

Why GAO Did This Study

Ionizing radiation comes from both natural sources and medical, commercial, and industrial activities. Prior research has not clearly identified how low doses of such radiation affect the health of millions of people exposed in various settings. The 2022 National Academies report found that a coordinated, multidisciplinary low-dose radiation research program could enable a better assessment of current risk estimates.

Congress included a provision in statute for GAO to review the activities of DOE's low-dose radiation research program. This report addresses the extent to which (1) DOE and selected agencies have efforts that can help address the findings and recommendations of the National Academies report and (2) DOE has developed a plan for addressing the findings and implementing the recommendations of the report.

GAO analyzed documents from DOE and three other agencies that fund or conduct low-dose radiation research and interviewed agency officials involved in low-dose radiation research, as well as officials from OSTP. GAO compared DOE's efforts to leading practices on interagency collaboration.

What GAO Recommends

GAO is making two recommendations for DOE's Office of Science to lead a collaborative effort for an interagency low-dose radiation research program and to work with Congress if the office finds that it should share or hand over leadership to another agency. DOE concurred with both recommendations.

View [GAO-24-106317](#). For more information, contact Candice N. Wright, 202-512-6888, WrightC@gao.gov.

LOW-DOSE RADIATION

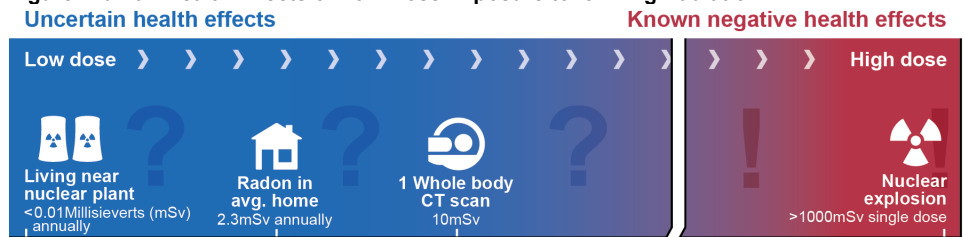
Agency Leadership and Collaboration Are Needed to Set the Direction of Future Research

What GAO Found

In 2018, Congress directed the Department of Energy (DOE) to carry out a research program on low-dose radiation and in 2020, directed DOE to enter into an agreement with the National Academies of Sciences, Engineering, and Medicine (National Academies) to develop a research agenda for that program. The National Academies issued a report in June 2022 with recommendations and priorities for a research program to better assess health effects of low-dose radiation (see figure).

DOE and three selected agencies involved in low-dose radiation research have some ongoing and planned efforts that can help address the findings and recommendations of the June 2022 report. DOE's Office of Environment, Health, Safety, and Security has long supported research on the health of people exposed to low-dose radiation. In addition, DOE's Office of Science resumed some low-dose radiation research activities in 2020 after ending its previous research program in 2016. The new research is focused on using artificial intelligence (AI) to better understand low-dose radiation biology. DOE invested \$22.3 million in this research in fiscal years 2020 through 2023. One of the funded projects uses AI to build a framework for estimating cancer risk based on long-term exposure to radiation. Other selected agencies continue to support and conduct research that generally aligns with agency specific missions, such as understanding cancer risk in people exposed to radiation and promoting occupational safety and health.

Figure: Human Health Effects of Low-Dose Exposure to Ionizing Radiation



Sources: Environmental Protection Agency (data); GAO (icons). | GAO-24-106317

Note: Low-dose radiation is a dose of less than 100 millisieverts (mSv). For details see fig. 1 in GAO-24-106317.

DOE's Office of Science—the sponsor of the National Academies report—has taken some steps in response to the report. According to DOE, its efforts—including plans to apply AI—are relevant to three of the 11 research priorities from the National Academies report. Currently, DOE does not have plans to expand its research to address the other priorities. However, DOE is seeking input from its advisory committee by spring 2024 on the potential scope of a program. Nevertheless, Office of Science officials told GAO that a low-dose radiation research program is not a priority because, among other reasons, the research might not reduce knowledge gaps enough to lead to changes in radiation protection regulations.

In 2020, Congress directed DOE to engage with other federal agencies as part of its low-dose radiation research program. Additionally, the National Academies called for coordination across federal agencies that carry out low-dose radiation research. However, DOE's Office of Science has not led a coordinated response to the National Academies report or worked with the Office of Science and Technology Policy (OSTP) or another agency to do so. By taking a leadership role for an interagency low-dose radiation research program or taking steps to initiate efforts with another agency, DOE could help to resolve uncertainty with low-dose radiation research in the United States.