

# Most Alternative Technologies to Open Burning and Open Detonation of Conventional Waste Munitions Are Mature, Says New Report

Dec. 6, 2018

**FOR IMMEDIATE RELEASE** **Most Alternative Technologies to Open Burning and Open Detonation of Conventional Waste Munitions Are Mature, Says New Report** WASHINGTON – Most of the alternative technologies to open burning and open detonation (OB/OD) of conventional munitions designated for disposal are mature, including contained burn and contained detonation chambers with pollution control equipment, and many are permitted to replace OB/OD of waste munitions, says a [new report](#) by the National Academies of Sciences, Engineering, and Medicine.

However, without a clear directive and sufficient and stable funding from Congress, it will be impossible for the U.S. Army to implement a full-scale deployment of alternative technologies to replace OB/OD. To help address this, the DOD should analyze the overall cost of both the current practice as well as the alternatives to determine the funding necessary to increase the use of alternatives over time.

This report is a result of an 18-month study that examined the conventional munitions demilitarization program at the U.S. Department of Defense (DOD), as mandated in the Fiscal 2017 National Defense Authorization Act.

OB/OD operations destroy excess, obsolete, or unserviceable munitions, such as projectiles, bombs, rockets, landmines, and missiles by either detonating them or burning them in the open. This has been a common disposal practice for decades. While there have been some safety incidents, the practices are considered generally safe for workers, according to the U.S. Army, and the committee finds that the Army safety program appears to be effective. The downside of these operations is the process effluents that are released into the environment, containing some hazardous constituents, which are a significant concern for public interest groups.

"Because the U.S. military has a huge inventory of conventional munitions set for demilitarization, nearly 400,000 tons, the cost of alternative technologies and the successful disposal of these munitions through these alternatives are very important considerations for DOD and the Army," said Todd Kimmell, a principal investigator at the U.S. Department of Energy's Argonne National Laboratory and chair of the committee that conducted the study. "Complicating any push to fund replacement of open burning and open detonation with alternative technologies is the fact that EPA and the states maintain that permitted operations are safe for human health and the environment."

The report assesses the pros and cons of OB/OD and alternative technologies. Implementing alternative technologies for munitions treatment would result in reduced emissions compared with OB/OD, but it would also be associated with increased capital and operating costs, although with lower closure costs. In addition, alternative technologies that treat the same types of munitions as those treated by OB/OD will have varying throughputs, depending on the capabilities of the technologies, munitions being treated, and other factors including permit restrictions.

As part of the study, the committee focused on the DOD conventional munitions stockpiles being demilitarized at seven depots – Anniston Munitions Center; Blue Grass Army Depot; Crane Army Ammunition Activity; Hawthorne Army Depot; Letterkenny Munitions Center; McAlester Army Ammunition Plant; and Tooele Army Depot. However, the committee noted that the findings and recommendations of this report will have implications for and applicability to open burning and open detonation conducted at other locations.

Key findings of the report include:

The committee recommended DOD develop a detailed implementation plan for transitioning from OB/OD to alternative technologies, with appropriate performance metrics, and institutionalize it through the demilitarization program.

Representatives of public interest groups say that before selecting a technology to be implemented at a specific site, community preferences and the conditions of the site should be considered. The committee recommended that the Army identify issues that could affect the permit process for alternative technologies, including public concerns, and work with state regulators to minimize the chance of issues becoming problematic, thereby reducing the risk of permit delays.

The report notes some munitions may be unstable and possibly shock-sensitive due to decreasing stability in the explosives or propellants as they age. This makes them unsuitable for disposal using alternative technologies because transportation and handling must be minimized to reduce exposure of workers to the explosive hazards posed by these munitions. For this reason, the committee concluded that the capability for OB/OD would continue to be needed to dispose of certain munitions.

The study was sponsored by U.S. Army. The National Academies of Sciences, Engineering, and Medicine are private, nonprofit institutions that provide independent, objective analysis and advice to the nation to solve complex problems and inform public policy decisions related to science, technology, and medicine. The National Academies operate under an 1863 congressional charter to the National Academy of Sciences, signed by President Lincoln. For more information, visit <http://national-academies.org>. A committee roster follows.

## Contacts:

Riya Anandwala, Media Relations Officer  
Andrew Robinson, Media Assistant  
Office of News and Public Information  
202-334-2138; e-mail [news@nas.edu](mailto:news@nas.edu)

Follow us: Twitter [@theNASEM](#) | Instagram

[@thenasem](#)

| Facebook [@NationalAcademies](#)

[Newsroom](#)

Copies of *Alternatives for the Demilitarization of Conventional Munitions* are available from the National Academies Press at [www.nap.edu](http://www.nap.edu) or by calling 202-334-3313 or 1-800-624-6242. Reporters may obtain a copy from the Office of News and Public Information (contacts listed above).

**THE NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE** Division on Engineering and Physical Sciences  
Board on Army Science and Technology

**Committee on Alternatives for the Demilitarization of Conventional Munitions** **Todd A. Kimmell** (*chair*)

Principal Investigator  
Environmental Science Division  
Argonne National Laboratory  
Washington, D.C.

**Douglas M. Medville** (*vice chair*)  
Program Leader (retired)  
Chemical Material Disposal and Remediation  
MITRE Corp.

**Judith A. Bradbury**  
Technical Manager (retired)  
Pacific Northwest National Laboratory  
Richland, Wash.

**Gail Charnley**  
Principal  
HealthRisk Strategies LLC  
Washington, D.C.

**Herek L. Clack**  
Research Associate Professor  
Department of Civil and Environmental Engineering  
University of Michigan  
Ann Arbor

**Deborah L. Grubbe**  
Owner and President  
Operations and Safety Solutions LLC  
Chadds Ford, Pa.

**Rebecca A. Haffenden**  
Programs Attorney  
Argonne National Laboratory Associate/Global Empire, LLC  
Santa Fe, N.M.

**Peter R. Jaffe**  
William L. Knapp '47 Professor of Civil Engineering  
Department of Civil and Environmental Engineering, and  
Associate Director for Research  
Andlinger Center for Energy and the Environment  
Princeton University  
Princeton, N.J.

**Richard S. Magee**  
Executive Director  
New Jersey Corporation for Advanced Technology  
Hoboken  
Bedford, Mass.

**James P. Pastorick**  
President (retired)  
UXO Pro Inc.  
Alexandria, Va.

**Seth P. Tuler**  
Associate Teaching Professor  
Co-director, Bangkok Project Center  
Co-director, Boston Project Center  
Interdisciplinary and Global Studies Division

Worcester Polytechnic Institute  
Worcester, Mass.

**William J. Walsh**

Senior Counsel  
Environment, Energy & Natural Resources Practice  
Clark Hill PLC  
Washington, D.C.

**Lawrence J. Washington**

Corporate Vice President for Sustainability and Environment, Health, and Safety (retired)  
Dow Chemical Co.  
Midland, Mich.

**STAFF James C. Myska**

Staff Officer