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## Team bags another 3,000 curies



By ROGER SNODGRASS

A half dozen technical experts from Los Alamos hauled in a couple more highly radioactive sources recently, a reminder that the work of keeping the raw ingredients for dirty bombs out of the hands of bad actors is a daily activity.

The nuclear materials this time happened to be two unusually large medical research devices recovered from a warehouse located in Rahway, New Jersey, 25 miles from New York City.

"Properly disposing of more than 3,000 curies of cesium eliminates the threat this material poses if lost or stolen and used in a dirty bomb," National Nuclear Security Administration Administrator Thomas P. D'Agostino said in a statement following the action.

Ken Sheely, deputy director of the NNSA's Global Threat Reduction Initiative (GTRI) said in a recent telephone interview that the significance of the recovery operation had to do with the intensity of the sources and proximity to a large metropolitan area.

GTRI has the responsibility for reducing the inventory of vulnerable nuclear and radiological materials on a global scale, but its domestic and global work goes hand-in-hand.

"We want to be a shining example to the international community," Sheely said. "It's more what you do than what you say."

NNSA reports that they have now secured some 24,000 sources containing 760,000 curies since the program started in 1997, with another 4,000 sources added since last year at this time. Most were recovered by the Off Site Recovery Project from Los Alamos, which has been engaged in rounding up sources for more than a decade.

"We have 23 people here working on OSRP," Julia Whitworth, the program manager at LANL said. Since Oct. 1, 2009, the group has recovered 1,254 sources.

"There is no adventure," Whitworth said. "The work is difficult because it involves very heavy equipment." Tight regulations and safety procedures must be performed by qualified and licensed personnel, especially when it comes to containers and transportation.

"Everything is done with an eye toward safety and regulatory compliance," she said. "It takes a lot of prep work."

Examples of international efforts by the LANL team include a cooperative program with China to move nuclear materials out of Beijing before the Olympic Games and a fellowship for International Atomic Energy Agency candidates for training related to source recovery in Ghana.

All kinds of devices and equipment use sources, radioactive materials sealed in closed metal capsules.

Many of the first cardiac pacemakers are powered by little batteries of plutonium-238; a certain type of smoke detector uses radioactive Americium-241 to detect smoke particles; some self-illuminating exit signs use the radioactive gas tritium to direct occupants safely out of buildings.

The radioactive materials in the exit signs are not in themselves a security risk, but they require certain precautions and specialized disposal.

Curies are a measure of radiation, but depend on the nature of the source, more than its size.

An Oak Ridge National Laboratory discussion of curies, says uranium-238 has 0.00015 curies of radioactivity per pound while cobalt-60 has nearly 518,000 curies per pound.

By way of comparison, a dirty bomb scenario developed for planning purposes by the Department of Homeland Security, imagines a 3,000 pound truck containing 2,300 curies of cesium-137 that blows up in a downtown business district. There are 180 immediate fatalities and 270 injuries from the blast, but 65 percent of the city has to be evacuated.

Over time a 36-block area is found to require decontamination.

"Economic impacts will be severe as business within the city will be at a standstill until clean-up is complete; schools and businesses may relocate and the city itself could suffer long-term decline," according to the scenario.

Even with the steady recovery of unused and unwanted radioactive sources, more are manufactured and distributed each year.

"We are recovering more each year," Whitworth said. "The total amount is increasing with radioactive materials that serve very legitimate and vital research purposes."

The International Atomic Energy Agency notes, "When safely used and regulated, the social and economic benefits from the many applications of radioactive sources are high, in the billions of dollars world wide each year."

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