Subcommittee on Oversight and Investigations
Hearing on
"DOE's Mounting Cleanup Costs: Billions in Environmental Liability and Growing"
May 1, 2019

Mr. David Trimble, Director, Natural Resources and Environment
U.S. Government Accountability Office

The Honorable Frank Pallone, Jr. (D-NJ)

1. **In January 2019, the Government Accountability Office (GAO) found that the Office of Environmental Management (EM) relies primarily on its sites to select cleanup remedies. What steps should EM headquarters take to provide additional oversight over its sites?**

As we reported in January 2019, we and others have made several recommendations over the last 2 decades that EM develop national priorities to balance risks and costs across and within its sites.[1] For example, a 2015 report by the Consortium for Risk Evaluation with Stakeholder Participation recommended that DOE develop an approach to compare priorities across the complex based on risk and direct resources to better address higher-risk activities. In addition, in 2011 DOE's IG recommended that EM address its environmental responsibilities on a national, complex-wide basis and direct resources to high-risk activities that threaten human health and safety or the environment. In our January 2019 report, we recommended that EM develop a program-wide strategy that outlines how EM will direct available resources to address human health and environmental risks across and within sites. DOE concurred with this recommendation.

2. **EM conducts the majority of its work with limited independent oversight from the Department of Energy (DOE) or others. What steps should DOE take to improve independent oversight of EM and its operations activities?**

We have recommended that DOE establish criteria for classifying its work as operations activities—which use less stringent requirements than capital asset projects— and, consistent with leading practices, require independent reviews of its cleanup program. As we reported in February 2019, two DOE bodies play a role in the oversight of EM's capital asset projects: (1) DOE's Office of Project Management, which is responsible for providing DOE-wide leadership and assistance pertaining to project management, as well as validating project performance baselines for the department's capital asset projects; and (2) the Project Management Risk Committee, which reviews and provides advice on capital asset projects with a total project cost of $100 million or more.[2] However, EM manages most of its cleanup work as operations

[1]GAO, *Department of Energy: Program-Wide Strategy and Better Reporting Needed to Address Growing Environmental Cleanup Liability,* GAO-19-28 (Washington, D.C.: Jan. 29, 2019).

[2]GAO, *Nuclear Waste Cleanup: DOE Could Improve Program and Project Management by Better Classifying Work and Following Leading Practices,* GAO-19-223 (Washington, D.C.: Feb. 19, 2019).

activities and site managers have the discretion to classify cleanup work as operations activities even if the work has characteristics of capital asset projects, because DOE and EM have not established requirements for classifying EM's cleanup work. In that February 2019 report, we recommended that EM work with DOE's Office of Project Management to establish requirements for classifying cleanup work as capital asset projects or operations activities and then work together to assess EM's ongoing operations activities to determine if they should be reclassified as capital asset projects based on the newly established requirements. DOE partially concurred with these recommendations.

In addition, in the same February 2019 report, we found that EM's policy does not follow program management leading practices. One of these practices—which we found EM's policy "minimally meets"—is having an independent oversight body that conducts periodic reviews of the progress of the program in delivering its expected benefits. Specifically, we found that EM's 2017 cleanup policy does not require any independent entity outside EM to review the performance of the EM program as a whole in delivering its expected benefits. EM's policy requires EM's Office of Project Management to conduct a periodic Programmatic Peer Review of cleanup work at each site, but this review is not independent of EM. We recommended that EM revise its 2017 cleanup policy to include program management leading practices, including relating to independent reviews. DOE concurred with this recommendation.

3. EM has been subject to reorganization within DOE and leadership turnover. What measures should EM take to help ensure successful long-term continuity of operations through reorganization and staff and leadership changes?

EM will be in a better position to withstand organizational changes if it meets the first three criteria listed in our High Risk Series, namely: (1) a demonstrated commitment from leadership; (2) the capacity (i.e., people and resources) to resolve risks; and (3) a corrective action plan that defines the root cause, solutions, and provides for substantially completing corrective measures, including steps necessary to implement solutions.[3] Since the early 1990s, our high-risk program has focused attention on government operations with greater vulnerabilities to fraud, waste, abuse, and mismanagement, or that are in need of transformation.

In addition, EM would be in a better position to withstand organizational changes if it incorporates leading program management practices into its cleanup policy. In February 2019, we recommended that EM include program management leading practices in its cleanup policy to help ensure the EM program achieves its goals and intended benefits.[4] These practices include (1) having a program management plan and roadmap that are updated regularly; (2) having a reliable, integrated master schedule that is updated on a regular basis; and (3) having a lessons learned database.

[3]GAO, *High-Risk Series: Substantial Efforts Needed to Achieve Greater Progress on High-Risk Areas,* GAO-19-157SP (Washington, D.C.: Mar. 6, 2019).

[4]GAO-19-223.

The Honorable Diana DeGette (D-CO)

1. **To what extent does the Office of Environmental Management (EM) have the capacity to do its work, including resources such as having sufficient staff and staff with the right skill sets? What additional resources, if any, does EM need to address these management challenges?**

As we reported in our 2019 update to the High Risk List issue area on the U.S. government's environmental liabilities, EM lacks the information needed to evaluate overall project and program performance and assess whether it has sufficient staff—or the staff with the right skills—to carry out its cleanup mission.[5] Similarly, in our 2019 update to the High Risk issue on DOE's contract and project management, we found that, although DOE revised its program and project management guidance in May 2016 to direct that capital asset acquisitions have adequate oversight staff, EM has not benefitted from this change. This is because EM does not follow DOE's program and project management requirements for the majority of its cleanup activities. In addition, EM's July 2017 cleanup policy does not sufficiently address the need for EM to have adequate staff for its work.

It is also unclear what additional resources EM may need because EM has historically not provided all of the statutorily required information about the status of its cleanup effort, and the information EM has reported has been incomplete or inaccurate. Specifically, under the Atomic Energy Defense Act, EM must annually develop and report to Congress a Future-Years Defense Environmental Management Plan that reflects estimated expenditures and proposed appropriations included in the DOE budget for defense environmental cleanup activities.[6] EM did not submit plans from fiscal year 2013 through fiscal year 2016, and the plan submitted in August 2017 included little of the information required. For example, the costs EM included were less than those reflected in EM's environmental liability, and EM did not provide estimated expenditures and proposed appropriations in the budget year and no less than 4 succeeding fiscal years. In January 2019, we recommended that EM submit annual plans with all mandated requirements, as well as information on annual growth in environmental liability estimates by site, the key factors causing that growth, and an explanation of significant differences between environmental liability estimates and life cycle cost estimates. DOE concurred with this recommendation. By taking steps to regularly and more accurately report information to Congress on its projected resource needs over the coming years, DOE and congressional decision-makers will be in a better position to understand what resources EM needs to address management changes.

2. **What are the most pressing issues for current and future DOE leadership to address when it comes to EM?**

    a. **What advice would you offer to EM's new acting Assistant Secretary?**

[5]GAO-19-157SP.

[6]50 U.S.C. § 2582a.

b. What advice would you offer to future EM leadership?

DOE and EM leadership may turn to GAO's priority recommendations for DOE, which were highlighted in an April 2019 letter to DOE, urging leadership to continue focusing on these priority issues. [7] As of January 2019, DOE had 135 open recommendations, and in our letter we noted that 18 of these are considered priority recommendations. They fall into 7 major areas: (1) improve project and program management; (2) improve contract management; (3) improve financial and cost information; (4) strengthen planning for the future of the strategic petroleum reserve; (5) address nuclear modernization challenges; (6) address DOE's environmental liability; and (7) address aging legacy information technology systems and cybersecurity.

Several of these priority recommendations pertain directly to EM. For example, in the letter we highlighted an April 2018 recommendation pertaining to Hanford's Waste Treatment and Immobilization Plant project—that DOE revise the Office of River Protection's organizational structure so that the quality assurance function is independent of the office's upper management.[8] In addition, we highlighted a recommendation that we made in May 2017, that DOE develop updated information on the effectiveness of treating and disposing of all the different portions of Hanford's supplemental low-activity waste with alternate methods or at alternate disposal sites.[9] Fully implementing these open recommendations could significantly improve agency operations.

Implementing these recommendations would also allow DOE and EM to make progress in addressing the issues that have caused them to be included on GAO's High Risk List. These two areas are DOE's contract and project management for the Office of Environmental Management, and the U.S. government's environmental liability.[10]

3. According to federal accounting standards, environmental liability estimates are to include probable and estimable costs of cleanup work. What costs are excluded from DOE's environmental liability estimates? What do these costs represent, and what are the implications of excluding them from DOE's environmental liability estimates?

According to federal accounting standards, only work that is probable and reasonably estimable is required to be reported in an agency's liability.[11] DOE is responsible for developing its

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[7]GAO, *Priority Open Recommendations: Department of Energy,* GAO-19-311SP (Washington, D.C.: Apr. 10, 2019).

[8]GAO, *Hanford Waste Treatment Plant: DOE Needs to Take Further Actions to Address Weaknesses in Its Quality Assurance Program,* GAO-18-241 (Washington, D.C.: Apr. 24, 2018).

[9]GAO, *Nuclear Waste: Opportunities Exist to Reduce Risks and Costs by Evaluating Different Waste Treatment Approaches at Hanford,* GAO-17-306 (Washington, D.C.: May 3, 2017).

[10]GAO-19-157SP.

[11]According to the Financial Accounting Standards Board, where the federal government is not legally responsible for environmental cleanup but acknowledges that it will assume financial responsibility for the cleanup, a liability is recorded for unpaid amounts due, not necessarily the full cost of cleanup. Also, where the government is legally responsible for environmental cleanup but there is no known technology to clean up a particular site, then known costs for which the entity is responsible, such as a remedial investigation, feasibility studies, and costs to contain the contamination, are recorded as a liability. Further, federal

environmental liability in accordance with these federal accounting standards. Therefore, DOE's environmental liability does not include the cleanup activities for which DOE may be responsible in the future but that are not yet probable, not yet reasonably estimable, or both. For example, DOE's EM has not yet developed a cleanup plan or cost estimate for the Nevada National Security Site and, as a result, the cost of future cleanup of this site was not included in the reported environmental liability. In addition, because the cost of addressing some of EM's largest projects is underestimated, EM's (and therefore DOE's) environmental liability may continue to grow. For example, as of April 2018, EM and its contractor had still not negotiated an updated estimated cost for completing the Waste Treatment and Immobilization Plant, which is DOE's largest and most complex construction project. As a result of not including these various costs, DOE's currently estimated environmental liability may be understated.

The Honorable Brett Guthrie (R-KY)

1. Is the Office of Environmental Management (EM) environmental liability estimate understated? If so, why?

As we reported in our 2019 High Risk Series update, we believe that DOE's cleanup responsibilities may be underestimated. DOE is responsible for developing its environmental liability in accordance with federal accounting standards, under which agencies' environmental liability estimates do not include cost estimates for work which reasonable estimates cannot currently be generated. Therefore, DOE's environmental liability does not include the cleanup activities for which DOE may be responsible in the future but that are not yet probable, not yet reasonably estimable, or both. Within DOE, EM is responsible for most of the department's cleanup activities—accounting for over 75 percent of DOE's total environmental liability. GAO has found that EM's environmental liability also does not include the cleanup activities for which it may be responsible in the future but that are not yet probable, not yet reasonably estimable, or both. For example, EM has not yet developed a cleanup plan or cost estimate for the Nevada National Security site and, as a result, the cost of future cleanup of this site was not included in EM's reported environmental liability. The nearly 1,400-square-mile site has been used for hundreds of nuclear weapons tests since 1951. These activities have resulted in more than 45 million cubic feet of radioactive waste at the site, but the costs for the cleanup of this waste are excluded from EM's annually reported environmental liability. In addition, the current cost associated with some of EM's cleanup efforts may be underestimated. For example, as of April 2018, EM and its contractor had still not negotiated an updated estimated cost for completing the Waste Treatment and Immobilization Plant—DOE's largest and most complex construction project.

2. What costs are not included in EM's environmental liability estimate?

a. Is there a way to account for these costs?

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agencies' environmental liability estimates do not include cost estimates for work for which reasonable estimates cannot currently be generated.

As described above, DOE is responsible for developing its environmental liability in accordance with federal accounting standards. Federal accounting standards state that agencies' environmental liability estimates are to include probable and reasonably estimable costs of cleanup work. Therefore, EM's environmental liability does not include the cleanup activities for which EM may be responsible in the future but that are not yet probable, not yet reasonably estimable, or both. In addition, EM is only required to report on its program's environmental liability, not the environmental liabilities of other programs.

EM would have better assurance that it provides policymakers the information necessary to assess the full costs of long-term cleanup by disclosing the funding it needs to meet all of its schedule milestones called for in compliance agreements in, for example, supplemental reporting or the annual Future-Years Defense Environmental Management Plan. Although DOE provides budget materials to help Congress understand the long-term costs of the cleanup program, EM's recent submissions did not include sufficient details about the agency's long-term cleanup plans or future funding requirements necessary to fulfill its cleanup mission, and did not account for realistic, future budget scenarios. By including information on annual growth in its environmental liability estimates by site, the key factors that caused that growth, and an explanation of significant differences between life cycle cost estimates in its annually required Future-Years Defense Environmental Management Plan, EM would provide Congress with a more complete picture of long-term cleanup costs. In January 2019, we recommended that EM disclose the funding it needs to meet all of its schedule milestones called for in compliance agreements. DOE agreed with our recommendation.

3. Do the recent EM budget materials provide the required or complete information on the funding needed to meet its future cleanup responsibilities?

We reported in January 2019 that EM has not submitted congressionally mandated reports on its cleanup program and the information EM has reported has been incomplete or inaccurate.[12] These reports are intended to provide Congress with information on the progress, challenges, and expected future costs of the EM cleanup program. Under the fiscal year 2011 National Defense Authorization Act, EM must annually develop and report to Congress a Future-Years Defense Environmental Management Plan that reflects estimated expenditures and proposed appropriations included in the DOE budget for defense environmental cleanup activities.[13]

However, we found that EM did not submit the required plans from fiscal year 2013 through fiscal year 2016, or in fiscal year 2018—it had only submitted the plans in 2012 and 2017. Moreover, we found that EM's most recent Future-Years Defense Environmental Management Plan, which DOE submitted to Congress in August 2017, included little of the information required by the fiscal year 2011 National Defense Authorization Act. We also found that the forecast completion dates for milestones listed in the 2012 and 2017 plans may not present an accurate picture of the status of the milestones and EM's cleanup efforts. For example, the 2017 plan listed only one milestone out of 154 as forecast to miss its due date. However, because EM

[12]GAO-19-28.

[13]50 U.S.C. § 2582a.

does not have a historical record of the changes made to the milestones, it is unclear how many of these milestones were recently revised or actually represented their original due dates because the report does not include this information.

Because DOE is not consistently and comprehensively submitting complete information about the status of its cleanup, Congress and other stakeholders may not have access to reliable information to make informed decisions about billions of dollars of cleanup work. We recommended that DOE submit in EM's annually required Future-Years Defense Environmental Management Plan all mandated requirements, as well as information on annual growth in environmental liability estimates by site, the key factors causing that growth, and an explanation of significant differences between environmental liability estimates and life cycle cost estimates. DOE agreed with our recommendation and has since said it is working toward this goal.

4. Is there any cleanup work that should still be classified as operational activities? If so, what type of activities, and why?

DOE project management experts on the Project Management Risk Committee and in DOE's Office of Project Management have raised concerns related to EM's 2017 cleanup policy and the classification of cleanup work since 2015. These officials have stated that some current operations activities should be classified as capital asset projects.

As we reported in February 2019, neither DOE nor EM has a policy on how to classify cleanup work as either operations activities or capital asset projects.[14] According to DOE Office of Project Management officials, DOE does not have a department-wide policy on how to classify cleanup work. Instead, these officials stated that DOE's general management approach is to let its individual programs, such as EM, decide how to classify their work. EM officials explained that EM allows each site manager to determine independently how to classify cleanup work because according to EM's 2017 cleanup policy, the site manager is responsible and accountable for the planning and execution of all site-level activities.

EM currently manages most of its work as operations activities. EM's work is divided into 77 operations activities and 20 capital asset projects. In the fiscal year 2019 budget, operations activities accounted for 77 percent of EM's approximately $7.2 billion budget—about $5.5 billion—while capital asset projects accounted for 18 percent of EM's budget—about $1.3 billion.[15]

We reported in February 2019 that until EM works together with DOE's Office of Project management (1) to establish requirements for classifying cleanup work as capital asset projects or operations activities and (2) to assess EM's ongoing operations activities to determine if they should be reclassified as capital asset projects based on the newly established requirements, the department may incur more project management risk of cost increases and schedule delays than it should for hundreds of billions of dollars of remaining work.

[14]GAO-19-223.

[15]EM used the remaining $347 million to fund its operations at headquarters for program direction and support.

5. Has the Government Accountability Office (GAO) done work to determine how much of the money that has gone to EM contractors has been audited by the DOE?

We reported in March 2019 that DOE and NNSA did not always ensure that contractors audited subcontractors' incurred costs as required in their contracts.[16] GAO's review of 43 incurred-cost assessment and audit reports identified more than $3.4 billion in subcontract costs incurred over a 10-year period that had not been audited as required, and some subcontracts remained unaudited or unassessed for more than 6 years. Completing audits in a timely manner is important because of a 6-year statute of limitations to recover unallowable costs that could be identified through such audits. DOE headquarters has not issued procedures or guidance that requires local offices to monitor contractors to ensure that required subcontract audits are completed in a timely manner, consistent with federal standards for internal control. Without such procedures or guidance, unallowable costs may go unidentified beyond the 6-year limitation period of the Contract Disputes Act, preventing DOE from recovering those costs.

DOE's headquarters and local offices have taken some steps to ensure that contractors comply with their subcontracting requirements. However, differences in how contractors, local DOE offices, and DOE headquarters offices interpret subcontract audit requirements and perform subcontract audits persist because DOE has not clearly defined—in guidance or other documents—how these requirements should be met. Until DOE clarifies which subcontracts should be audited, how an audit is defined, and how to meet subcontract requirements, contractors may not perform subcontract audits as intended and unallowable costs may not be identified or recouped. We recommended that DOE clearly define how these audits should be done. DOE partially concurred with this recommendation.

6. Does GAO consider the numbers used in EM's financial statement to be reliable?

DOE's Office of Inspector General engaged the independent public accounting firm KPMG LLP to perform an audit of DOE's Fiscal Year 2018 Consolidated Financial Statements, which includes EM.[17] KPMG issued an unmodified opinion based on its audits and the reports of other auditors. The firm concluded that DOE's consolidated financial statements are presented fairly, in all material respects, in conformity with United States generally accepted accounting principles.

GAO has not independently audited DOE's financial statements; rather, we audit the U.S. government's consolidated financial statements, which are made up of agencies' already audited financial statements, including that of DOE. As reported in March 2019, GAO was unable to provide an opinion on the fiscal year 2018 U.S. government consolidated financial statements, primarily due to limitations related to certain material weaknesses in internal control over financial reporting and other limitations affecting the reliability of these financial statements and

[16]GAO, *Department of Energy Contracting: Actions Needed to Strengthen Subcontract Oversight,* GAO-19-107 (Washington, D.C.: Mar. 12, 2019).

[17]Department of Energy, Office of Inspector General, *Audit Report: The Department of Energy's Fiscal Year 2018 Consolidated Financial Statements*, DOE-OIG-10 (Washington, D.C.: Dec. 19, 2018).

the scope of our work.[18] For example, these weaknesses concerned the federal government's inability to: (1) reasonably estimate or adequately support amounts reported for certain liabilities, such as environmental and disposal liabilities, or determine whether commitments and contingencies were complete and properly reported; and (2) reasonably assure that the consolidated financial statements are (a) consistent with the underlying audited entities' financial statements, (b) properly balanced, and (c) in accordance with U.S. generally accepted accounting principles.

In addition, as we have previously reported, EM's reported environmental liability is not required to include the costs of all cleanup activities for which EM may be responsible in the future.[19] EM's management is responsible for developing its environmental liability in accordance with federal accounting standards. Federal accounting standards state that agencies' environmental liability estimates are to include probable and reasonably estimable costs of cleanup work. Therefore, the EM environmental liability does not include the cleanup activities for which EM may be responsible in the future but that are not yet probable, not yet reasonably estimable, or both.

7. What is a formal root cause analysis, and why does it matter that EM has not conducted one since it is conducting ad hoc root cause studies into cost increases anyway?

Leading practices and DOE requirements for program management laid out in DOE's Order 413.3B call for a root cause analysis when officials realize a capital asset project can no longer meet its established scope, cost or schedule baseline. According to EM headquarters officials we interviewed for a January 2019 report, they are aware of the increases to the environmental liability from year to year, as well as the areas in which the liability changed, but acknowledged that they have not done a detailed analysis of the root causes of the growth.[20] In addition, EM officials at both headquarters and selected sites told us that they had not analyzed the reasons why its schedule cleanup milestones are missed or postponed.[21]

As we reported in February 2019, one leading practice for program management is "monitoring and controlling the program, including conducting root cause analyses and developing corrective action plans."[22] Furthermore, according to best practices identified in GAO's cost estimating guide, agencies should identify root causes of problems that lead to schedule delays and renegotiated milestones.[23] Specifically, when risks materialize (i.e., when milestones are missed or delayed), risk management should provide a structure for identifying and analyzing root

[18]GAO, *Financial Audit: Fiscal Years 2018 and 2017 Consolidated Financial Statements of the U.S. Government*, GAO-19-294R (Washington, D.C.: Mar. 28, 2019).
[19]GAO-19-28.

[20]GAO-19-28.

[21]GAO-19-223.

[22]GAO-19-223.

[23]GAO, *Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, GAO-09-3SP (Washington, D.C.: Mar. 2, 2009).

causes. The benefits of doing so include developing a better understanding of the factors that caused milestones to be missed and providing agencies with information to more effectively address those factors in the future. In addition, DOE has recently emphasized the importance of doing this kind of analysis. In 2015, DOE issued a directive requiring sites to do a root cause analysis when the project team, program office, or independent oversight offices determine that a project has breached its cost or schedule thresholds.[24] This directive, which applies to all programs and projects within DOE, calls for "an independent and objective root cause analysis to determine the underlying contributing causes of cost overruns, schedule delays, and performance shortcomings," such as missed or postponed milestones.

Until DOE conducts a formal root cause analysis of its growth in environmental liabilities, decision-makers will not have a comprehensive understanding of the causes of the growth in liabilities. In addition, because EM has not analyzed why it has missed or postponed milestones, EM cannot address these systemic problems and consider those problems when renegotiating milestones with regulators.[25] Without such analysis, EM and its cleanup regulators lack information to set more realistic and achievable milestones and, as a result, future milestones are likely to continue to be pushed back, further delaying the cleanup work, and these delays will continue to lead to increases in the overall cost of the cleanup work.[26]

The Honorable Michael C. Burgess (R-TX)

1. **Last year, Texas regulators proposed $10,000-a-day fine on a company in Denton, Texas due to its failure to clean medically related low-level radioactive waste. The main driver for this failure to clean up the waste was financial hardship and a lack of capital to reopen the plant in which the waste was produced. Now, taxpayers in Texas may be on the hook for millions of dollars. Although this matter is being handled at the state level and is separate to the role of DOE's cleanup mission, it suggests questions about liabilities pertaining to the cleanup and disposal of radioactive waste throughout the country.**

    a. **How prevalent is it for the environmental liability of radioactive waste cleanup to be transferred to taxpayers at the state level? What about the federal level?**

    b. **Does any environmental liability from World War II and Cold War era sites fall onto the states?**

[24]Department of Energy, *Memorandum for Heads of All Department Elements: Project Management Policies and Principles* (Washington, D.C.: June 8, 2015). This language is mirrored in DOE's order that outlines guidance for managing capital asset projects. See Department of Energy, *Program and Project Management for the Acquisition of Capital Assets*, Order 413.3B, Chg. 5 (Washington, D.C.: Apr. 12, 2018).

[25]EM issued standard operating procedures for negotiating milestones in 2013. This document specifies such things as which milestone changes require headquarters approval and when sites must prepare a negotiating strategy before meeting with regulators to make changes. See Department of Energy, *Review and Approval of Regulatory Agreements, Milestones and Decision Document: U.S. Department of Energy Office of Environmental Management Standing Operating Policies and Procedures (SOPP)* (Washington, D.C.: Apr. 2013).

[26]GAO, *Nuclear Waste: DOE Should Take Actions to Improve Oversight of Cleanup Milestones,* GAO-19-207 (Washington, D.C.: Feb. 14, 2019).

c. What role do state and local governments play in these cleanup efforts?

i. Are there any instances of states aiding or hindering the DOE's environmental management cleanup mission?

d. What lessons have been learned at the federal level that might be applicable to the state level?

GAO has not specifically evaluated these questions; however, several GAO reports have examined various aspects of managing low level radioactive waste:

- In 2019, as part of an engagement examining Superfund sites that affect Indian tribes, GAO provided a status report on numerous sites, some of which had radioactive contamination, in Appendices I and III.[27]

- In 2007, GAO reported on the extent to which other countries have (1) low-level radio-active waste (LLRW) inventory databases, (2) timely removal of higher-activity LLRW from waste generator sites, (3) disposition options for all LLRW, and (4) requirements that LLRW generators have financial reserves to cover waste disposition costs, as well as any other approaches that might improve U.S. LLRW management.[28] Among other things, we found that most countries surveyed use national radioactive waste plans to guide the management of their radioactive wastes. Many representatives from LLRW generators, disposal operators, regulators, and others told GAO that the application of similar approaches to those used by other countries might improve the management of U.S. radioactive waste.

- In 2005, GAO determined whether (1) DOE sites use life-cycle cost analysis to evaluate LLRW management alternatives and (2) DOE has a strategy for cost-effectively managing LLRW department wide, including state actions that may affect this strategy.[29] Among other things, we concluded that, although DOE has been disposing of LLRW for decades, it still lacks an integrated national strategy for doing so. Such a department wide strategy is crucial for ensuring that LLRW management needs throughout DOE are identified and addressed in a cost-effective manner that also meets other departmental goals, such as timely site cleanup. Specifically, an integrated approach could help consolidate similar types of LLRW to obtain economies of scale and lower per-unit disposal costs across the complex.

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[27]GAO, *Superfund: EPA Should Improve the Reliability of Data on National Priorities List Sites Affecting Indian Tribes*, GAO-19-123 (Washington, D.C.: Jan. 23, 2019).

[28]GAO, *Low-Level Radioactive Waste Management: Approaches Used by Foreign Countries May Provide Useful Lessons for Managing U.S. Radioactive Waste*, GAO-07-221 (Washington, DC: Mar. 21, 2007).

[29] GAO, *Department of Energy: Improved Guidance, Oversight, and Planning Are Needed to Better Identify Cost-Saving Alternatives for Managing Low-Level Radioactive Waste*, GAO-06-94 (Washington, D.C.: Oct. 31, 2005).

- In 2004, GAO examined (1) changes in LLRW conditions since 1999, (2) recent annual LLRW disposal volumes and potential future volumes, (3) any current or anticipated shortfalls in disposal availability, and (4) potential effects of any such shortfall.[30] Among other things, we concluded that DOE and NRC have reduced their oversight of LLRW management by the states. As a result of this decreased federal oversight and a national LLRW database with known deficiencies, there is no central collection of information to monitor disposal availability and the conditions of stored LLRW.

- In 1999, GAO examined the Formerly Utilized Sites Remedial Action Program (FUSRAP), which was created in the mid-1970s to clean up radiological contamination resulting from the early development of nuclear weapons.[31] DOE was responsible for FUSRAP until October 1997, when responsibility for the program was transferred to the U.S. Army Corps of Engineers (the Corps). Our report discussed (1) the Corps' cost and schedule estimates for cleaning up the FUSRAP sites; (2) the Corps' progress in meeting milestones for site cleanups, FUSRAP staffing levels, and environmental document preparation; and (3) the transition of the program from DOE to the Corps. Among other things, we found that DOE's initial cost estimate for cleaning up the 22 sites covered by the program was too low, and that the Corps had experienced mixed success in achieving its cleanup milestones.

[30]GAO, *Low-Level Radioactive Waste*: *Disposal Availability Adequate in the Short Term, but Oversight Needed to Identify Any Future Shortfalls*, GAO-04-604 (Washington, D.C.: June 9, 2004).

[31]GAO, *Nuclear Waste: Corps of Engineers' Progress in Cleaning Up 22 Nuclear Sites,* GAO/RCED-99-48 (Washington, D.C.: Feb. 26, 1999).