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PIPELINE SAFETY

Systematic Process Needed to Evaluate Outcomes of Research and Development Program

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Highlights

Highlights of GAO-03-746, a report to congressional subcommittees

Why GAO Did This Study

From 1998 through 2002, a total of 1,770 pipeline accidents occurred, resulting in 100 fatalities and $621 million in property damage. The Office of Pipeline Safety (OPS) within the Department of Transportation operates a research and development (R&D) program aimed at advancing the most promising technologies for ensuring the safe operation of pipelines. In fiscal year 2003, OPS received $8.7 million for its R&D program, a sevenfold increase since fiscal year 1998. In response to a directive from the House Committee on Appropriations, GAO (1) assessed OPS's distribution of funding among various areas of R&D and the alignment of this funding with its mission and goals, (2) surveyed experts to obtain their views on R&D priorities, and (3) determined how OPS evaluates R&D outcomes.

What GAO Recommends

To better determine the effectiveness of its R&D program, GAO recommends that OPS develop a systematic process for evaluating program outcomes, using recognized best practices, and include the results of R&D evaluations in its annual reports to Congress.

OPS officials told us that they generally agreed with the report's findings and will follow our recommendations as they continue to develop an evaluation process for their R&D program.

www.gao.gov/cgi-bin/getrpt?GAO-03-746.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Peter Guerrero at (202) 512-2834 or guerrerop@gao.gov.

What GAO Found

OPS distributes its R&D budget among four main areas. For example, in fiscal year 2003, the office plans to allocate its $8.7 million budget as follows:

- 46 percent ($4.0 million) to developing new technologies to prevent damage to pipelines and prevent leaks;
- 21 percent ($1.9 million) to improving technologies for operating, controlling, and monitoring the condition of pipelines;
- 19 percent ($1.7 million) to improved pipeline materials, such as materials that are resistant to damage and defects; and
- 14 percent ($1.2 million) to efforts to improve data on the location and safety performance of pipelines.

On the basis of our work, we believe that OPS's R&D funding is generally aligned with its mission and pipeline safety goals. OPS has taken a number of steps to ensure this alignment. For example, it obtained the views of a variety of experts and stakeholders in deciding on its R&D priorities and has described in various plans how its R&D efforts can lead to new and improved technologies that can help achieve its safety performance goals, such as reducing the impacts of pipeline accidents.

The pipeline safety R&D priorities of the experts we surveyed are generally consistent with OPS's R&D priorities. For example, most assigned a high priority to the two areas of R&D that receive the highest amount of funding from OPS.

OPS's efforts to evaluate the outcomes of its R&D have been limited. The agency has taken some preliminary steps toward developing an evaluation process for its R&D program, such as identifying possible measures of program results. Leading research organizations, the Office of Management and Budget, and GAO have identified a number of best practices for systematically evaluating the outcomes of federal R&D programs, such as setting clear R&D goals, measuring progress toward goals, and reporting periodically on evaluation results. These best practices can help OPS to determine the effectiveness of its R&D program in achieving desired outcomes, such as the development and use of new and improved technologies that can enhance pipeline safety.

Pipeline technicians remove a ruptured section of pipe in Bellingham, Washington, following the 1999 accident that resulted in three fatalities, massive environmental damage, and at least $45 million in property damage. Damage to the pipeline from excavation was one of the probable causes of the rupture. The Office of Pipeline Safety funds R&D aimed at developing new techniques for preventing such damage.

Source: National Transportation Safety Board.