for dangerous purposes," Abraham said. "The national security effort we are involved in to recover these materials with

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Administrator Brooks Gives Pollution Prevention Awards At Savannah River

NNSA Administrator Linton Brooks presents a 2004 NNSA Pollution Prevention Environmental Stewardship Award to Westinghouse Savannah River Company. The award recognizes the work of the Savannah River Site's Tritium Hot Calibration Laboratory in developing new and more efficient processes to reduce waste generation and disposal costs.

Radioactive Sources

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other U.S. agencies is vital to the safety and security of all Americans."

He said the DOE continues recovering at-risk radiological materials domestically at universities, hospitals and other locations. Because of the Bush administration's priority on nonproliferation, the Nuclear and Radiological Threat Reduction Task Force accelerated its efforts, which has resulted in the recovery of over 9,500 high-risk radiological sources within the United States.

The announcement marks the recent one-year anniversary of the March 2003 International Conference on the Security of Radioactive Sources held in Vienna, Austria, which was co-sponsored by the United States, Russia and the International Atomic Energy Agency (IAEA). Since the conference, DOE has initiated important radiological threat reduction efforts in over 25 countries and is planning to expand its cooperation to 40 by the end of this calendar year.

The conference, called for and co-chaired by the secretary, was attended by 123 nations and resulted in recommendations to mitigate the threat posed by at-risk radiological materials around the world. In his remarks at the time, the secretary said, "It is our critically important job to deny terrorists the radioactive sources they need to construct such weapons." Then, Abraham announced a new radiological security partnership program with the IAEA to address dangerous radiological materials globally as well as accelerate current efforts.

As part of these activities, DOE provided critical enhancements to secure high-risk radiological materials in Uzbekistan. The materials removed had been housed in the immediate vicinity of a recent terrorist attack in Tashkent. The secretary noted that DOE is working hard to address the radiological threats in other areas as well that are critical to U.S. national security interests, including Iraq and Greece, in support of the upcoming Olympic games.

In the past three months, the task force has had two key achievements. It recovered four high-risk strontium-90 radioisotopic thermoelectric generators (RTGs) in the Houston area in close cooperation with the Federal Bureau of Investigation, the Department of Homeland Security, the Nuclear Regulatory Commission (NRC) and Texas officials. These were the largest high risk sources recovered to date by the task force. This effort served as a model of cooperation between DOE and other U.S. national security agencies. Just last month, the task force recovered, in close cooperation with the NRC and the Pennsylvania Department of Environmental Protection's Bureau of Radiation Protection, approximately 500 at-risk radiological sources from a bankrupt company in Pennsylvania. The task force is also exploring additional ways within the U.S. to leverage DOE's expertise and experience in reducing the threat posed by radiological materials that could be used to make a dirty bomb.

Infrastructure Update:

Milestone Reached At SRS Facility

The Savannah River Site's Tritium Facility Modernization and Consolidation project (TCON), has reached another major milestone with approval to begin radioactive operation of building 234-7H. The TCON project was undertaken to consolidate all of the tritium processing and handling activities into two updated facilities to improve safe operations, reduce environmental releases, increase productivity and significantly reduce future operating costs.

Construction of the 234-7H facility allows the reservoir life storage and material examination functions to be transferred from the 232-H Material Test Facility to this new building, resulting in the eventual shutdown of the 50-year-old 232-H. The new building houses life storage equipment, contaminated material examination equipment and motor control center equipment.

To prepare for radioactive operations, a readiness assessment was conducted the last week of March, with authorization to introduce tritium received on April 7. The first piece of contaminated equipment was moved into the new facility on April 12.

Contaminated equipment relocation and startup testing are currently scheduled to be completed in July.

Got an article for the NNSA Newsletter?
Submit it to
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Secretary Abraham Launches Refocused DOE Global Threat Reduction Initiative

In a recent speech to the International Atomic Energy Agency (IAEA) in Vienna, Energy Secretary Spencer Abraham launched a comprehensive global initiative to secure and remove high-risk nuclear and radiological materials that continue to pose a threat to the United States and the international community.

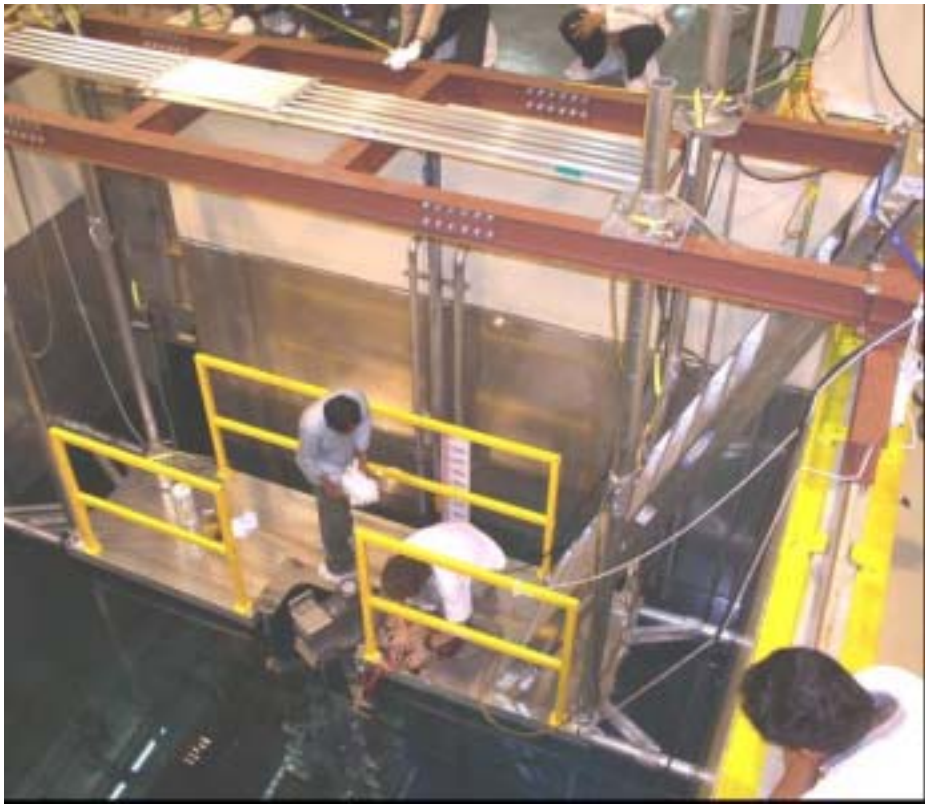
Secretary Abraham said that while the DOE has made significant strides in the security and removal of nuclear materials of concern by improving the security of hundreds of tons of weapons-usable material in Russia, there still exists a significant amount of nuclear materials in dozens of research reactors and other locations throughout the world. The Global Threat Reduction Initiative will be carried out in close cooperation with the IAEA and global partners in order to ensure that such nuclear and radiological materials do not fall into the hands of terrorists or other rogue actors.

"We have worked with Russia to down-blend over 200 metric tons of high-enriched uranium (HEU) from dismantled Russian nuclear weapons, and just in the last eight months have repatriated 48 kilograms of Russian-origin HEU in three separate operations, including the most recent removal of 17 kilograms of Russian-origin HEU from Libya. Nevertheless, we must continue to press forward in our efforts to reduce the threat posed by proliferation-sensitive nuclear materials and high-risk radiological materials," Abraham stated.

Secretary Abraham has directed NNSA to consolidate and accelerate the department's nuclear materials removal efforts and rapidly identify and address any gaps in current security coverage and recovery or removal efforts. Under this new initiative, which will include the establishment of a new office under the deputy administrator for defense nuclear nonproliferation, NNSA will develop a threat-based, prioritized approach to systematically address facilities that possess high-risk fissile and other nuclear materials.

This important effort will build upon existing and long-standing U.S. nonproliferation efforts to minimize and eventually eliminate any reliance on HEU in the civilian fuel cycle, including conversion of research and test reactors worldwide from the use of HEU to the use of low-enriched uranium fuels and targets.

In April, Secretary Abraham directed NNSA to consolidate the U.S. Foreign Research Reactor Spent Nuclear Acceptance Program within its nonproliferation mission, and instructed the appropriate offices within the department to initiate actions necessary to extend the program's fuel acceptance deadline. Taken together, these efforts will reduce the threat worldwide of high-risk and proliferation-attractive materials.



FOREIGN REACTOR FUEL: Spent Fuel Being Prepared for Loading at Indonesian Reactor.

KCP Chemical Database Will Provide Better Materials With Greater Safety And Cost Savings

Imagine the best dessert you've ever had at a restaurant. Its flavor, its consistency, even its enticing appearance were perfect. Now imagine trying to duplicate it in your own kitchen without the recipe. Not an easy task, right?

Chemical engineers at the NNSA's Kansas City Plant occasionally receive requests for new materials or older materials that have been off the shelf for decades that need to be brought back into production. When these situations occur, engineers are faced with the time-consuming process of in-depth literature searches on chemical properties, followed by extensive trial-and-error tests.

It would be nice to have the recipe.

Kyle Johnson, a University of Kansas (KU) chemical engineering student and Kansas City Plant intern, presented a way to significantly reduce this work last summer. Along with KU's Dr. Kyle Camarda, Johnson is working on a database that will identify the correct chemicals to use when users tell it what material properties they are looking for.

The Kansas City Plant is partnering with KU for this project, which is funded by the Plant-Directed Research and Development program. Staff engineer Tricia Wilson is the project's principal investigator. Other team members are staff chemists Charlie Long, Charlie Cook and staff engineer Mark Wilson. Using general algebraic modeling systems software, the team will define all of the chemistries they use, develop correlations between chemical and material properties and plug this information into a database.

When this is done, they will be able to tell a computer the properties they're trying to achieve in a specific material, and the computer will go through a data matrix to identify what chemicals will work. Finally, the team can test the computer's "recipe" on a reaction calorimeter to see if they get the desired results.

"We'll be able to narrow the playing field a lot sooner because we'll already know what materials give us certain properties," said Wilson.

Wilson said this new tool will give them better controls over the materials they produce. For example, Wilson can ask customers what qualities they need in their materials and then use the database to come up with the exact chemicals to produce those qualities. This capability has many benefits, including increased safety, cost savings, faster production and a more proactive approach to material design.

For now, the team is focusing the project on the molecular design and optimization of urethane encapsulants and adhesives, but Wilson said their work will eventually be applied to other materials at the Kansas City Plant, such as epoxies.

KCP CHEMICAL DATABASE: A reaction calorimeter helps test chemical recipes.

Livermore Lab Engineer Chosen To Be Astronaut

Lawrence Livermore National Laboratory (LLNL) employee Jose M. Hernandez has been selected by NASA to join its 2004 Astronaut Candidate Class. Hernandez was an electrical engineer at LLNL for 15 years before taking a leave of absence to serve as chief of NASA's materials and processes branch in Houston in 2001.

Hernandez' class is expected to be at the forefront of President Bush's recent call for expanded space exploration, which includes trips back to the moon and eventual manned flights to Mars.

Hernandez joined the lab in 1986 and has worked on digital mammography, the x-ray laser program and the materials protection, control and accountability program.

"The lab had a big impact on how I turned out as a person and an engineer," Hernandez said. "It helped me reach my ultimate goal."

Hernandez is the fourth astronaut affiliated with LLNL. LLNL chemical engineer Leroy Chiao also joined NASA and has flown a number of space shuttle missions. Former astronauts Tammy Jernigan and Jeff Isoff, both space flight veterans, served with NASA before coming to the lab.

Jose M. Hernandez

NIH Chooses Los Alamos To Model Disease Outbreaks

An emergency room physician sees a patient with a high fever and a trace of a rash and admits her to the hospital. The next morning, three more patients with similar symptoms come in, then more patients, until lab tests confirm the initial hunch: an outbreak of smallpox has begun.

How to keep the outbreak from becoming an epidemic, and recommending the best responses to public health officials, could be revealed through computer simulations under development at NNSA's Los Alamos National Laboratory.

The National Institute of General Medical Science, or NIGMS, has chosen a team of scientists at Los Alamos to study how people's daily interactions might affect the spread of and efforts to stem infectious diseases, whether natural or deliberately released by bioterrorists.

The project is one of four studies of epidemics and community responses funded through the Models of Infectious Disease Agent Study, or MIDAS by the institute, which is part of the National Institutes of Health. The projects also will help in biodefense, allowing officials to simulate strategies to detect, control and prevent the spread of disease. Information about the studies is available at http://www.nigms.nih.gov/news/online.

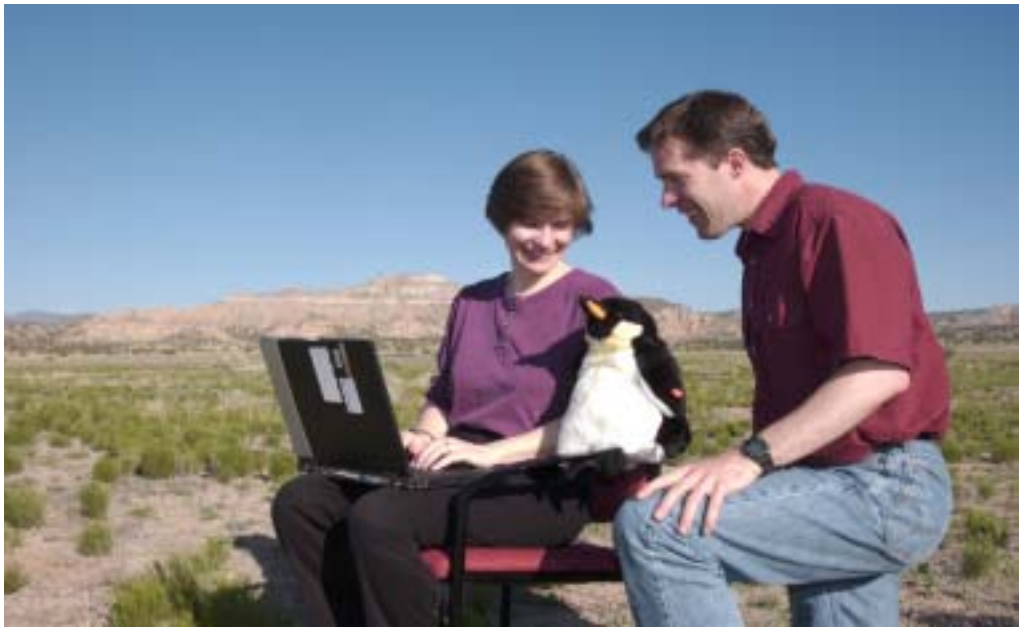
The Los Alamos team, led by Stephen Eubank of the Basic and Applied Simulation Science Group, will build an artificial city of 1.5 million people in a computer, then explore how patterns of human contact affect disease transmission, as well as the consequences of early and mid-term responses. The new project, "Population Mobility Models of Urban Disease Outbreak," is based on EpiSims, one component of a well-established family of Los Alamos epidemiological computer models known as the Urban Infrastructure Suite.

The simulations developed through the project will allow public health officials or other users to specify such scenarios as the initial health of the population, how people interact with disease-causing pathogens, possible paths for introduction of the pathogens and the choice, timing and location of strategies to fight the outbreak.

The Los Alamos team and the other MIDAS scientists also will be able to change hats quickly, from theoreticians seeking a fundamental understanding of biological processes, to experimentalists helping government officials to make quick decisions about how to handle an actual epidemic.

Desert Lab Models Sea Ice Role In Climate

For nearly a decade, Los Alamos National Laboratory researchers have been upgrading and fine-tuning a sea ice modeling program created at the laboratory. From their dry place in New Mexico's high desert, the Los Alamos team has helped climate scientists around the world develop a better understanding of the surprisingly complicated role that sea ice plays in the global climate.



LOS ALAMOS RESEARCHERS AND FRIEND: Elizabeth Hunke and Bill Lipscomb of the Los Alamos fluid dynamics department photographed west of NM Road 30 near Los Alamos with a non-native short-legged, flightless aquatic bird.

Called CICE, and pronounced "sea ice," the computer model has been the principal focus of Elizabeth Hunke's work at Los Alamos since she was first hired as a postdoctoral researcher in 1994. Working with Los Alamos staff members Bill Lipscomb and Phil Jones, Hunke and the CICE team have made the state-of-the-art model one of the most widely used tools for understanding the complex nature of sea ice.

Sea ice forms from seawater under arctic conditions. The ice moves around polar oceans in various states from thin, loosely amalgamated ice floes to thick, nearly solid ice sheets whose thickness is often increased by snow cover. Its presence in the oceans affects not only the ocean's salinity, since it leaves salt behind as the ice forms, but also the atmospheric conditions above the ice, where it affects chemical and heat exchanges between the two regimes.

According to Hunke, "sea ice has quite a significant impact on global climate. It usually covers an area of ocean larger than the United States and Canada combined. It also has a very high albedo, or reflectivity and that much area reflects a significant amount of the sun's radiation, rather than allowing it to be absorbed by the ocean."

CICE was originally designed to be a component of global climate models and is a vital part of the Climate, Ocean and Sea Ice Modeling program at Los Alamos. Along with Los Alamos' powerful ocean model, the Parallel Ocean Program, CICE is a critical element of the Community Climate System Model, one of the world's leading general circulation climate models based at the National Center for Atmospheric Research (NCAR) in Boulder, Colo.

CICE has been used for a variety of global studies of climate, including variability of atmosphere and ocean processes, over time scales of decades to centuries. It has found use in regional climate studies where sea ice plays a major role, including studies of the Arctic and Southern oceans, North Atlantic and Baltic Sea. Researchers have used CICE in global carbon cycle studies, pale oceanographic studies and studies of sea ice physics and material properties.

Modeling groups around the world use CICE to make climate change predictions under various energy-use scenarios. The Intergovernmental Panel on Climate Change uses some of these predictions in its state-of-the-art climate assessments for policy makers. Whether used alone, or as a part of other larger modeling systems, CICE has been adopted by a number of institutions in the United States, including the National Centers for Environmental Prediction and NASA, along with at least 18 institutions in 10 countries.

Three Sandians Named To 2004 List Of Most Influential Hispanics In Technology, Business

Three Sandia National Laboratories executives, Frank Figueroa, Lenny Martinez and Sid Gutierrez, have been selected as among the "50 Most Important Hispanics in Technology and Business" for 2004 by *Hispanic Engineer & Information Technology* magazine.

Lenny Martinez

Frank Figueroa

Figueroa has been vice president and chief financial officer for Sandia since 1997. He is responsible for the Integrated Enabling Services Strategic Management Unit as well as finance, business services, facilities and construction, procurement, logistics, pension and savings fund management and prime contract administration.

Martinez is Sandia's vice president of manufacturing systems, science & technology. He joined Sandia in 1995 as director of production integration, a center created to support the manufacturing operation to produce neutron generators.

Gutierrez is director of Sandia's Monitoring Systems and Technology Center and the Systems Assessment and Research Center. Before joining Sandia in 1994, he served as an Air Force fighter pilot/test pilot and NASA astronaut/shuttle commander. He serves on a number of boards and commissions including the Board of Regents of New Mexico Institute of Mining and Technology, the New Mexico Space Commission and the National Advisory Board for the National Hispanic Cultural Center.

Honorees are chosen for this annual list for their outstanding work in technology and their leadership. This list includes some of the nation's highest-achieving Hispanic executives, managers and researchers in industry, government and academia.

The honorees will be featured in the June/July issue of *Hispanic Engineer & Information Technology* magazine. They are also scheduled to attend a colloquium and awards dinner late this summer where increasing minority entrepreneurship, executive development and educational readiness for the digital economy will be discussed. The event is set for September 17, in Nashville,

Sid Gutierrez

Tenn., as part of the Emerald Honors Conference, a career development and employee recognition event for minorities in research science and technology.

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Security Clearance Processing Time Decreasing

An effort to reduce the processing time required for the granting of "L" and "Q" clearances for the NNSA complex has resulted in new efficiencies within the Service Center's personnel security organization.

Don Richer, Service Center personnel security manager, said the current processing time for "L" applicant cases is an average of 55 days. The processing time for "Q" applicant cases is an average of 75 days. On the other end of the process, the investigative agencies — the Office of Personnel Management (OPM) and the Federal Bureau of Investigation (FBI) — are averaging 150 days for "L" access investigations and 260 days for "Q" access investigations. Reinvestigation cases are presently with the investigative agencies an average of 250 days. Current field investigations by OPM and the FBI number 2,900 applicant cases and 8,000 reinvestigation cases.

"The NNSA Service Center personnel security organization is dedicated to the safeguards and security division's mission to support and protect the national security," Richer said. "In accordance with this mission, we've worked to reduce the processing time involved in the granting of access authorization. The security clearance process begins when the applicant, incumbent and employer submit the clearance justification and the Questionnaire for National Security Positions (QNSP) to personnel security. Other processing steps involve personnel security processing efforts and separate processing efforts by the investigative agencies."

Richer said personnel security is responsible for initially reviewing QNSPs and clearance requests. That involves returning the forms to the applicant, incumbent or employer when insufficient information is on the forms. When the application process is complete, Richer's office forwards the appropriate field investigation request to the investigative agency.

Personnel security is additionally responsible for adjudicating the investigative reports when they are received from the investigative agency. The processing time for adjudication naturally increases on those occasions when clarification is required as a result of the investigation, Richer said. However, even with variances, the average personnel security processing time has decreased.

"Due to the separate elements involved in the security process, the time involved in processing a security clearance may remain longer than many would desire," Richer said. "However, we have significantly reduced the average processing time that is within our control. There is a continuous flow of cases processed for security clearance and we remain dedicated to providing a quality service in the most efficient manner possible without sacrificing any security measures.

Livermore Scientists Honored At White House

Lawrence Livermore National Laboratory's Edmond Chow and Christine Orme have been honored with 2002 Presidential Early Career Awards for Scientists and Engineers. The two received their awards from the President's Science Adviser, John H. Marburger III in a White House ceremony and also were honored by Energy Secretary Spencer Abraham in a special ceremony at DOE headquarters.