GAO Highlights

COMBATING NUCLEAR SMUGGLING

DHS Research and Development on Radiation Detection Technology Could Be Strengthened

Why GAO Did This Study

Preventing terrorists from smuggling nuclear or radiological material to carry out an attack in the United States is a top national priority. DNDO's mission is to improve capabilities to deter, detect, respond to, and attribute responsibility for nuclear terrorist attacks, in coordination with domestic and international partners. As part of this mission, DNDO conducts R&D on radiation and nuclear detection devices.

GAO was asked to review DNDO's management of its R&D program. This report (1) provides information on the types of R&D projects DNDO started in fiscal years 2008 through 2013, (2) examines the extent to which DNDO's process for planning and selecting R&D projects to fund aligns its investments with gaps in the GNDA, and (3) examines the steps DNDO takes to evaluate the outcomes of R&D projects in which it invests. To conduct this work, GAO analyzed DNDO program documentation and R&D project data for projects starting in fiscal years 2008 through 2013, and interviewed DNDO and other DHS component officials, among other actions.

What GAO Recommends

GAO recommends, among other things, that DNDO document how its research investments align with its research challenges and gaps in the GNDA, and that it take a systematic approach for evaluating the extent to which outcomes of its R&D investments collectively contribute to addressing its research challenges. DHS agreed with GAO's recommendations.

View GAO-15-263. For more information, contact David C.Trimble at (202) 512-3841 or trimbled@gao.gov or Timothy M. Persons (202) 512-6412 or personst@gao.gov.

What GAO Found

During fiscal years 2008 through 2013, the Department of Homeland Security's (DHS) Domestic Nuclear Detection Office (DNDO) started 189 research and development (R&D) projects that it grouped into various scientific or technological focus areas, known as portfolios. These projects are intended to address gaps in the Global Nuclear Detection Architecture (GNDA), a U.S. government framework to detect and interdict nuclear smuggling. As of September 2014, DNDO had obligated approximately $350 million to these projects. For example, DNDO's shielded detection portfolio, which investigates methods for detecting shielded nuclear material, had the most projects start during this time—48 projects—and received the most obligations—approximately $103 million, or about 30 percent of obligations.

Because of limitations in DNDO's documentation, it is unclear to what extent DNDO's process for planning and selecting R&D projects to fund aligns these investments with gaps in the GNDA. According to DNDO officials, they developed high-level goals—known as research challenges—to align with gaps in the GNDA and guide R&D investment planning. Officials said they regularly discuss how ongoing R&D projects align with these research challenges and gaps in the GNDA. However, DNDO does not document this alignment, consistent with federal standards for internal control. Without such documentation, it is unclear to what extent DNDO's investments are positioned to address gaps in the GNDA.

DNDO has taken some steps to evaluate the outcomes of individual R&D projects, which may demonstrate the success of specific technologies, but it does not have a systematic approach for evaluating how the outcomes of projects may collectively contribute to addressing its overall research challenges. Under federal standards for internal control, managers are to compare actual program performance to expected results and analyze significant differences. Such analysis can help managers identify program problems, if any, and make improvements. Without a systematic approach for evaluating the results of its investments in R&D projects more broadly, DNDO cannot demonstrate the extent to which its investments contribute to addressing its overall research challenges.

Examples of DNDO-Funded R&D Projects

Source: Oak Ridge National Laboratory (photo). | GAO-15-263

Prototype to detect and identify sources of illicit material traveling at normal speed over multiple lanes of traffic.

Source: InradOptics (photo). | GAO-15-263

Stilbene, a new material developed for detecting nuclear threats.

United States Government Accountability Office