

Note 15. Environmental and Disposal Liabilities

Environmental and Disposal Liabilities as of September 30, 2021, and 2020

(In billions of dollars)	2021	2020
Department of Energy.....	515.6	512.3
Department of Defense.....	82.0	75.0
All other entities	15.7	15.4
Total environmental and disposal liabilities	<u>613.3</u>	<u>602.7</u>

After World War II, the U.S. developed a massive industrial complex to research, produce, and test nuclear weapons and commercial nuclear power reactors. The nuclear complex was comprised of nuclear reactors, chemical-processing buildings, metal machining plants, laboratories, and maintenance facilities.

At all sites where these activities took place, some environmental contamination occurred. This contamination was caused by the production, storage, and use of radioactive materials and hazardous chemicals, which resulted in contamination of soil, surface water, or groundwater. The environmental legacy of nuclear weapons production also includes thousands of contaminated buildings and large volumes of waste and special nuclear materials requiring treatment, stabilization, and disposal.

Estimated cleanup costs at sites for which there are no current feasible remediation approaches are excluded from the estimates, although applicable stewardship and monitoring costs for these sites are included. DOE has not been required through regulation to establish remediation activities for these sites.

Estimating DOE's environmental cleanup liability requires making assumptions about future activities and is inherently uncertain. The future course of DOE's environmental cleanup and disposal will depend on a number of fundamental technical and policy choices, many of which have not been made. Some contaminated sites and facilities could be restored to a condition suitable for any desired use or could be restored to a point where they pose no near-term health risks to the surrounding communities. Achieving the former condition of the sites and facilities would have a higher cost which may or may not warrant the cost or be legally required. The environmental and disposal liability estimates include contingency estimates intended to account for the uncertainties associated with the technical cleanup scope of the program. Congressional appropriations at lower-than anticipated levels or lack of Congressional approval, unplanned delays in project completions including potential delays due to COVID-19, unforeseen technical issues, obtaining regulatory approval, among other things, could cause increases in life-cycle costs.

DOE's environmental and disposal liabilities also include the estimated cleanup and post-closure responsibilities, including surveillance and monitoring activities, soil and groundwater remediation, and disposition of excess material for sites. DOE is responsible for the post-closure activities at many of the closure sites as well as other sites. The costs for these post-closure activities are estimated for a period of 75 years after the Balance Sheet date, i.e., through 2096 in FY 2021 and through 2095 in FY 2020. While some post-cleanup monitoring and other long-term stewardship activities post-2096 are included in the liability, there are others DOE expects to continue beyond 2096 for which the costs cannot reasonably be estimated.

A portion of DOE's environmental liability at various field sites includes anticipated costs for facilities managed by DOE's ongoing program operations, which will ultimately require stabilization, deactivation, and decommissioning. The estimates are largely based upon a cost-estimating model. Site specific estimates are used in lieu of the cost-estimating model, when available. Cost estimates for ongoing program facilities are updated each year. For facilities newly contaminated since FY 1997, cleanup costs allocated to the periods benefiting from the operations of the facilities. Facilities' cleanup costs allocated to future periods and not included in the environmental and disposal liabilities amounted to \$1.1 billion and \$0.9 billion for fiscal years ending September 30, 2021, and 2020, respectively.

DOD has cleanup requirements for DERP for active installations, Base Realignment Closure installations, and Formerly Used Defense Sites. DOD has additional cleanup requirements for active installations not covered by DERP, weapon systems programs, and chemical weapons disposal programs. The weapons system program consists of chemical weapons disposal,

nuclear powered aircraft carriers, nuclear powered submarines, and other nuclear ships. All cleanup efforts are performed in coordination with regulatory entities, other responsible parties, and current property owners, as applicable.

DOD follows the *Superfund Amendments and Reauthorization Act*, CERCLA, RCRA or other applicable federal or state laws to clean up contamination. The CERCLA and RCRA require DOD to clean up contamination in coordination with regulatory entities, current owners of property damaged by DOD, and third parties that have a partial responsibility for the environmental restoration. Failure to comply with agreements and legal mandates puts the DOD at risk of incurring fines and penalties.

DOD uses engineering estimates and independently validated models to estimate environmental costs. The engineering estimates are based upon extensive data obtained during the remedial investigation/feasibility phase of the environmental project.

For general PP&E placed into service after September 30, 1997, DOD expenses associated environmental costs systematically over the life of the asset using two methods: physical capacity for operating landfills and life expectancy in years for all other assets. DOD expenses the full cost to clean up contamination for stewardship PP&E and certain other general PP&E at the time the asset is placed into service. DOD has expensed cleanup costs for general PP&E placed into service before October 1, 1997, except for costs intended to be recovered through user charges. As costs are recovered DOD expenses cleanup costs associated with the asset life that has passed since the general PP&E was placed into service. DOD systematically recognizes the remaining cost over the remaining life of the asset. The unrecognized portion of the estimated total cleanup costs associated with disposal of general PP&E was \$4.9 billion and \$4.3 billion for fiscal years ending September 30, 2021, and 2020, respectively.

DOD is responsible for environmental restoration and corrective action for buried chemical munitions and agents; however, a reasonable estimate is indeterminable because the extent of the buried chemical munitions and agents is unknown. DOD has ongoing studies for the Formerly Utilized Sites Remedial Action Program and will update its estimate as additional information is identified. DOD has the potential to incur costs for restoration initiatives in conjunction with returning overseas DOD facilities to host nations. DOD continues its efforts to reasonably estimate required restoration costs.

Environmental liabilities are subject to changes in laws and regulations, agreements with regulatory entities, and advances in technology. DOD is unaware of pending changes affecting its estimated cleanup costs. DOD revised estimates resulting from previously unknown contaminants, reestimation based on different assumptions, and other changes in project scope.

Please refer to the financial statements of the main contributing entities, DOD and DOE, for additional information regarding environmental and disposal liabilities, including cleanup costs.