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NUCLEAR SAFETY

DOE's Investigation of Phosgene Gas Contamination Was Inadequate, but Experts Conclude That Worker Safety and Facilities Are Not Threatened

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Highlights

Highlights of GAO-07-712, a report to congressional addressees

Why GAO Did This Study

More than 700,000 tons of uranium are stored at two Department of Energy (DOE) sites where uranium enrichment took place and where two facilities are being constructed to treat depleted uranium. Some of the storage cylinders for uranium came from the Army more than 50 years ago and may originally have contained phosgene, a toxic gas used as a chemical weapon in World War I. In September 2005, DOE's Inspector General issued an alert warning that residual phosgene, if present, could threaten the safety of people and the treatment facilities.

GAO was directed to review DOE's investigation of possible phosgene contamination of uranium storage cylinders. GAO consulted a panel of experts to assess the adequacy of DOE's investigation and whether possible phosgene contamination could threaten the new treatment facilities under construction.

What GAO Recommends

GAO recommends that the Secretary of Energy strengthen DOE's review process for safety investigations to include reviewers who are independent of the investigations being done and can provide objective evaluations of the methods used and the findings and conclusions reached.

DOE agreed that workers and the public were not at risk but did not believe that its investigation had flaws. DOE did not comment on our recommendations.

www.gao.gov/cgi-bin/getrpt?GAO-07-712.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Gene Aloise at (202) 512-3841 or AloiseE@gao.gov.

What GAO Found

According to members of GAO's expert panel, although DOE adequately demonstrated that the public would not be harmed if small amounts of phosgene escaped from the storage cylinders, it neglected to explicitly document its analysis of worker safety in its investigation of possible phosgene contamination. DOE's regulations and guidance call for thorough safety analyses of newly identified hazards, such as possible phosgene contamination, to protect workers and the public. Yet DOE assumed, without explicitly documenting, that existing worker safety procedures were adequate to protect workers from the possible presence of phosgene. After GAO identified the need for DOE to support this key assumption, DOE provided supplemental information on worker safety; GAO's panel agreed that this supplement sufficiently supported DOE's position. In addition, although DOE's guidance calls for independent review of investigation results, DOE officials supervising the phosgene investigation also served as reviewers. This lack of independent review may have contributed to weaknesses in the investigation.

The experts GAO consulted agreed that, for two reasons, the facilities under construction in Ohio and Kentucky would not be threatened by possible phosgene contamination of uranium storage cylinders. First, at the start of treatment operations, cylinders containing depleted uranium will be placed inside pressure vessels designed to withstand and contain any leak from a cylinder. If phosgene were present, it would not affect either the pressure vessels or the treatment facilities. Second, during subsequent steps, any phosgene that may be processed with the depleted uranium would be destroyed by the extreme heat and water vapor applied during the treatment process.

Uranium Storage Cylinders at Paducah, Kentucky

Source: Uranium Disposition Services.