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Toxicologist: Plan to detonate lead azide in Iowa a 'dumpster fire'

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Dr. Devra Davis was "horrified" when she heard about the U.S. Army's plans to detonate 68 barrels of lead azide, a highly volatile and reactive explosive, in southeastern Iowa.

"We spent decades trying to reduce exposures to lead... This is an entirely new vehicle," Davis said in a phone interview with the Des Moines Register. "Lead azide is a very dangerous, unstable material."

The U.S. Army plans to detonate 68 barrels of lead azide on Friday, Nov. 20, in Middletown, a town in southeastern Iowa, after it was found to be unstable during an inspection of the Iowa Army Ammunition Plant earlier this year.

Davis, an expert in lead exposure and founding executive director of the Board on Environmental Studies and Toxicology at the U.S. National Research Council of the National Academy of Sciences where she oversaw the Committee on Toxicology, said the U.S. Army should postpone the detonation.

"I've worked on lead for more than 40 years and it's unbelievable," Davis said. "You can blow it up, but you can never destroy lead."

Davis said in her time working as an epidemiologist and toxicologist, she has "never, ever heard of such a thing."

"I think that is dreadful and not fair and certainly not how we should be treating people in this day and age," Davis said of the planned detonation. "I think the American government owes the citizens more protection than that."

The Army and Environmental Protection Agency has directed Middletown residents to close the doors and windows of their homes as well as turn off their homes' HVAC systems. Residents are also encouraged to evacuate or shelter at the U.S. Army Reserve Center in Middletown.

"Even if you turn off your HVAC, there still could be ultrafine particulate suspended in the air that would be taken into these systems," Davis said.

Davis said the detonation sounds like a "terrible dumpster fire."

Toxicologist says Army was aware of lead deterioration for over two decades

Davis noted that the Army was aware of the deteriorating lead at the Iowa Army Ammunition Plant as early as 2004.

The then-40-year-old stockpile of lead azide at the Iowa plant spurred the Army's Armament Research Development Engineering Center's project focused on replacing lead-based compounds with copper nitrotetrazole, a more environmentally friendly chemical.

A 2026 inspection found the explosive had crystallized and degraded while stored in a mixture of ethanol and water.

"I don't understand why chemical neutralization wasn't undertaken years ago," Davis said.

Blast will render lead azide as 'ultrafine' particles

Davis said that once the lead azine is detonated, lead will "become ultrafine. Some of it will become ultrafine particulate matter 50-times smaller than a human hair. And when it gets to be that size, it doesn't just settle."

She said lead in an ultrafine particulate state "remains in the air, sometimes for weeks. So what are you going to tell people, not to breathe?"

David Cwiertny, director of the Center for Health Effects of Environmental Contamination and a professor at the University of Iowa, said the lead cloud will thin out as it travels north and the risk of breathing in the substance should pass "relatively quickly."

He noted heavier lead particles will settle to the ground and on surfaces, including outdoor furniture and playgrounds, which will need to be wiped down. He said cleaning up lead-contaminated land poses a larger challenge.

"You cannot simply wipe down farm fields, gardens, or topsoil," Cwiertny said. "Because those surfaces are hard to clean, we will ultimately need to rely on actual field samples after the event to measure how much lead settles there and understand what it means for our land and those crops and the quality of the environment."

Patrick O'Shaughnessy, a professor in the University of Iowa's College of Public Health Department of Occupational and Environmental Health, said the lead cloud will not be visible following the initial blast and advised impacted Iowans to stay inside during the recommended times even if they can't see it.

"Unlike a tornado warning system where you could really pinpoint it, that's not going to be the case," O'Shaughnessy said.

Toxicologist questions why robots, chemical neutralization isn't an option

Davis says chemical neutralization via robots would be a safer way to neutralize the lead azide rather than the Army's plan to detonate it.

"To the extent possible, humans should not be handling this material," Davis said. "The accidental exposure risk is real."

With chemical neutralization, "it would still be toxic material, but it could be managed," according to Davis.

The Army ruled out chemical neutralization because "achieving chemical contact requires opening drums and physically agitating shock-sensitive crystals, creating an extreme and unacceptable risk of fatal accidental detonation," according to an Army report.

Another Army report said chemical neutralization "requires significantly more 'hands-on' time and physical manipulation of the drums by personnel over a prolonged 7- to 22-day period, drastically increasing the probability of accidental, fatal detonation during handling."

The Army considered other options, including not taking action or transporting the lead azide to a different area for detonation, but neither were selected. The Army and the EPA deemed detonation to be the "safest course of action" to neutralize the material.

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