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COMBATING NUCLEAR SMUGGLING

Recent Testing Raises Issues About the Potential Effectiveness of Advanced Radiation Detection Portal Monitors

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Highlights

Highlights of GAO-10-252T, a testimony before the Subcommittee on Investigations and Oversight, Committee on Science and Technology, House of Representatives

Why GAO Did This Study

The Department of Homeland Security's (DHS) Domestic Nuclear Detection Office (DNDO) is responsible for addressing the threat of nuclear smuggling. Radiation detection portal monitors are key elements in the nation's defenses against such threats. DHS has sponsored testing to develop new monitors, known as advanced spectroscopic portal (ASP) monitors, to replace radiation detection equipment being used at ports of entry. DNDO expects that ASPs may offer improvements over current-generation portal monitors, particularly the potential to identify as well as detect radioactive material and thereby to reduce both the risk of missed threats and the rate of innocent alarms, which DNDO considers to be key limitations of radiation detection equipment currently used by Customs and Border Protection (CBP) at U.S. ports of entry. However, ASPs cost significantly more than current generation portal monitors. Due to concerns about ASPs' cost and performance, Congress has required that the Secretary of Homeland Security certify that ASPs provide a significant increase in operational effectiveness before obligating funds for full-scale ASP procurement. In May 2009, GAO issued a report (GAO-09-655) on the status of the ongoing ASP testing round.

This testimony (1) discusses the principal findings and recommendations from GAO's May report on ASP testing and (2) updates those findings based on information from DNDO and CBP officials on the results of testing conducted since the report's issuance. DHS, DNDO, and CBP's oral comments on GAO's new findings were included as appropriate.

View GAO-10-252T or key components.
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What GAO Found

GAO's May 2009 report on ASP testing found that DHS increased the rigor in comparison with previous tests and thereby added credibility to the test results. However, GAO's report also questioned whether the benefits of the ASPs justify its high cost. In particular, the DHS criteria for a significant increase in operational effectiveness require only a marginal improvement in the detection of certain weapons-usable nuclear materials, which DNDO considers a key limitation of current-generation portal monitors. The marginal improvement required of ASPs is particularly notable given that DNDO has not completed efforts to fine-tune current-generation equipment to provide greater sensitivity. Moreover, the test results showed that ASPs performed better than current-generation portal monitors in detection of such materials concealed by light shielding approximating the threat guidance for setting detection thresholds, but that differences in sensitivity were less notable when shielding was slightly below or above that level. Finally, DNDO had not yet updated its cost-benefit analysis to take into account the results of ASP testing and did not plan to complete computer simulations that could provide additional insight into ASP capabilities and limitations prior to certification even though test delays have allowed more time to conduct the simulations. DNDO officials believed the other tests were sufficient for ASPs to demonstrate a significant increase in operational effectiveness. GAO recommended that DHS assess ASPs against the full potential of current-generation equipment and revise the program schedule to allow time to conduct computer simulations and to uncover and resolve problems with ASPs before full-scale deployment. DHS agreed to a phased deployment that should allow time to uncover ASP problems but disagreed with the other recommendations, which GAO believes remain valid.

The results of DNDO's most recent round of field testing raise continuing issues. In July 2009, DNDO resumed the field testing of ASPs that it initiated in January 2009 but suspended because of serious performance problems. However, the July tests also revealed critical performance deficiencies. For example, the ASP had a high number of false positive alarms for the detection of certain nuclear materials. According to CBP, these false alarms are very disruptive in a port environment because any alarm for this type of nuclear material causes CBP to take enhanced security precautions. To address these false alarms, DNDO plans to modify the ASP to make these monitors less sensitive to these nuclear materials and thereby diminishing the ASPs' capability. As GAO reported earlier this year, previous testing results demonstrated that the ASPs represented a marginal improvement in detecting these materials. By reducing the sensitivity to nuclear materials even further, it is uncertain exactly what improvement in detecting these materials the ASPs are providing or whether DNDO might be able to achieve a similar level of performance as the modified ASPs by improving the current-generation portal monitors that are already in place. In addition, the July 2009 testing also identified a critical equipment failure, including an alert malfunction, which DNDO is taking steps to resolve for future testing.