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## ECA Update June 8, 2016

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## Upcoming Events

June 2016

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House Nuclear Cleanup Caucus  
Capitol Hill

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Oak Ridge EMSSAB Meeting

June 2016

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Paducah EM SSAB Meeting

June 2016

[LINK](#)

Monica Regalbuto has taken on the Department of Energy's Mission: Impossible.

As chief of DOE's Office of Environmental Management, Regalbuto oversees cleanup of Cold War-era nuclear weapons sites that the department once promised to finish by 2019. On her must-do list: more than 2,000 buildings -- many of them sprawling hangars as big as soccer fields -- where making bombs took priority over protecting the environment.

"What's the composition of the waste? The answer is pretty much everything on the periodic table," the assistant Energy secretary said during a recent interview. She pointed to a poster-sized periodic table on an easel in front of a windowed wall of her corner office on the seventh floor of the department's Washington, D.C., headquarters.

"Understand, there was a war. ... The priority wasn't on the waste, it was on the product moving forward, forward, forward," she said. "What was left became the mission of EM."

The estimated cleanup tab: \$340 billion.

Regalbuto (pronounced Reg-al-BOO-toe) isn't one to shy from big challenges. The Mexico-born engineer holds six patents and master's and doctoral degrees in chemical engineering. She expresses confidence that technological advances can make the mission possible.

Monica Regalbuto

Monica Regalbuto, assistant secretary for the Energy Department's Office of Environmental Management, shows off a robotic exoskeleton on display outside her office at DOE's Washington, D.C., headquarters. Photo by Hannah Hess. For a high-stakes, high-cost cleanup effort, the office was forced to go more than four years without a Senate-confirmed leader.

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Idaho National Laboratory  
EM SSAB Meeting

August 2016

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Third Annual  
Intermountain  
Energy Summit  
Idaho Falls, ID  
[Visit website](#)

September 2016

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Save the Date: ECA Peer Exchange  
Contact Ivana Brancaccio at  
[ivana@energyca.org](mailto:ivana@energyca.org)  
for more information

September 2016

14-15

2016 National Cleanup Workshop  
Hilton Alexandria Mark Center  
Alexandria, VA  
Visit [cleanupworkshop.com](http://cleanupworkshop.com)

November 2016

That changed last August, when Regalbuto took the reins after being confirmed to replace Ines Triay.

Regalbuto's in charge at a critical time. The Obama administration is considering an overhaul of the office that has been besieged by high-profile leaks of radioactive waste, contractor problems, missed deadlines and ballooning cleanup costs, according to documents obtained by Greenwire. DOE is proposing to reconfigure Environmental Management to focus on regulatory and policy affairs, field operations, and business operations, Regalbuto and Principal Deputy Assistant Secretary Mark Whitney said in a presentation last month (Greenwire, June 1).

Energy Secretary Ernest Moniz has been working to prime DOE to leverage new technology and connections with universities and businesses -- relationships that have been key to Regalbuto's career.

In 1988, she got her start at Argonne National Laboratory near Chicago, supporting the development of technologies for the treatment of high-level waste at DOE's plutonium production sites. Eight years later, she departed for BP Amoco, returning to Argonne in 2001. She joined Environmental Management in 2008.

From 2010 to 2014, she served as assistant secretary for fuel cycle technologies at DOE's Office of Nuclear Energy.

Regalbuto was responsible for directing a research and development program involving 10 national laboratories, 32 universities, over 400 scientists and 300 professors.

Two years ago, Regalbuto returned to Environmental Management, which has a laboratory at the Savannah River Site in South Carolina. The office took the helm of the lab in 2006, making it the nation's central source for science and technology to reduce the cost, shorten the schedule, and mitigate risks to workers and the environment.

# 16-18

Save the Date: 2016  
Intergovernmental Meeting  
New Orleans, LA

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"They have, in my opinion, the best logo in the whole DOE complex," Regalbutto said of the lab. "That is, 'We put science to work,' and they really do."

Science is on display in DOE headquarters, where Regalbutto showed a visitor a robotic exoskeleton developed by the Institute for Human and Machine Cognition, a State University System of Florida-affiliated nonprofit that has partnered with NASA and the U.S. military.

Robotic devices, such as arms equipped with jaws and pipe-cutting shears, are used in cleanups overseen by Regalbutto's office to remove waste from areas of high radioactivity.

The administration's plans to revamp the office would establish a new field operations division with a unit focused on technology development.

Big question: Can technology make up for funding shortfalls?

The office is running on about 15 percent less cash since a 2005 peak of \$7.3 billion, with an increasing chunk of the agency's funding targeted for maintaining the safety and readiness of the nation's nuclear weapons arsenal.

"We never have enough money to do everything that we would like to do," Regalbutto said.

### Cupcakes

Members of Congress, focused on cleanups in their home states or districts, have formed caucuses in both chambers to promote funding for the effort.

Rep. Chuck Fleischmann (R-Tenn.), chairman of the House Nuclear Cleanup Caucus, told Greenwire the caucus is one of the fastest-growing in Congress, in part because of the complexity of the challenge.

"Let's face it -- thank goodness we don't have legacy sites in every congressional district in the country. But in those communities where you have it, the members

are made acutely aware of this," said Fleischmann, who represents Oak Ridge, the former Manhattan Project site.

Regalbuto attended a caucus meeting in April to discuss DOE's plans for addressing the problem of high-risk excess facilities, or high-risk buildings that are no longer needed. The number of excess facilities in DOE's inventory is expected to grow to more than 3,000 over the next decade. For fiscal 2017, EM requested \$887 million -- about 15 percent of its annual budget -- for facility deactivation and decommissioning.

According to Rep. Mike Simpson, the Idaho Republican who leads the House Appropriations subcommittee that oversees the cleanup budget, Regalbuto does "the toughest job in federal government" (E&E Daily, March 16).

The Environmental Management footprint has shrunk 90 percent since the office was established in 1989, but many of its biggest challenges lie ahead.

Before decontamination and decommissioning can begin, workers need to inventory hazardous chemicals and special nuclear materials that haven't been characterized since the weapons work concluded.

Regalbuto tries a homespun explanation of her office's assessments.

"Imagine you were making cupcakes in your kitchen and we told you to go do something else, and you left the kitchen as is. So you have cupcakes and the containers. Yeah, you shut off the oven and took them out so they didn't burn, but in general you didn't leave it in a clean, safe way," she said.

"So if you leave your house, I don't know what kind of batter you used. Were you making chocolate chip? Were you making vanilla? Was it from scratch? Was it from a box? I have no idea unless I start rumbling in there, right."

This conservative approach, aimed at protecting the health and safety of the federal nuclear waste workforce, has contributed to missed deadlines and cost overruns. But Regalbuto says it's necessary to "inch away."

Environmental cleanup and nuclear waste disposal continue to rank among DOE's most pressing management challenges (Greenwire, Nov. 19, 2015).

Acting Inspector General Rickey Hass, who runs his shop down the hall from Regalbuto, noted the agency is responsible for "one of the most complex nuclear remediation efforts in the world ... faced with developing unique solutions to address often unknown obstacles."

Adding to the problem, the Waste Isolation Pilot Plant, or WIPP, in Carlsbad, N.M. -- the nation's sole repository for defense transuranic waste -- remains shuttered as a result of an accidental radiological leak in February 2014. Regalbuto wishes DOE had robotic capabilities to support the investigation into the incident and the ongoing efforts to reopen the facility.

According to the department's recovery plan, WIPP was slated to resume operations in the first quarter of 2016. However, last summer DOE announced the March target date was no longer viable and a new target date in 2016 must be established (Greenwire, Aug. 24, 2015).

"Our goal is to restart operations at the end of the calendar year, but we will only do that if it's safe to do so," she said.

WIPP moved one step closer to reopening in early May with approval of the newest documented safety analysis, in which officials detailed potential disasters and their plan of action. Cold operations started last week.

"It's a big landmark to us, and we're very much looking forward to that. The target is the end of the year, but again, only if it's safe to do so," Regalbuto said. "It's exciting, but there's still work to do."

Milestone

For Regalbuto, incremental progress on the 16 cleanup sites the office oversees in 11 states is "exciting."

At the Hanford site in southern Washington, where engineers once manufactured plutonium for the first nuclear bomb, Regalbuto reports "very exciting" progress toward removing sludge from the K Basins.

Hanford's overdue Waste Treatment and Immobilization Plant, tied up with technical glitches for more than a decade, is also "actually getting pretty close, which is very exciting," she said.

The 586-square-mile site was a sticking point in Regalbuto's lengthy journey to Senate confirmation. Her nomination was advanced by the Energy and Natural Resources Committee in the 113th Congress but stalled before reaching the floor.

President Obama nominated her again in the 114th, but Oregon Democratic Sen. Ron Wyden threatened to block consideration over dissatisfaction with her plans for high-level nuclear waste storage tanks (Greenwire, June 16, 2015).

At Oak Ridge, Environmental Management is on the verge of another exciting milestone, Regalbuto said.

By the end of this year "if not sooner," she said, the office expects to demolish the last of five uranium-enrichment buildings at the former gaseous diffusion plant. The former weapons site is slowly being converted to an industrial park that would include an airport on land transferred back to local control in Knoxville, Tenn.

"I don't think anybody in the old days would have envisioned at that site you would be having your airport expansion," Regalbuto said, tying the site to two other former gaseous diffusion plants in Kentucky and Ohio. "So, it's very exciting and we can just think about the future of other sites that are in the same process."

**New DOE plan calls for research, technology to help fight mercury contamination, including in Oak Ridge**

Oak Ridge Today

June 7, 2016

[LINK](#)

U.S. Department of Energy officials have [released a new plan](#) to address mercury contamination at the Oak Ridge Reservation in Tennessee and Savannah River Site in South Carolina. It advocates for research and the development of technologies that could resolve key technical uncertainties with mercury in environmental remediation, the deactivation and decommissioning of facilities, and processing waste in tanks.

The [Oak Ridge Reservation](#) and [Savannah River Site](#) both used mercury in industrial-scale processes. At the Oak Ridge Reservation, large quantities of mercury were used at the Y-12 National Security Complex from the early 1950s until the early 1960s. During the peak period of operations, according to estimates from the Oak Ridge Office of Environmental Management, or OREM, 700,000 pounds of a total 20 million pounds of mercury that were used were released into the surrounding environment.

Ongoing mercury abatement and remediation efforts at Y-12 that began in the 1980s have decreased overall mercury releases to the environment, the DOE Office of Environmental Management, or EM, said in a May 31 newsletter.

But elevated concentrations remain in certain water, soil, and facilities, federal officials said.

The DOE Office of Environmental Management is already implementing recommendations from the new plan, "[Technology Plan to Address the EM Mercury Challenge](#)," to reduce the mercury contamination, the newsletter said. The Oak Ridge Office of Environmental Management is [designing a mercury treatment facility](#) that officials expect will significantly reduce mercury migration from the Y-12 National Security Complex into the Upper East Fork Poplar Creek.

OREM is also developing plans to build a research station along Lower East Fork Poplar Creek, where ecological studies will focus on reducing methylmercury concentrations in fish, the newsletter said. Methylmercury, an organic form of the element, is especially toxic. It damages the nervous system, is quickly absorbed but slowly excreted, and accumulates in fish and other organisms.

SRS has used mercury for decades as a catalyst for dissolving aluminum cladding during nuclear separation processes and in other chemical processes. Mercury has not been released to the environment from these processes; rather, an estimated 60,000 kilograms of mercury is in high-level waste tanks and throughout the liquid waste system.

Planned research and technology development projects at Savannah River Site will improve mercury removal efficiency in the site's liquid waste system, the newsletter said.

It said research and the development of technologies related to mercury contamination have been identified by the DOE Office of Environmental Management as critical to completing its mission more safely, efficiently, and cost-effectively.

The new plan recommends analytical and screening methods for mercury; approaches to stabilize mercury in debris, soil, and aquatic environments; determination of the chemical form, or species, of mercury in high-level radioactive waste liquids and sludges; processes to convert mercury from one form to another to help remove it or safely stabilize it; and improved understanding of mercury speciation and reaction mechanisms in chemically complex tank waste.

Two research areas proposed in the plan are the formulation of grout, a mortar, to stabilize mercury-bearing wastes and alternative methods for assessing the leachability of waste forms, or their ability to allow a material to percolate through something.

In addition to laying out technical recommendations, the plan emphasizes that EM must continue to demonstrate leadership in its partnerships with other agencies,

institutions, and industries engaged in mercury-related research, technology development, and operations, the newsletter said.

“EM is pursuing new technologies to stabilize subsurface mercury contamination in the form of insoluble minerals that can safely remain in the ground, and it is assessing mercury contamination and removal in building materials such as concrete and steel,” the newsletter said. “Planned research and technology development projects at SRS will improve mercury removal efficiency in the site’s liquid waste system.”

Prepared by representatives from Oak Ridge and Savannah River national laboratories, and EM headquarters in consultation with DOE site representatives, the plan is based on input from experts from DOE sites and national laboratories, industry, academia, and other federal agencies, who shared information about mercury contamination, remediation strategies, recent research and technology assessments, and lessons learned.

Read the full plan [here](#).

### **DOE: Oak Ridge’s Building K-27 being torn down quickly**

Oak Ridge Today

June 7, 2016

[LINK](#)

In February 2016, demolition crews started tearing down the K-27 gaseous diffusion building.

Now, only months later, the Oak Ridge Office of Environmental Management and its contractor UCOR have already completed demolition on more than 65 percent of the four-story, 383,000-square-foot facility, the U.S. Department of Energy said.

K-27 is the last of five large gaseous diffusion facilities to be torn down at the East Tennessee Technology Park, or ETPP, which was formerly known as the Oak Ridge Gaseous Diffusion Plant and often referred to as the former K-25 site.

“Due to the heavy contamination and state of the 1940s facility, K-27 was one of the environmental management’s highest cleanup priorities,” the DOE Office of Environmental Management, or EM, said in a May 31 newsletter. “The progress taking down the facility moves EM closer to fulfilling its Vision 2016—the removal of all five gaseous diffusion buildings from the site by year’s end. It is not only a significant goal for EM and Oak Ridge, but it will also mark the first time in the world that a uranium enrichment complex has been cleaned and removed.”

A significant amount of work occurred inside K-27 during the past two years before demolition crews could begin.

“The men and women working on this project are doing a phenomenal job,” ETPP Portfolio Federal Project Director Wendy Cain said. “I think we can attribute our success and impressive pace of work to our talented team and our organization’s ability to continually learn and apply lessons from previous projects to help us perform as efficiently as possible.”

Deactivation, which concluded in January, included removing hazardous and radioactive materials to ensure protection of workers, the public, and the environment; isolating utility systems; and ensuring structural stability. In addition, all materials that could cause a nuclear criticality were removed.

To date, demolition crews have produced more than 4,000 truckloads of debris from the K-27 work site that have been shipped to the onsite disposal facility, known as the Environmental Management Waste Management Facility (it’s on Bear Creek Road west of the Y-12 National Security Complex). Most importantly, all of this work is being achieved safely, the DOE Office of Environmental Management said.

The K-27 teardown follows successful demolition of four other uranium enrichment process buildings, including K-29, K-33, K-31, and the mile-long K-25 building. All of

these facilities once produced highly enriched uranium for national defense and commercial energy production.

“All of these cleanup projects are paving the way to OREM’s ultimate goal for the site as a privately-owned and operated industrial park,” the newsletter said. “Each project and accomplishment adds to the inventory of clean land that can be made available for reuse and economic development purposes.

UCOR is also known as URS | CH2M Oak Ridge.

The K-25 site was built during World War II as part of the Manhattan Project, a top-secret program to build the world’s first atomic weapons. The site enriched uranium for atomic weapons and commercial nuclear power plants through the Cold War. Operations ended in 1985, and the site was permanently shut down in 1987. Now, it is being slowly converted into a large industrial park.

More information will be added as it becomes available.

### **Gov. Nikki Haley denounces plutonium shipments to the Savannah River Site**

The Post & Courier

June 7, 2016

[LINK](#)

A federal agency announced Monday that controversial shipments of plutonium from Japan have made it to the Savannah River Site, following Gov. Nikki Haley’s recent efforts to block the plutonium from entering her state.

Haley said Tuesday that the news is another reminder that the Department of Energy has not lived up to its promises.

“We will not back down: South Carolina will not be a permanent dumping ground for nuclear waste,” Haley said in an email to The Post and Courier.

Reports first surfaced in March that ships carrying 331 kilograms of weapons-grade plutonium from Japan would dock at the Charleston Naval Weapons Station before being sent about 120 miles to SRS near Aiken.

The National Nuclear Security Administration reported Monday that the plutonium will be diluted and stored at SRS until it is eventually shipped to a New Mexico repository.

“This strong partnership has helped the international community ensure that these materials never find their way into the hands of criminals, terrorists, or other unauthorized actors,” wrote NNSA Administrator Frank Klotz.

In response to the reports, Haley demanded, in a March 23 letter to DOE Secretary Ernest Moniz, that he either reroute the plutonium so that it would not enter South Carolina or cease the shipments altogether.

Less than two weeks later on April 5, Haley reported that she had spoken to Moniz and had been reassured that the Japanese material and other plutonium stockpiles would not be permanently stored at SRS. Moniz said the federal government plans to remove six tons of plutonium from the state.

It will be processed over the next five years at SRS and shipments to New Mexico will begin after the processing is complete. Another seven tons of surplus plutonium still resides at SRS but the federal government said in April that it has not identified a “preferred alternative” to dispose of the material.

The federal government has plans to remove an additional 1,431 kilograms of plutonium and uranium from foreign countries by 2022. South Carolina, by way of SRS, is expected to see most, if not all, of the material at some point.

None of the foreign plutonium is part of the South Carolina’s MOX program, another plutonium program that is designed to meet an agreement with Russia by converting, at SRS, 34 metric tons of weapons-grade plutonium into commercial nuclear fuel.

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That program is behind schedule and is at the center of a lawsuit between the Energy Department and South Carolina.

Per a 2003 agreement signed by both parties, either one ton of the MOX plutonium was supposed to be processed through the facility or removed from the state by Jan. 1, 2016. Neither happened, which is why, according to the agreement, the federal government was supposed to begin paying South Carolina \$1 million a day or up to \$100 million annually.

After a month of waiting for the Department of Energy to address the matter, South Carolina filed suit on Feb. 9. A hearing is scheduled for June 30 in Columbia.

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