Risk Mitigation Practices Fact Sheet

Risk mitigation practices (RMP) at Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) federal facility sites are critical for addressing environmental contamination efficiently and responsibly. These practices involve measures to mitigate risks posed by hazardous substances while long-term remediation plans are developed and implemented. Some examples discussed include access restrictions, interim land use controls, dig notifications, and public awareness.

The purpose of this Fact Sheet is to help regulators identify when RMP should be considered to mitigate environmental impacts and to identify potential existing resources available. This Fact Sheet recommends regulators consider RMP at all federal facility CERCLA sites where such practices will reduce risk, prevent the continued migration of contamination, be cost effective, and help build community trust. The Fact Sheet outlines current risk mitigation practices by different Federal Agencies.

What are Risk Mitigation Practices

In general, RMP at federal facility CERCLA sites are activities to reduce risks to human health and the environment prior to removal or remedial actions. Although risk mitigation practices are not explicitly outlined in federal regulations, RMP are necessary to reduce potential ongoing risks to human health and the environment and may be necessary to prevent or mitigate immediate health and/or environmental impacts. Generally, CERCLA remedial actions are long term response actions consistent with a permanent remedy, while removal actions can be (i) emergency, (ii) time-critical (require action within 6 months), or (iii) non-time critical (involving timeframes longer than 6-months) [40 CFR Section 300.415].

At Military Munitions Response Program (MMRP) Formerly Used Defense Sites (FUDS), RMP are conducted by sending out notification letters to property owners. The letters inform property owners of potential risks and provide educational materials (e.g., Recognize, Retreat, and Report) on how to identify potential imminent hazards and avoid them. RMP at Installation Restoration Program (IRP) sites will vary depending on the installation/lead agency involved and the type of contaminant, but can include interim land use controls, various communication methods (i.e., letters, warning signs, outreach notices), dig restrictions, providing alternative water sources, and best management practices to support infrastructure construction involving a variety of stakeholders, such as contractors, municipalities, and utility companies.

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Why Risk Mitigation is Important

At some CERCLA federal facilities, reducing risk and exposure before final remedial investigations and response actions are complete may be necessary. For example, on-going construction and infrastructure projects at federal facilities can encounter environmental contamination before response actions finish, or even before the nature and extent of the contamination is fully characterized.

Site investigations and remedial actions can also take time to implement. A common delay at new building construction projects and utility line installations is the unexpected presence of soil or groundwater contamination, which causes infrastructure delays at the facility and nearby properties. Costly construction delays are only one of the chief concerns, though not the only issue. Outside of project delays and increased costs, improper RMP can create conditions for hazardous exposure to human and environmental receptors at unmanaged sites, and the mismanagement of contaminated media could lead environmental hazards to spread across the site to other locations. Implementing RMP demonstrates a commitment to the local community in addressing contamination promptly, which fosters trust and cooperation amongst stakeholders and reduces future federal liability.

When to Implement RMP

As soon as a site begins a Preliminary Assessment (PA) or Site Investigation (SI) as a potentially contaminated property which requires further investigation, the need for RMP should be evaluated. Regulators must consistently reassess RMP measures and ensure they remain in place at the site until a final remedy is selected and implemented.

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What Constitutes RMP

RMP at CERCLA sites applies to a wide range of contaminants, including munitions of explosive concern (MEC), its constituents, radionuclides, heavy metals, per- and polyfluoroalkyl compounds (PFAS), volatile organic compounds, and other hazardous substances and emerging contaminants. Various federal agencies have implemented practical RMP strategies, including internal communication procedures (such as a dig notice or notice of soil disturbance prior to excavation activities) for infrastructure construction projects near CERCLA sites at Department of Defense (DoD) military bases and Department of Energy (DOE) sites. Due to limited funding for DoD and DOE cleanups, some federal facilities with lower hazard rankings take longer to investigate and clean up, making RMP even more important.

The first steps of RMP involve site access permissions and awareness of environmental contamination, including identification of contaminated areas on site maps and facility GIS drawings. Approval of construction projects near CERCLA sites should be obtained via communication with appropriate environmental personnel to address any health and safety concerns and management of excavated soils. Some examples of successful RMP activities include:

- Access restrictions/permissions through land use, institutional, and administrative controls
- Public awareness programs about known and potential site contamination and environmental hazards (e.g., warning signs, outreach notices, education programs)
- Identification of potentially contaminated areas and areas of known contamination awaiting cleanup on site maps and facility GIS documents
- Requirements for environmental review of construction projects at or near CERCLA project sites
- Restrictions on soil disturbance at CERCLA project sites (i.e., “dig restrictions”)
- Outreach to off-site property owners and other stakeholders potentially impacted by environmental hazards at CERCLA sites currently under investigation or awaiting remediation.

What is an Example of Risk Mitigation Practices at FUDS

Interim Risk Management (IRM) is a type of RMP which the DoD uses to implement risk management exclusively at FUDS MMRP sites. While the DoD Defense Environmental Restoration Program (DERP) has a policy to implement IRM at MMRP sites, many of the tools or techniques used in IRM may translate to Installation Remediation Program (IRP) sites where chemical contamination may remain in soil and groundwater.

IRM at FUDS MMRP is prescriptive and generally includes preparing a site-specific pamphlet describing historic munitions use at the site, providing 3Rs (Recognize, Retreat, Report) guidance for identifying and reporting munitions, and sending a letter to the property owner every five years advising them of the hazards on their property. In some cases, signage and in-person training may be provided upon request. Notably, the FUDS IRM program does not provide engineering controls or access and use limitations and puts most of the onus of managing the hazard on the landowner. The FUDS IRM program is limited to sites that have not yet begun the Remedial Investigation (RI) phase of CERCLA. The CERCLA removal process is relied upon to address risks once the RI is initiated.

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Examples of Risk Mitigation

a. Since 2017, Brookhaven National Laboratory (BNL) has investigated potential PFAS soil contamination areas, including in areas where firefighter training and the testing and maintenance of fire suppression systems released AFFF. The extent of PFAS contamination in the soil will be characterized during an upcoming RI/FS. Meanwhile, BNL implemented risk mitigation measures, including implementing land use and institutional controls with periodic inspections and administrative controls such as work planning procedures prior to digging in the area.

b. There are known asbestos containing materials (ACM) in the soil within certain areas of the Buckley Space Force Base installation, which must be handled in accordance with the Colorado solid waste regulations. In 2015, during the repair of underground power lines, soil disturbing activities in the known ACM areas were not conducted under the supervision of a Certified Asbestos Building Inspector (CABI), personnel did not have proper training to handle the ACM, and they did not properly manage the ACM. In response to a compliance advisory, the installation strengthened its environmental and safety protocols through targeted procedural updates. First, the installation updated its procedures in AF Form 103 to ensure proper environmental coordination. Additionally, the AF updated its base asbestos management plan to require mandatory training for personnel and to require a CABI be integrated into the oversight of future soil disturbing activities within known ACM areas on base.

c. Bellows Air Force Station (AFS) is located on the east side of the Island of Oahu and is primarily used by DoD personnel for recreation. Beach houses and campsites are available for rent to DoD personnel, and the site includes amenities such as miniature golf, paintball, bar and cafe, and a small convenience store. Prior to World War II, the installation was used as an air strip and included a bombing range. In 2022, the discovery of a cooper bomb led to the decision to conduct a Time Critical Removal Action (TCRA) across the site to identify and remove any unexploded ordnance (UXO). Due to process constraints, the initiation of the Action Memorandum, site investigation, and TCRA took longer than expected to complete. To mitigate further incidents, the installation implemented RMP, which closed the campsite temporarily and placed warning signs around the former bombing target area to restrict activities such as: digging, building sandcastles, using beach umbrellas and tent stakes.

   At a separate area of the base where live-fire training occurred and where Bellows AFS abuts a State beach park area, posted signage warned of potential UXO hazards. Since discoveries during the investigation of the bombing range indicated additional live-fire maneuver training may have occurred across the installation, the Air Force initiated an outreach program to warn all visitors and the community of potential UXO hazards, including setting up an information booth at a small farmer's marketplace near the entrance to the base.

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Available Resources on Risk Mitigation Practices

The ASTSWMO Website and Federal Facilities Resource Compendium are two great places to access information on RMP and IRM. The Compendium contains the documents listed below, and further information relevant to State Remedial Project Managers.

a. ASTSWMO. *"Analysis of Interim Risk Management at Munitions Response Sites."* June 2013. https://astswmo.org/files/policies/Federal_Facilities/2013.06-State-Fed_Coord-IRM_at_MRS_Final.pdf

b. ASTSWMO. *"Interim Risk Management at Federal Facilities."* April 2025. https://astswmo.org/files/Meetings/2025/MYM/Presentations/Carey_-_Interim_Risk_Management.pdf

c. ASTSWMO. *"Removal Actions at Federal Facilities."* June 2007. https://astswmo.org/files/policies/Federal_Facilities/FinalRemovalActionsFFPaperJune07.pdf

d. Department of Defense. *"Guidance for Dispute Resolution within the Defense and State Memorandum of Agreement (DSMOA)."* Office of the Undersecretary of Defense (OSD) May 2013. https://www.denix.osd.mil/derp/denix-files/sites/26/2017/01/DoD-issues-Defense-and-State-Memorandum-of-Agreement-DSMOA-Program-Guida....pdf

e. Department of Defense. *"Interim Risk Management Procedures."* Defense Environmental Restoration Program May 2013. https://www.denix.osd.mil/derp/denix-files/sites/26/2017/01/Interim-Risk-Management-Proceudres.pdf

f. Department of Defense. *"Instruction."* Defense Environmental Restoration Program May 2013, updated August 31, 2018. https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/471507p.pdf

g. Environmental Protection Agency. *"Early Action and Long-Term Action Under the Superfund Accelerated Cleanup Model."* OSWER 9203.1-051. December 1992. https://semspub.epa.gov/work/01/22225.pdf

h. Environmental Protection Agency. *"Guide to Developing Superfund No Action, Interim Action, and Contingency Remedy RODs."* OSWER 9355.3-02FS-3. April 1991. https://fedfac-resources.astswmo.org/document/04-1991-a-guide-to-developing-superfund-no-action-interim-action-and-contingency-remedy-rods/

i. Environmental Protection Agency. *"Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA."* EPA 540-R-93-057. August 1993. https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=9100SN02.txt

j. Environmental Protection Agency. *"Guidance on Accelerating CERCLA Environmental Restoration at Federal Facilities."* August 22,1994

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https://www.epa.gov/fedfac/guidance-accelerating-cercla-environmental-restoration-federal-facilities

k. Interstate Technology & Regulatory Council. *"Remediation Management of Complex Sites."* October 2027. https://rmcs-1.itrcweb.org/

l. Naval Facilities Engineering Systems Command. *"Complex Groundwater Sites."* https://exwc.navfac.navy.mil/Products-and-Services/Environmental-Security/NAVFAC-Environmental-Restoration-and-BRAC/Focus-Areas/Complex-Groundwater-Sites/

m. U.S. Department of Energy. *"Brookhaven National Laboratory Land Use Controls Management Plan Rev 5."* NYSDEC Site #152009. May 13, 2022. https://extapps.dec.ny.gov/data/DecDocs/152009/Work%20Plan.HW.152009.2022-05-13.Land%20Use%20Conrols%20Management%20Plan%20Rev%205.pdf

n. U.S. Army Corps of Engineers. *"FUDS Notification and Safety Education Initiative: Interim Risk Management."* January 20, 2012. https://www.usace.army.mil/Missions/Environmental/FormerlyUsedDefenseSites/FUDSNotificationandSafetyEducationInitiative/InterimRiskManagement/

o. U.S. Army Corps of Engineers. *"Interim Risk Reduction Measures Fact Sheet."* https://www.mvs.usace.army.mil/Portals/54/docs/emergencymanagement/Flood%20Prep%20Meetings/2023/handouts/8_Interim%20Risk%20Reduction%20Measures%20Fact%20Sheet.pdf

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