GAO Highlights

Highlights of GAO-19-468, a report to congressional committees

April 2019

COMBATING NUCLEAR TERRORISM

NRC Needs to Take Additional Actions to Ensure the Security of High-Risk Radioactive Material

Why GAO Did This Study

NRC is responsible for regulating the security of radioactive material in the U.S. Failure to secure this material could result in an RDD causing socioeconomic damage. The Consolidated and Further Continuing Appropriations Act, 2015 (Public Law 113-235) includes a provision for GAO to review NRC's security requirements for high-risk radioactive material. This report examines, among other things, (1) the extent to which radioactive security experts agreed that NRC's assessment of risk includes all relevant criteria, and (2) NRC's 2016 evaluation of its security requirements for high-risk radioactive material. GAO reviewed NRC policies and procedures, worked with the National Academies of Sciences to convene a meeting with 18 experts in radioactive security, and reviewed 3 recent Sandia studies. GAO used the views of security experts to define high risk, and they generally agreed that high risk includes both larger and some smaller quantities of radioactive materials.

What GAO Recommends

GAO is making three recommendations to NRC, including that it consider socioeconomic consequences and fatalities from evacuations as criteria for determining security measures and require additional security measures for smaller quantities of high-risk material. NRC generally disagreed with the recommendations, stating that GAO's evidence does not provide a sufficient basis for recommended changes. GAO continues to believe these recommendations are important.

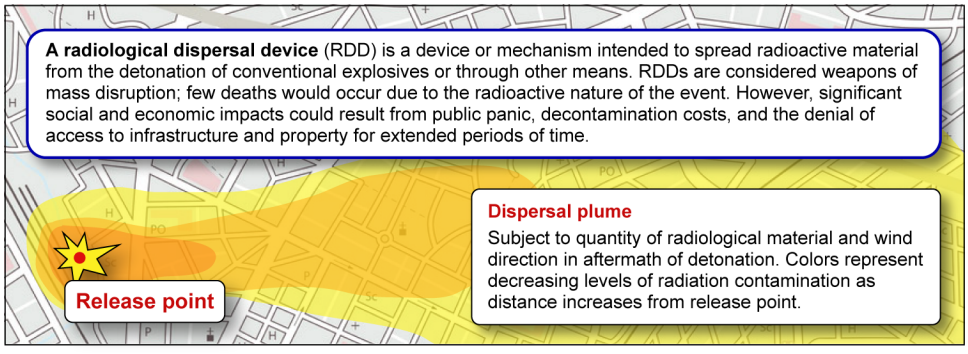
View GAO-19-468. For more information, contact David Trimble at (202) 512-3841 or trimbled@gao.gov.

What GAO Found

The 18 experts at a meeting GAO convened with the National Academies of Sciences generally agreed that the Nuclear Regulatory Commission (NRC) assessment of risks of radioactive material does not include all relevant criteria. NRC limits its criteria to prompt fatalities and deterministic health effects from radiation, which, according to the experts and recent studies, are unlikely to result from a radiological dispersal device (RDD). Two studies from Sandia National Laboratories (Sandia) measuring consequences of RDDs, released in 2017 and 2018, found that there would be no immediate fatalities from radiation. The experts at the meeting generally agreed that socioeconomic effects (e.g., relocations and clean-up costs) and fatalities that could result from evacuations are the most relevant criteria for evaluating the risks of radioactive material. The two Sandia studies found that a large RDD could cause about $30 billion in damage and 1,500 fatalities from the evacuation, and a considerably smaller RDD could cause $24 billion in damage and 800 fatalities from the evacuation. By considering socioeconomic impacts and fatalities resulting from evacuations in its criteria, NRC would have better assurance it was considering the more likely and more significant consequences of an RDD.

NRC's 2016 report evaluating its security requirements for high-risk radioactive material, required by Public Law 113-235, considered only the security of larger quantities of such material and not smaller quantities. Experts who attended GAO's meeting stated, and two 2018 Sandia studies agree, that if smaller quantities of certain radioactive material were used in an RDD, the impacts would be comparable to an RDD with a considerably larger amount of such material. For example, a 2018 study from Sandia found that malicious use of certain radioactive materials in smaller quantities could cause significant socioeconomic consequences. By requiring additional security measures for these smaller quantities of high-risk material, NRC can have better assurance that its security requirements are sufficient to secure all high-risk radioactive material from theft and use in an RDD.

Example of a Radiological Dispersal Device (RDD)



Sources: GAO analysis of Nuclear Regulatory Commission and U.S. Department of Homeland Security data; VectorStock® (map). GAO-19-468