
DOE's Environmental Cleanup Mission

**Scope and Growth in DOE's Environmental
Liabilities and Challenges to Progress**

**National Academies Committee Meeting
February 24, 2020**

The U.S. Government's Environmental Liability Is Nearly \$600 Billion

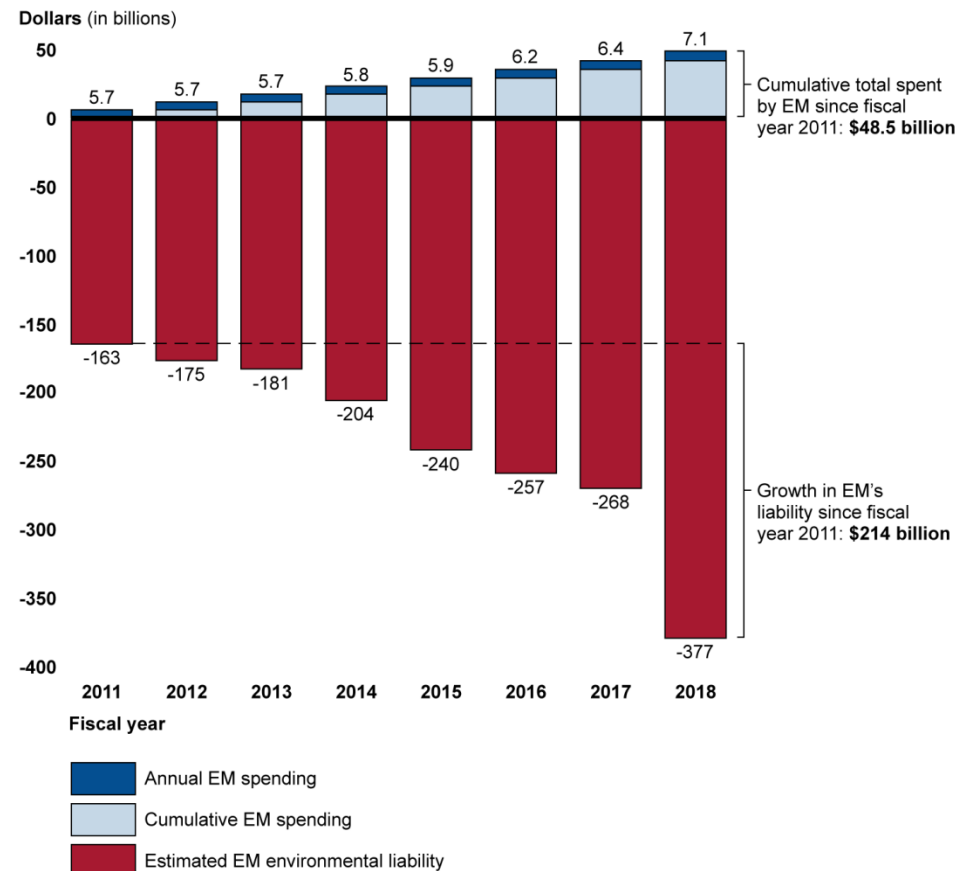
- As of fiscal year 2018, the U.S. government's environmental liability was reported at **\$577 billion**.
- This was an overall increase of \$113 billion since 2017.
- This is the 3rd highest liability listed in the Financial Report of the United States Government.

United States Government Balance Sheets as of September 30, 2018, and 2017

(In billions of dollars)	2018	Restated 2017
Liabilities:		
Accounts payable (Note 10)	86.7	70.8
Federal debt securities held by the public and accrued interest (Note 11)	15,812.7	14,724.1
Federal employee and veteran benefits payable (Note 12)	7,982.3	7,700.1
→ Environmental and disposal liabilities (Note 13).....	577.3	464.5
Benefits due and payable (Note 14).....	211.1	218.8
Insurance and guarantee program liabilities (Note 15)	170.2	202.5
Loan guarantee liabilities (Note 4)	38.2	42.9
Other liabilities (Note 16)	479.0	473.1
Total liabilities.....	25,357.5	23,896.8
Contingencies (Note 18) and Commitments (Note 19)		

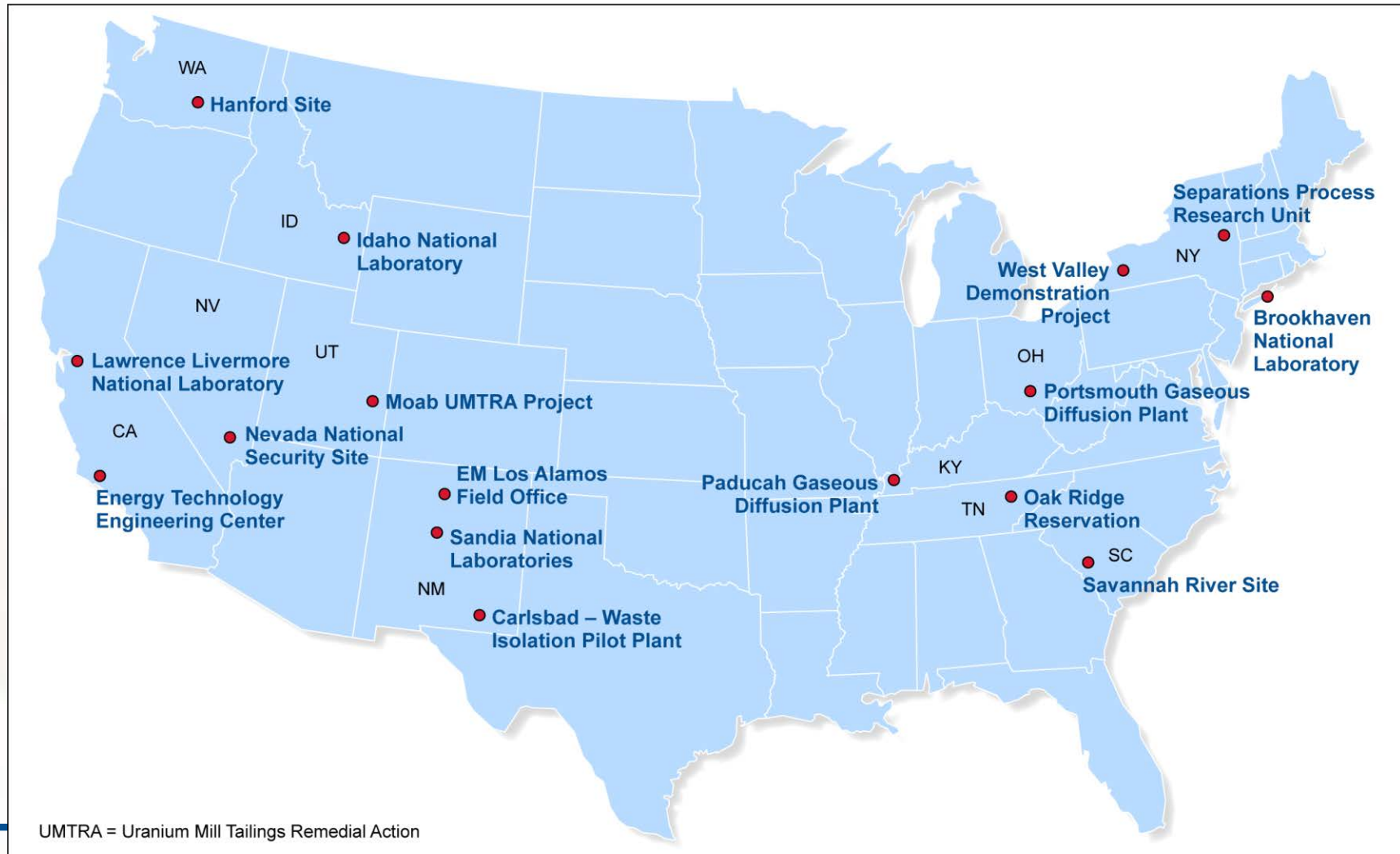
DOE's Environmental Liability

- DOE's overall environmental liability was \$505 in FY2019—an increase of **\$121 billion** since 2017.
- From fiscal years 2011 through 2018:
 - EM spent approximately **\$48 billion**.
 - EM's environmental liability grew by **\$214 billion**, from \$163 billion to \$377 billion.



Source: GAO analysis of Department of Energy financial and budget data. | GAO-19-460T

EM Conducts Cleanup at 16 Sites



EM's Environmental Liabilities May Grow

- **Minimum safety work**—which are recurring activities necessary to maintain EM's sites—made up a total of at least \$2.7 billion, or 42 percent, of EM's \$6.4 billion fiscal year 2018 budget
- EM has not conducted a formal **root cause analysis** to identify the causes for the growth in its environmental liabilities (this is a program management leading practice).
- Costs of some **future work** are not yet included
- Changes in **assumed cleanup remedies** could drive costs to increase

Key Findings of GAO's Recent Work (GAO-19-460T)

- EM does not have a program-wide cleanup **strategy**.
- EM manages most of its cleanup work as **operations activities**, under less stringent requirements than capital asset projects.
- EM does not manage its work as an **integrated program**.
- EM does not follow **project management** leading practices.
- EM's cleanup **performance measures** do not provide a clear picture of progress.
- EM reports and budget material have not provided required or **accurate information** on funding needed.

EM Does Not Have a Program-Wide Cleanup Strategy (GAO-19-28)

- EM relies primarily on individual sites to locally negotiate cleanup activities and establish priorities.
- EM sites generally do not consider other sites' risks and priorities when making cleanup decisions.
- GAO and others have recommended over the last 2 decades that EM develop national priorities to balance risks and costs across and within its sites.
- However, EM has not developed program-wide strategy that sets priorities and describes how EM will address its greatest risks.
- Without a strategy that sets national priorities and describes how DOE will address its greatest risks, EM lacks assurance that it is making the most cost-effective cleanup decisions across its sites.

EM Operations Activities (GAO-19-223)

- According to EM policy, operations activities are reoccurring facility or environmental operations as well as activities that are project-like, with defined start and end dates.
- DOE's EM program manages most of its cleanup work as operations activities, under less stringent requirements than capital asset projects.

Examples of Requirements for Operations Activities and Capital Asset Projects

Office of Environmental Management's 2017 Cleanup Policy

Contains requirements for operations activities

- Review and approval within EM
- Original cost and scope baselines can change and project would still be considered successful
- No requirement for a root cause analysis
- No requirement for contingency funding

EM = Department of Energy's Office of Environmental Management

77%
of EM's FY
2019 budget

Department of Energy's Order 413.3B

Contains requirements for capital asset projects

- Review by independent expert organizations and approval by Department of Energy senior leadership
- Project must be completed within 110% of the original scope and cost baseline to be considered successful
- Root cause analysis is required if project can no longer meet baseline
- Contingency funding must be included in the total project cost estimate

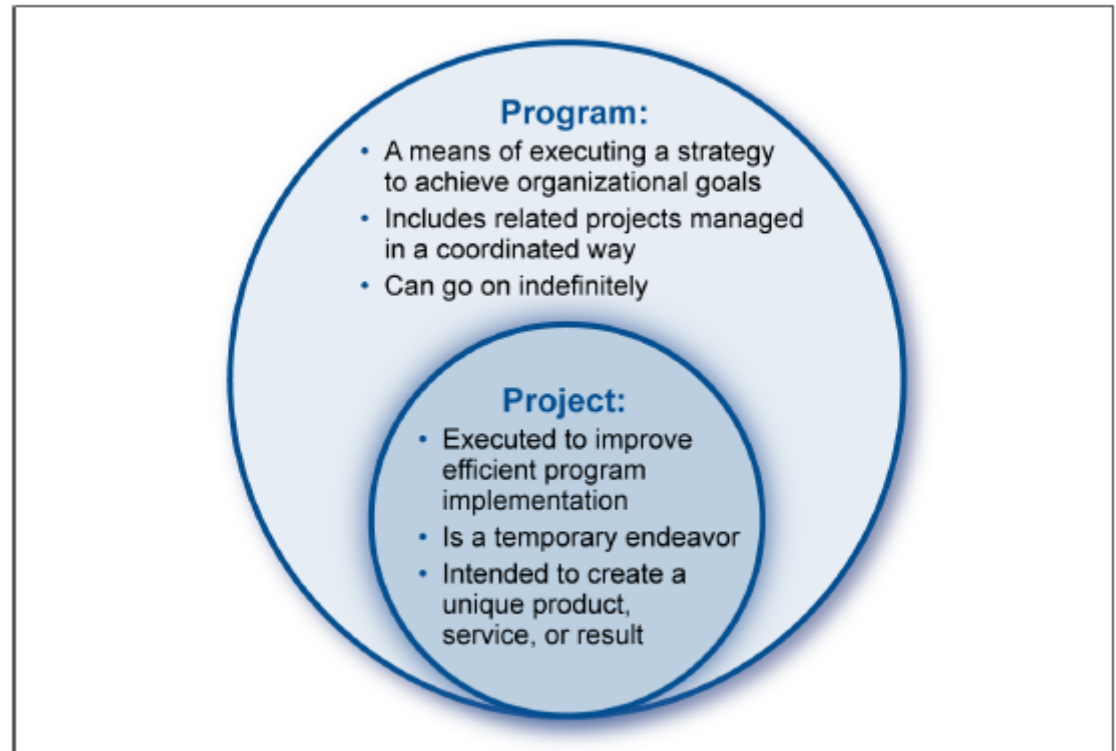
18%
of EM's FY
2019 budget

Source: GAO analysis of Department of Energy information. | GAO-19-223

EM's Status as a Program (GAO-19-223)

- EM refers to itself as a program.
- EM's organization and mission fit PMI's definition of a program.
- **Programs** are a means of executing a strategy and achieving organizational goals and objectives.
- A **project** is a temporary endeavor undertaken to create a unique product, service, or result.

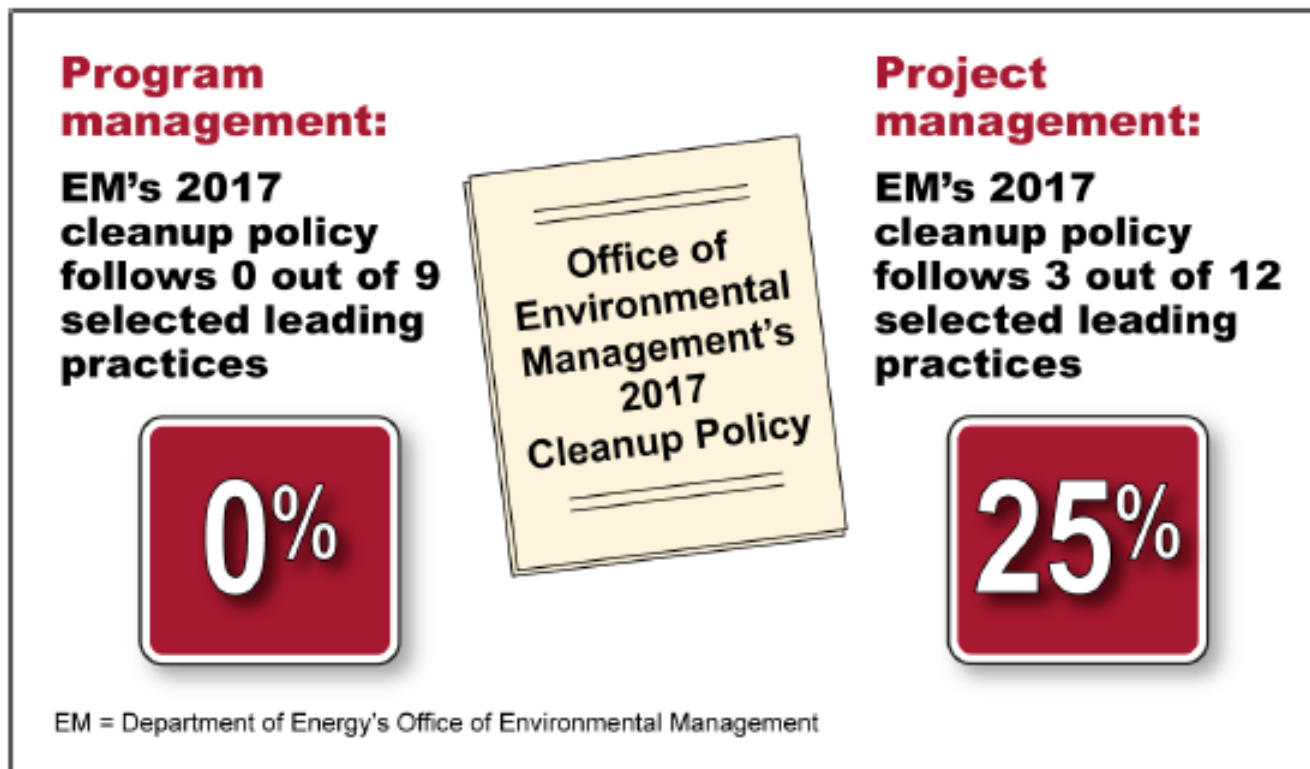
Figure 2: Relationship between a Program and a Project



Source: GAO analysis of Project Management Institute information. | GAO-19-223

EM Does Not Follow Most Selected Program and Project Management Leading Practices (GAO-19-223)

Figure 5: Percentage of Selected Leading Practices Followed by DOE's Office of Environmental Management's 2017 Cleanup Policy



Source: GAO analysis of Department of Energy information. | GAO-19-223

Program Management Leading Practices

(GAO-19-223)

1. Having a program management plan and a roadmap that are updated regularly.
2. Having a reliable, integrated, comprehensive life-cycle cost estimate that is updated on a regular basis.
3. Having a reliable, integrated master schedule that is updated on a regular basis.
4. Measuring performance against both a program's life-cycle cost and integrated master schedule baselines.
5. Completing performance reporting and analysis in a way that provides a clear picture of program performance
6. Having a lessons learned database.
7. Conducting program risk management throughout the life of the program.
8. Monitoring and controlling the program, including conducting root cause analyses and developing corrective action plans.
9. Having an independent oversight body that conducts periodic reviews of the progress of the program in delivering its expected benefits.

Project Management Leading Practices

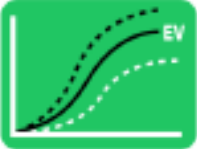
(GAO-19-223)

1. Establishing a performance baseline and tracking it from the beginning to the end of the project.
2. Conducting monitoring and controlling activities to measure performance at regular intervals.
3. Using an EVM system that is independently certified and continuously monitored to assess project performance.
4. Establishing a project execution plan with policies and procedures to manage and control project planning.
5. Clearly and completely defining the scope of a project so that its so that its performance can be measured.
6. Developing a cost estimate using GAO best practices
7. Developing and maintaining an integrated master schedule using GAO best practices
8. Conducting risk assessments throughout the life cycle of the project; prioritizing risks in a risk register; developing risk mitigation strategies; and determining the appropriate amount of contingency.
9. Capturing lessons learned throughout the continuum of a project in a database and disseminating them among projects.
10. Developing a root cause analysis and corrective action plan to identify and address the underlying causes of cost overruns, schedule delays, and performance shortcomings when a cost or schedule overrun occurs
11. Conducting a variety of independent reviews throughout the life of a project, including at key decision points, and on multiple aspects of the project, such as the mission need, cost, earned-value management system, and baseline review.
12. Establishing project-reporting systems/databases to provide a clear picture of project performance to management and to keep the contractor accountable.

Example: Opportunities to Manage Cleanup of DOE's Gaseous Diffusion Plants as a Program (GAO-20-63)

- EM is managing cleanup of three gaseous diffusion plants (GDPs) as three individual sites, not in an integrated manner.
- Why manage cleanup of the GDPs as a program?
 - It is consistent with the definition of a program.
 - They share a single D&D Fund to pay for cleanup.
 - DOE has stated its intent to manage cleanup of the 3 sites in an integrated manner.
 - There may be opportunities to leverage resources and coordinate activities across the 3 sites.
 - The National Academies recommended an integrated approach to cleanup of the GDPs in 1996.
- The three GDPs do not have:
 - A GDP-wide program management plan.
 - An integrated master schedule.
 - An integrated, comprehensive life-cycle cost estimate.

EM's Cleanup Performance Measures Do Not Provide a Clear Picture of Overall Performance (GAO-19-223)

Performance measure	Findings	Accurately measures EM's performance
Earned value management (EVM) systems 	- X EVM systems used by contractors covering operations activities are not comprehensive - X EVM systems do not provide reliable data on performance - X EVM systems do not support decision making by senior EM headquarters management - X Much of the cleanup work is categorized in a way that limits the usefulness of the EVM data	 Not clear
Program-wide performance metrics 	X Not connected to cost so difficult to determine whether EM received good value from the contractor	 Not clear
Cleanup milestones 	- X Milestones regularly re-negotiated and changes not tracked - X Reasons for changes to milestones are not recorded	 Not clear

EM = Department of Energy's Office of Environmental Management

EM Has Inconsistently Reported on Cleanup Status and Its Information May Be Misleading (GAO-19-28)

Table 1: GAO Analysis of Office of Environmental Management's (EM) Fiscal Year 2017 Future-Years Defense Environmental Management Plan

Reporting requirement	Extent to which the plan met requirement	Summary of GAO analysis
Timeliness: Submit annually at or around President's budget submission	Did not meet	The plan was first mandated in 2011, but EM submitted it only twice since then—once in 2012 and most recently in August 2017, 3 months after the fiscal year 2018 budget was submitted.
Expenditures/estimated future costs: Estimated expenditures and proposed appropriations in budget year and at least 4 succeeding fiscal years.	Did not meet	Plan provides general life-cycle cost estimates that are lower than the costs reflected in EM's environmental liability estimate, rather than specifying estimated expenditures and proposed appropriations for the budget year plus 4 succeeding fiscal years.
List of cleanup activities and projects: Provide a detailed list of activities planned for the budget year and 4 succeeding fiscal years	Partially met	Budget year activities are explained at a high level in a "highlights" section for each site. Although activities for fiscal year 2018 are discussed, activities for fiscal years 2019 through 2021 are outlined at a high level but not detailed.
Milestones: List all milestones for budget submission year and 4 succeeding years, due date, and statement of whether milestones will be met and, if not, why not.	Partially met	Plan shows milestones by site. However, out of 154 milestones listed, the plan shows only one milestone that may be missed; yet the Department of Energy has noted publicly that there is a high risk of missing another milestone (at Hanford).

Source: GAO analysis of the Department of Energy's Office of Environmental Management's (EM) 2017 Future-Years Defense Environmental Management Plan. | GAO-19-480T

Note: Reporting requirements are from the National Defense Authorization Act for Fiscal Year 2011.

GAO's High Risk List (GAO-19-157SP)

- The **U.S. Government's Environmental Liability** is included in GAO's High Risk List.
- DOE has not met the five criteria for removal from the High Risk List:
 - Leadership Commitment
 - Capacity
 - Action Plan
 - Monitoring
 - Demonstrated Progress



Source: GAO analysis. | GAO-19-157SP

Recent GAO Reports on Environmental Cleanup Issues

- *Nuclear Cleanup: Actions Needed to Improve Cleanup Efforts at DOE's Three Former Gaseous Diffusion Plants (GAO-20-63)*
- *Environmental Liabilities: DOE Would Benefit from Incorporating Risk-Informed Decision-Making into Its Cleanup Policy (GAO-10-339)*
- *Nuclear Waste Cleanup: DOE Faces Project Management and Disposal Challenges with High-Level Waste at Idaho National Laboratory (GAO-19-494)*
- *Department of Energy: Environmental Liability Continues to Grow, and Significant Management Challenges Remain for Cleanup Efforts (GAO-19-460T)*
- *Department of Energy Contracting: Actions Needed to Strengthen Subcontract Oversight (GAO-19-107)*
- *High-Risk Series: Substantial Efforts Needed to Achieve Greater Progress on High-Risk Areas (GAO-19-157SP)*
- *Nuclear Waste Cleanup: DOE Could Improve Program and Project Management by Better Classifying Work and Following Leading Practices (GAO-19-223)*
- *Nuclear Waste: DOE Should Take Actions to Improve Oversight of Cleanup Milestones (GAO-19-207)*
- *Department of Energy: Program-Wide Strategy and Better Reporting Needed to Address Growing Environmental Cleanup Liability (GAO-19-28)*
- *Hanford Waste Treatment Plant: DOE Needs to Take Further Actions to Address Weaknesses in Its Quality Assurance Program (GAO-18-241)*
- *Nuclear Waste: Opportunities Exist to Reduce Risks and Costs by Evaluating Different Waste Treatment Approaches at Hanford (GAO-17-306)*