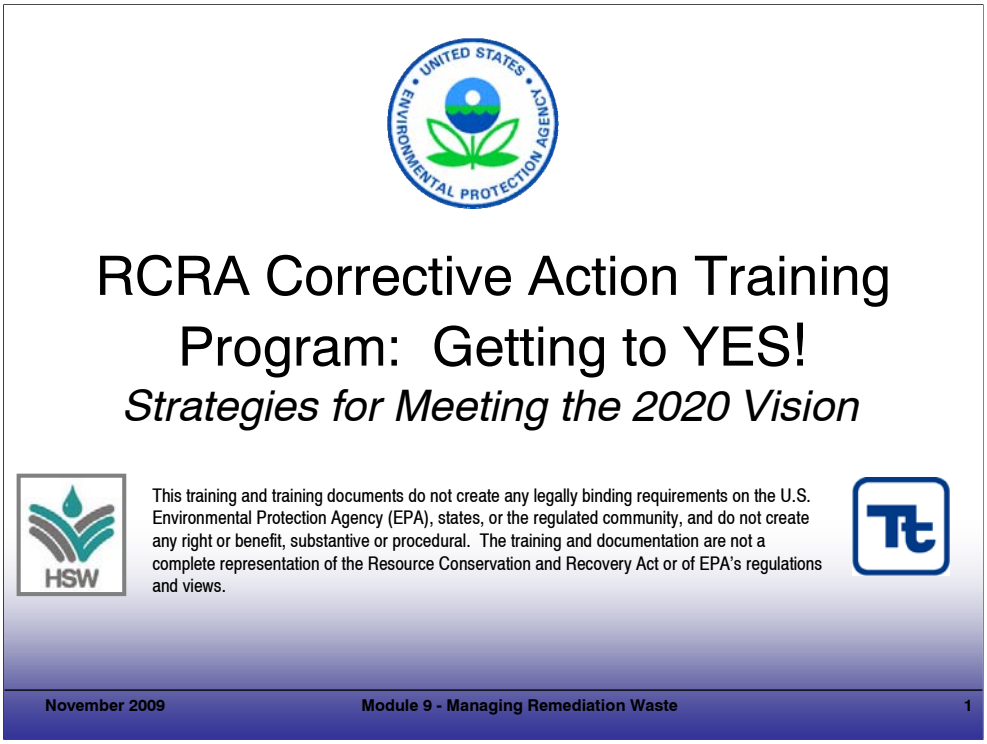


Notes:

Purpose of Slide

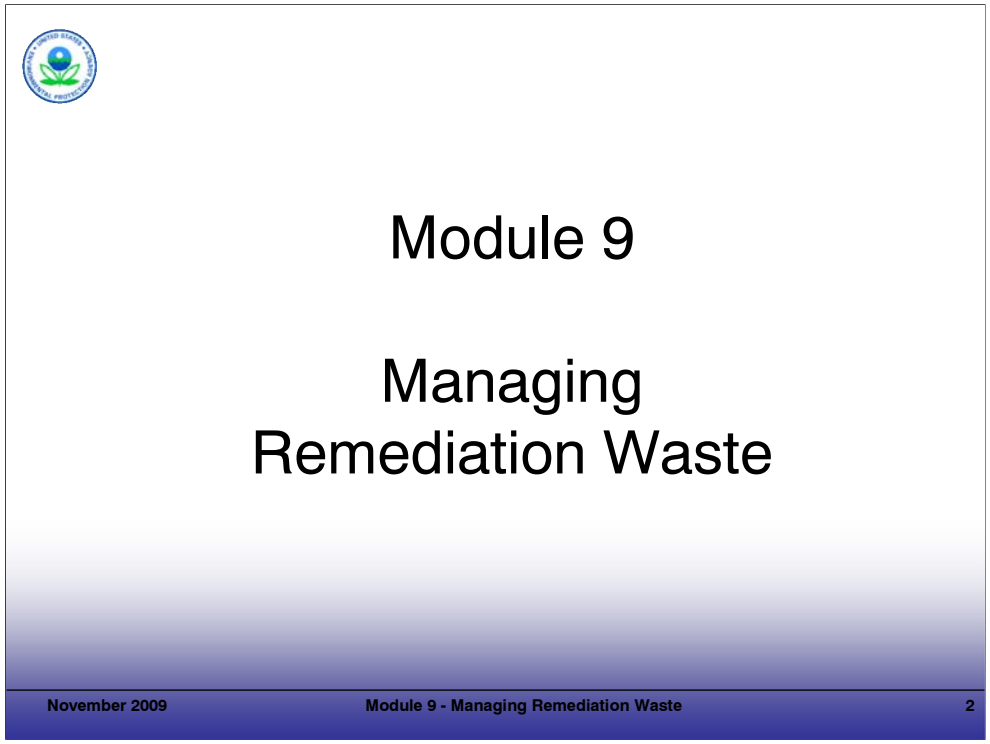
- Holder slide for Module 9, Managing Remediation Waste.

Key Points

- This is a holder slide. No specific key points.

References

- None.



Notes:

Purpose of Slide

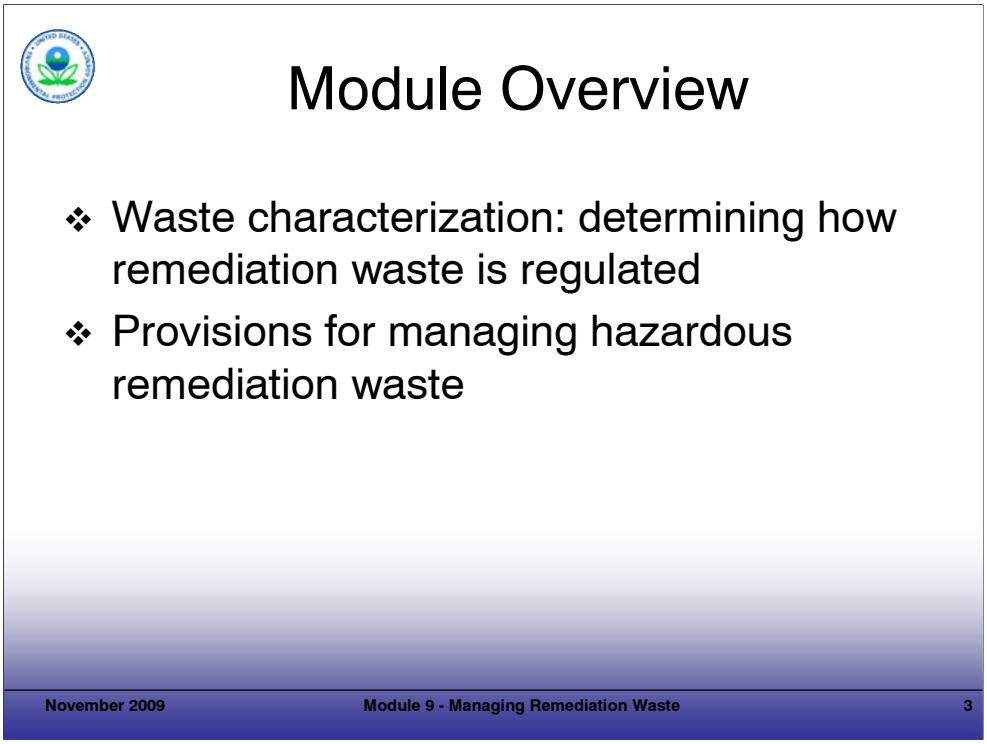
- Holder slide for Module 9, Managing Remediation Waste.

Key Points

- This is a holder slide. No specific key points.

References

- None.



Notes:

Purpose of Slide

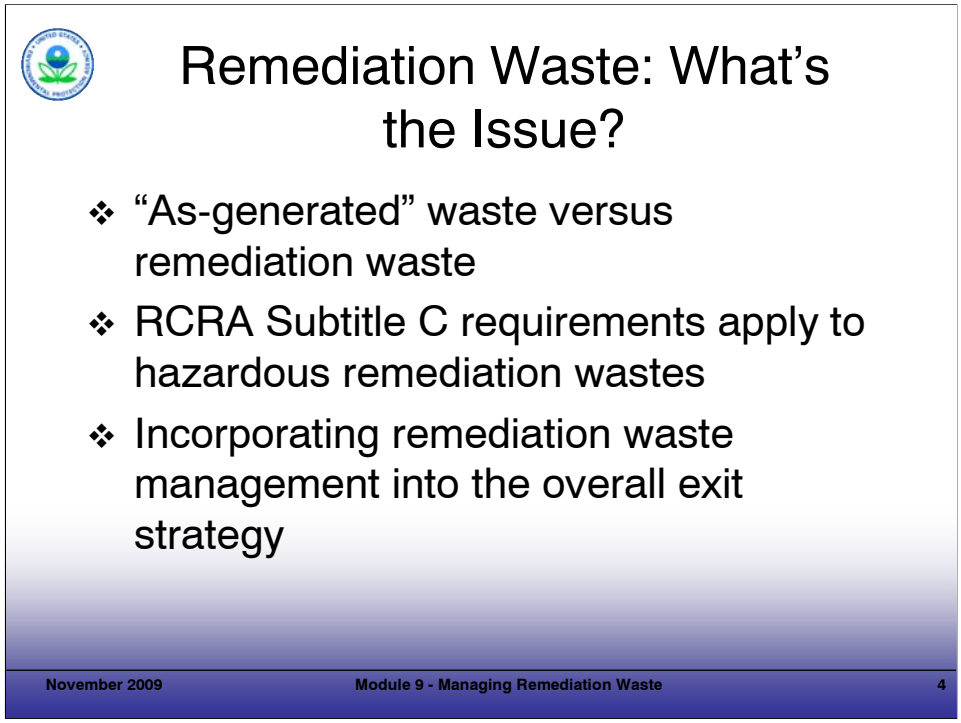
- Present module overview. Module addresses: (1) U.S. Environmental Protection Agency (EPA) regulations and policies applicable to remediation waste and (2) various technical issues associated with remediation waste management. Examples are used to illustrate concepts described in this module. Site managers should focus on a safe remedy – using the regulations and guidance developed for remediation waste.

Key Points: The module will cover:

- Key questions that site managers should answer to properly determine their management options for remediation waste.
- Types and sources of remediation waste and how EPA has issued regulations and policies for managing remediation wastes that differ from, and provide flexibility from, requirements for "as generated" hazardous waste.
- Determining when remediation waste is Resources Conservation and Recovery Act (RCRA) hazardous, including a discussion about the RCRA "contained-in" policy.
- Provisions for managing RCRA hazardous remediation waste, including discussion of:
  - The Area of Contamination Policy;
  - Special remediation waste management units, such as Corrective Action Management Units (CAMUs), Temporary Units (TUs), and staging piles, created for RCRA CA to provide flexibility from otherwise applicable RCRA design and operating standards;
  - Variances from land disposal restriction (LDR) treatment standards and alternative LDR treatment standards for contaminated soils and hazardous debris that may be used instead of the LDR standards developed for "as generated" waste.
  - EPA's policy regarding the application of LDR standards to re-injected groundwater;
- Other regulatory considerations that may apply to the management of remediation waste, such as permits needed for surface waste discharges, management of polychlorinated biphenyl compound (PCB) remediation wastes, EPA's Contaminated Sediments Strategy, and compliance with the Clean Air Act Maximum Achievable Control Technology (MACT) standards, will be discussed.
- Options for managing hazardous remediation waste at cleanups that would otherwise require a RCRA permit (for example, cleanups performed under State Superfund or other authorities).

References

- None.



Notes:

Purpose of Slide

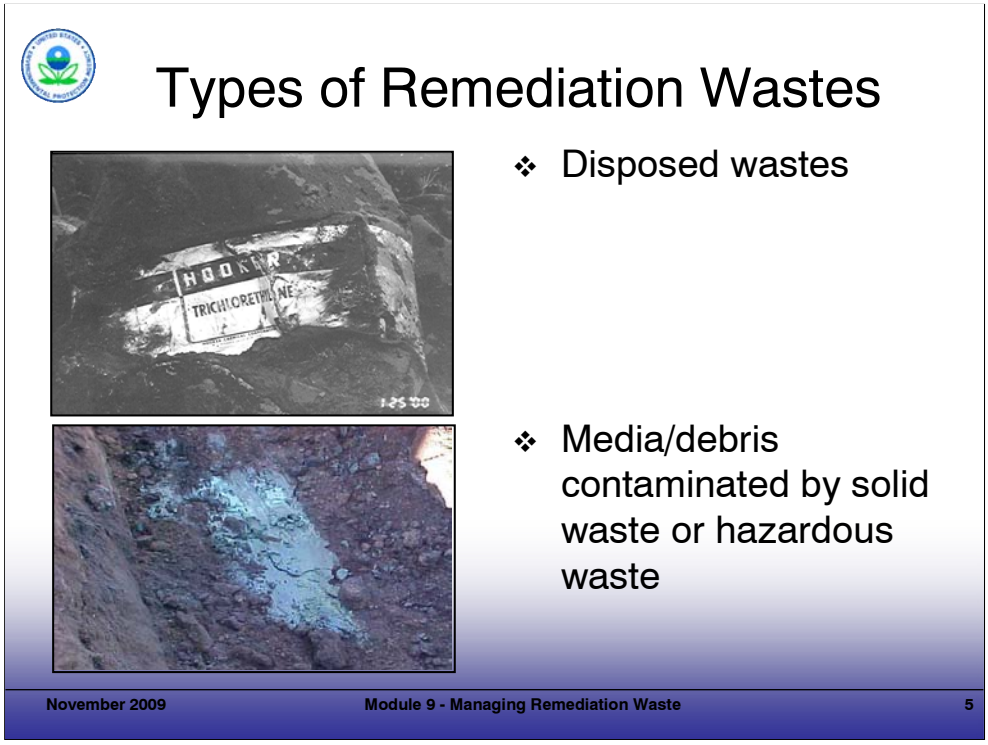
- Introduce the issue of remediation waste management and link the topic to the overall exit strategy

Key Points

- Realizing the unique nature of remediation wastes and that RCRA regulations for "as generated" wastes from industrial activities were acting as disincentives, EPA has promulgated a number of regulations and policies since the mid-1980's to provide practical approaches to managing remediation wastes. This module will discuss the special rules and policies in detail.
- With respect to managing remediation waste, there are several key questions site managers need to answer to determine whether and how those special rules and policies may apply:
  - The first and most critical question to answer regarding management of remediation waste is whether the waste must be managed under Subtitle C regulations because it exhibits a hazardous waste characteristic or contains a RCRA listed hazardous waste (HW).
  - When developing an exit strategy, don't forget to incorporate waste management into the plan

References

- None.



Notes:

Purpose of Slide

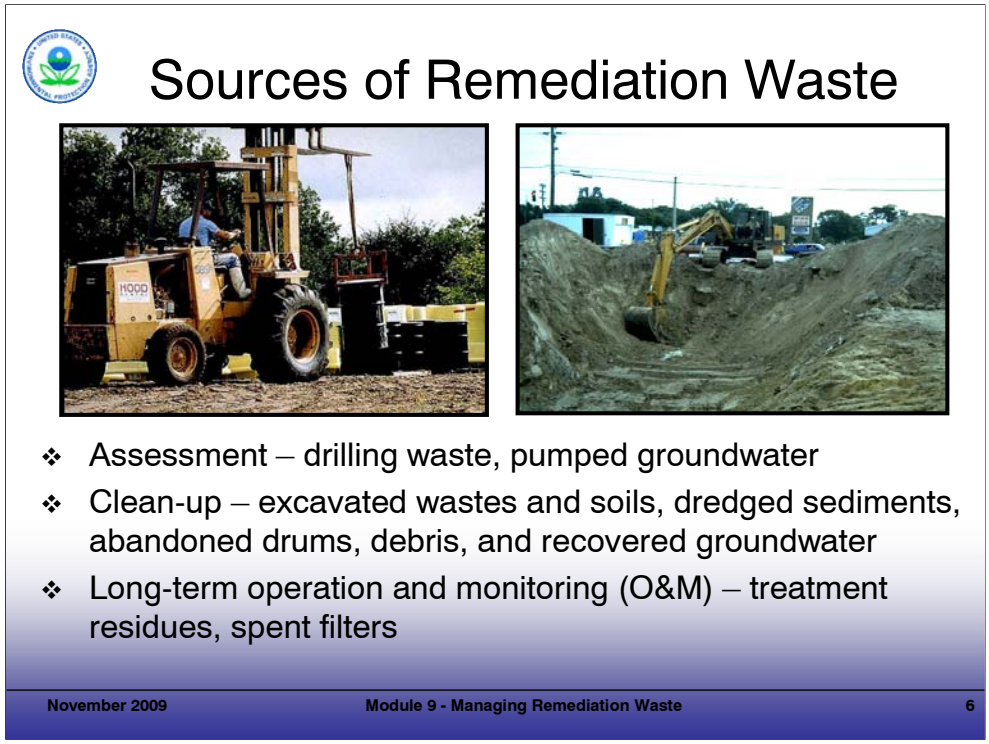
- Introduce broad types of remediation wastes.

Key Points

- Remediation waste is defined in 40 Code of Federal Regulations (CFR) 260.10 as "all solid and hazardous wastes, and all media (including groundwater, surface water, soils, and sediments) and debris, that are managed for implementing cleanup."
- Remediation waste may be RCRA hazardous; generators should make a determination as to which wastes need to be managed as hazardous waste taking into account available information about the wastes and policies covering the management of remediation waste, such as the "contained-in" policy.
- Some remediation wastes consist of media contaminated by HWs (for example, soil surrounding F006 sludge). These may be regulated under the more flexible remediation waste requirements that will be discussed in this module.
- Some remediation wastes are identified HWs previously disposed at a site (for example, F006 sludge and the containerized waste solvent shown on this slide).
- An important concept – even if a HW was disposed at a site before the effective date of its coverage under RCRA (for example, before November 1980), once it is removed/excavated at the site, it is "generated" and becomes subject to all applicable RCRA HW regulations for that waste (including LDRs).

References

- Code of Federal Regulations (CFR). 40 CFR 260.10.



Notes:

Purpose of Slide

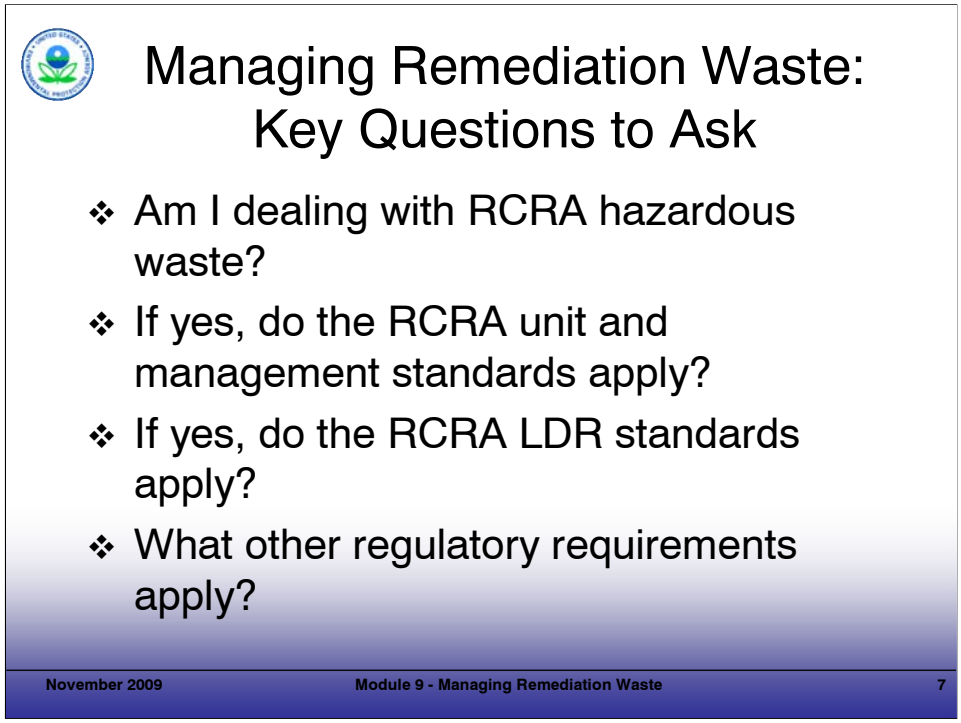
- Introduce typical sources of remediation waste at RCRA CA facilities.

Key Points

- Investigation-derived waste (IDW) is typically produced during site investigations in the form of drill cuttings from soils borings and well installation, groundwater produced by well development and sampling, and other forms of waste associated with site investigation activities (for example, spent personal protection equipment (PPE) and supplies).
- The largest volume of remediation waste is typically generated during cleanup activities and includes residuals such as excavated wastes (for example., sludge, drums, contaminated soils) and recovered groundwater.
- Lesser volumes of remediation waste may be generated during long-term operation and maintenance (O&M) such as spent filters, spent activated carbon, and solids (sludges or sediments) in settling tanks from groundwater treatment systems.

References

- None.



Notes:

Purpose of Slide

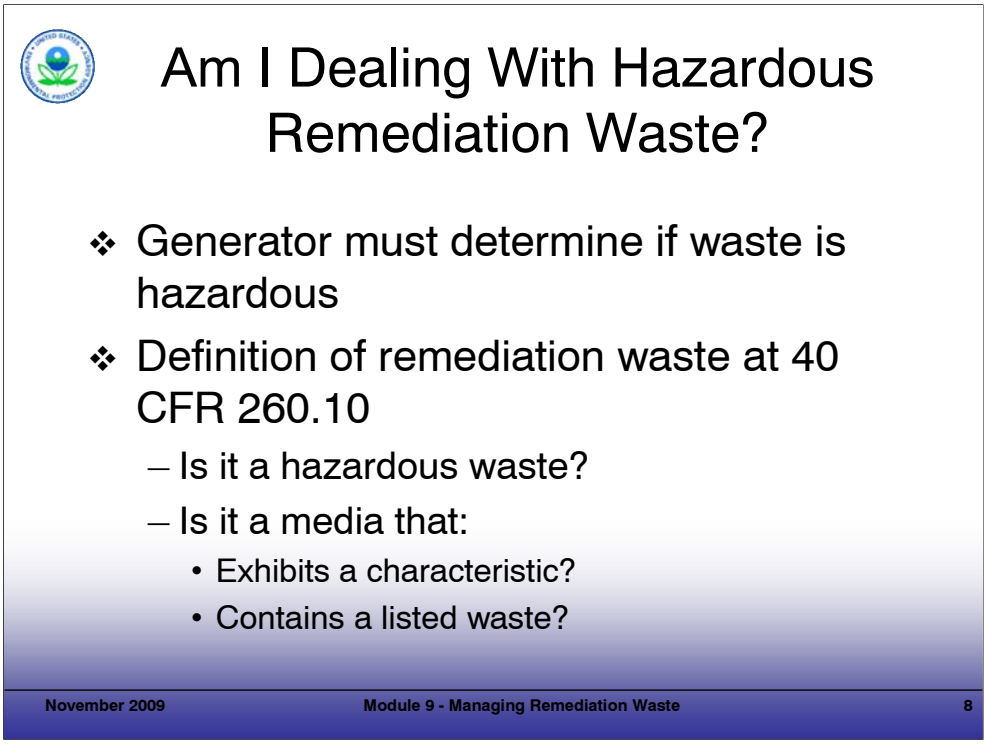
- Identify key questions and decisions that regulators and owners or operators (o/o's) must address regarding the management of remediation waste generated during the RCRA corrective action (CA) process.

Key Points

- Realizing the unique nature of remediation wastes and that RCRA regulations for "as generated" wastes from industrial activities were acting as disincentives, EPA has promulgated a number of regulations and policies since the mid-1980's to provide practical approaches to managing remediation wastes. This module will discuss the special rules and policies in detail.
- With respect to managing remediation waste, there are several key questions site managers need to answer to determine whether and how those special rules and policies may apply:
  - The first and most critical question to answer regarding management of remediation waste is whether the waste must be managed under Subtitle C regulations because it exhibits a hazardous waste characteristic or contains a RCRA listed hazardous waste (HW).
  - If remediation waste is subject to the RCRA HW regulations, then one must assess how the waste will be managed and determine whether other RCRA HW regulations will apply (for example, a hazardous remediation waste will be placed in a roll-off box for disposal off-site).
  - Hazardous remediation waste may be subject to the RCRA LDRs depending on how the waste is managed. If subject to LDRs, the waste will need to meet applicable LDR treatment standards before it may be land disposed unless a variance is obtained.
  - Other non-RCRA regulatory requirements may apply to the management of remediation waste, such as Toxic Substances Control Act (TSCA) regulations for the cleanup and management of PCB wastes, Clean Water Act requirements regarding surface water discharges, and Clean Air Act site remediation MACT requirements for emission of air pollutants.

References

- None.



Notes:

Purpose of Slide

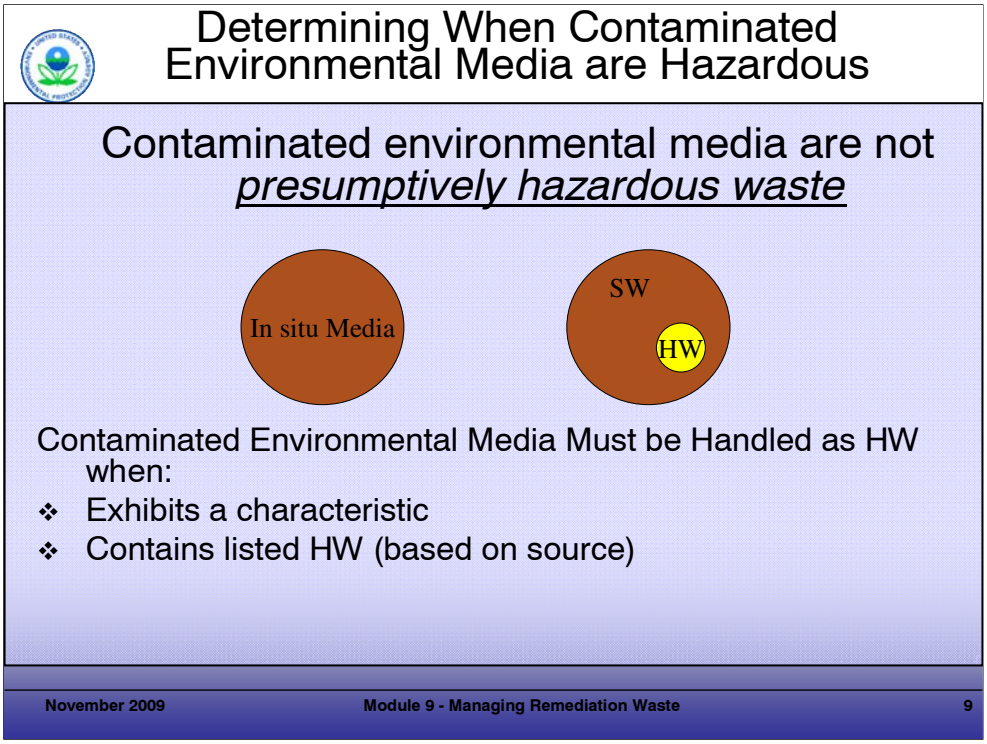
- Introduce discussion of determining whether remediation waste is hazardous under RCRA.

Key Points

- Remediation waste is defined in 40 CFR 260.10 and means all solid and hazardous waste, and all media (including groundwater, surface water, soils, and sediments), and debris that contains listed HW or that themselves exhibit a hazardous characteristic and are managed for implementing cleanup.
- Under 40 CFR 262.11, generators are responsible for determining if a remediation waste is hazardous.
- The process for determining whether a waste is hazardous is two-fold:
  - The waste is a listed hazardous waste (F-, K-, P-, or U-code listed hazardous wastes) and/or
  - The waste exhibits one of the characteristics of hazardous waste (ignitability, corrosivity, reactivity, or toxicity)
- In addition, wastes may be hazardous under the mixture and derived from rules located in 40 CFR 261.3. These rules discuss when waste mixtures and wastes derived from the treatment, storage, or disposal of HW are considered HW. (Note: The next several slides discuss the "contained in" rule and how that applies to environmental media).

References

- CFR. 40 CFR. 260.10.
- CFR. 40 CFR. 262.11.
- CFR. 40 CFR 261.3.
- EPA. 1998. Management of Remediation Waste Under RCRA. EPA530-F-98-026. October.
- Federal Register (FR). 1990. National Contingency Plan Final Rule-making. March 8. Page 8758.



Notes:

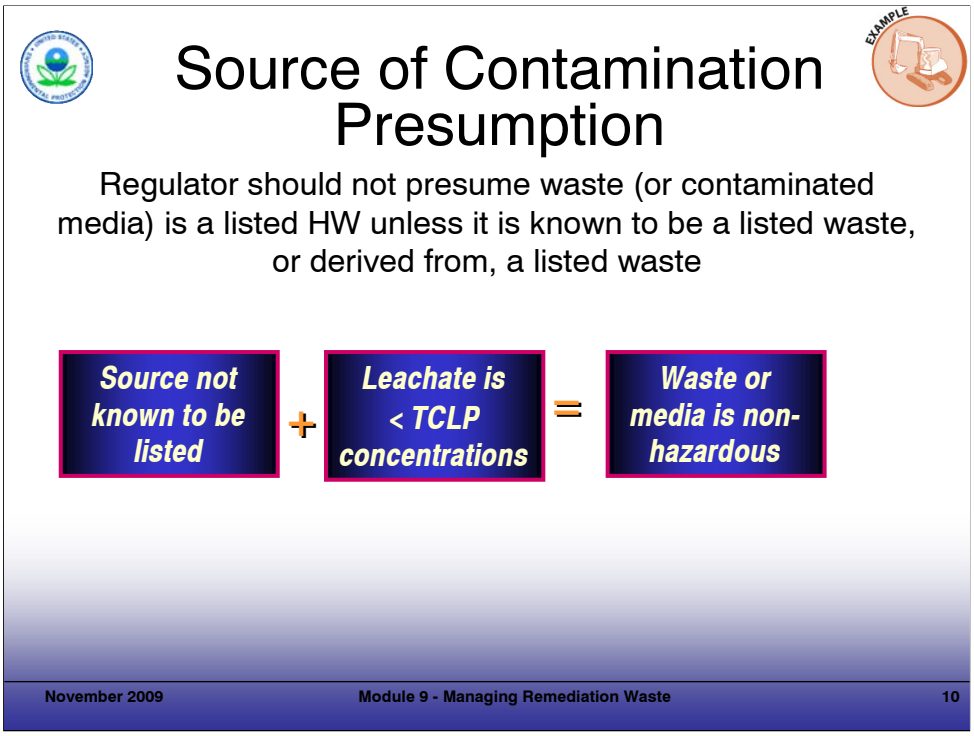
Purpose of Slide: Define and discuss the "contained-in" policy and how it applies to the management of contaminated environmental media.

Key Points

- Contaminated environmental media, in and of itself, is not HW and, generally, is not subject to regulation under RCRA. Environmental media is not considered solid waste because it is not "disposed of," so media contaminated with RCRA HW cannot be considered hazardous under the RCRA "mixture rule."
- Contaminated environmental media can become subject to regulation under RCRA if they "contain" HW. The "contained-in" policy forms the basis for applying RCRA Subtitle C requirements to mixtures of environmental media and HW. If contaminated environmental media contain HW, they are subject to all applicable RCRA requirements until they no longer contain HW.
- The "contained-in" policy requires contaminated environmental media to be managed as HW when they contain one or more listed HWs or exhibit one or more characteristics of HW.
- Media do not need to be managed as HW if they do not exhibit a hazardous characteristic and they do not contain hazardous constituents above site-specific health-based levels; this determination is referred to as a "contained out" determination.
- Authorized States interpret application of the "contained-in" policy on a case-by-case basis and make "contained out" determinations, which are discussed later in this module. In non-authorized states, EPA makes this determination.
- The "contained-in" policy also applies to media containing P- and U-listed wastes, which are discarded or off-specification commercial chemical products or intermediates and their spill residues. Some have questioned how the "contained-in" policy applies to P- and U- contaminated media because of 40 CFR 261.33(d). EPA clarified the interpretation of the applicability of the "contained-in" policy to P- and U-listed wastes in a February 17, 1995, EPA Memorandum, "P and U Listed Wastes and the Contained-in Policy." This memorandum states that the RCRA "contained-in" policy applies to P- and U- listed wastes in the same manner as for other listed wastes. In other words, if the implementing Agency determines that the media do not contain a P- or U-listed waste, they would not be a HW.

References

- FR. 1998. Preamble to the LDR Phase IV Rule. 63 FR 28621. May 26.
- EPA. 1995. P and U Listed Wastes and the Contained-In Policy. EPA Memorandum. February 17.



Notes:

Purpose of Slide

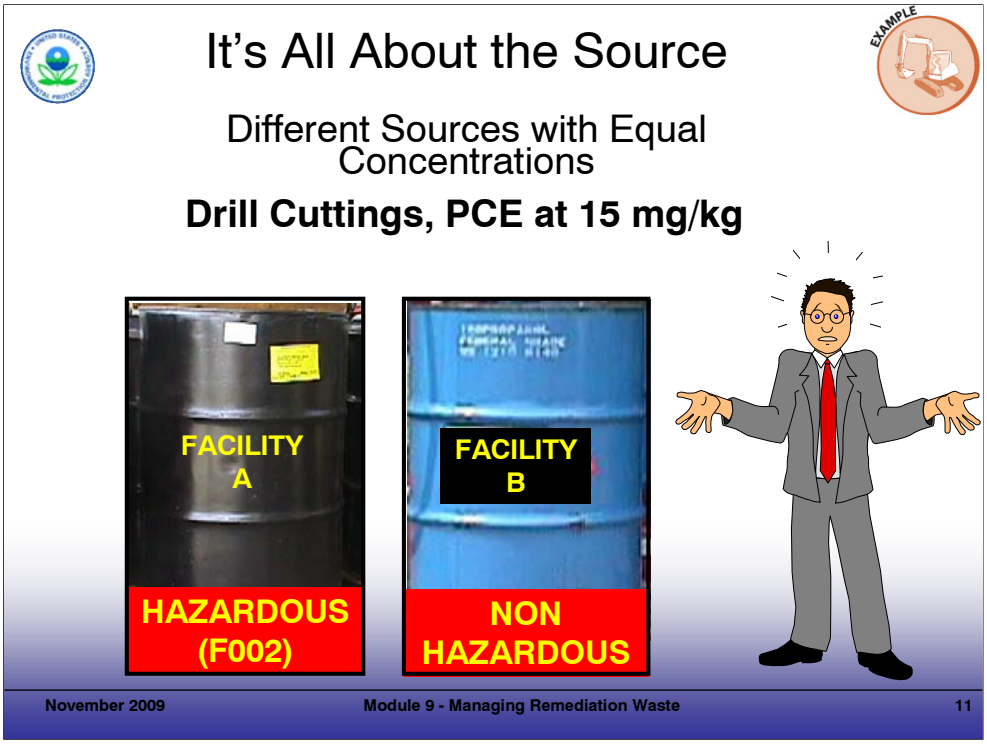
- Describe EPA's policy on the source of contamination presumption.

Key Points

- To determine whether a waste is a listed HW, the source (activity or industrial process that generated the waste) must be known. Project managers are not required to presume that a remediation waste contains a listed HW unless affirmative evidence supports this assumption.
- Project managers should make reasonable efforts to determine whether a remediation waste contains a RCRA-listed waste based on available information such as facility business records or documentation of processes used at the facility.
- If an affirmative determination cannot be made about the source of the contamination, the contaminated media can be considered not to contain a listed HW and therefore, would not need to be managed as a HW unless it was shown to exhibit a hazardous characteristic.

References

- EPA. 1998. Management of Remediation Waste Under RCRA. EPA 530-F-98-026. October.
- FR. 1988. Preamble of the Proposed and Final National Contingency Plan. 53 FR 51443 (December 21) and 1990 (55 FR 8758, March 8).
- EPA. 1989. Superfund Land Disposal Restrictions (LDRs) Guide #5: Determining When LDRs Are Applicable to CERCLA Response Actions. OSWER Directive 9347.3-OSFS. July.



Notes:

Purpose of Slide

- Point out the importance of source identification when determining if media contains listed HW.

Key Points

- In this example, drums of drill cuttings were generated during site investigations at two different facilities. Sampling showed the same concentration (15 milligram per kilogram (mg/kg) PCE) in the containerized materials from both sites.
- At Facility A, it was determined that a listed HW (spent solvent – F002) was the source of the PCE in the drill cuttings. The drill cuttings were determined to be subject to full RCRA regulation. (Because the drill cuttings were above the State's health threshold for PCE, the State did not make a "contained-out" determination.)
- At Facility B, the source of the PCE was not identified after good-faith efforts, so it was determined that the cuttings did not contain F002 or any other listed HW. The cuttings were also tested for Extraction Procedure (EP)-Toxicity using the Toxicity Characteristic Leaching Procedure (TCLP) and did not not exceed any regulatory levels. Therefore, the Facility B drill cuttings were not subject to the RCRA HW regulations (but, because of the PCE concentration, would likely be managed as non-hazardous, contaminated media).
- This example illustrates how the same type of material may require different management approaches under RCRA.

References

- None.

Notes:

Purpose of Slide

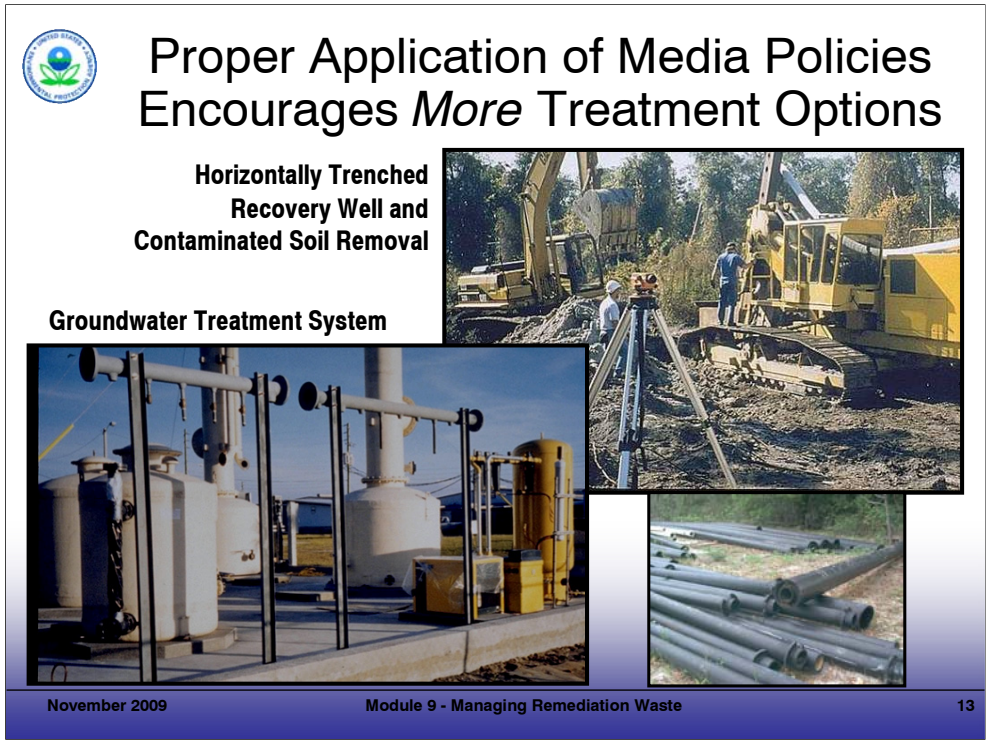
- Provide an example of the cost implications of the "contained-in" determination for contaminated media.

Key Points

- The above example of managing investigation derived waste (IDW) from a contaminated site illustrates the substantial difference in the estimated disposal cost (actually, transportation and off-site disposal) for media determined to be hazardous ($14,000) versus non-hazardous ($2,800).
- There would also be additional costs associated with management of HWs on site to comply with the applicable RCRA generator requirements for manifesting, inspections, training, recordkeeping, and reporting.
- These examples show that a presumption that contaminated media generated at a site are HW can have regulatory and cost implications. A more thorough evaluation of the source of contamination presumption and a resulting "contained out" determination may have helped to avoid the costs of containerizing and managing this media as HW.

References

- None.



Notes:

Purpose of Slide

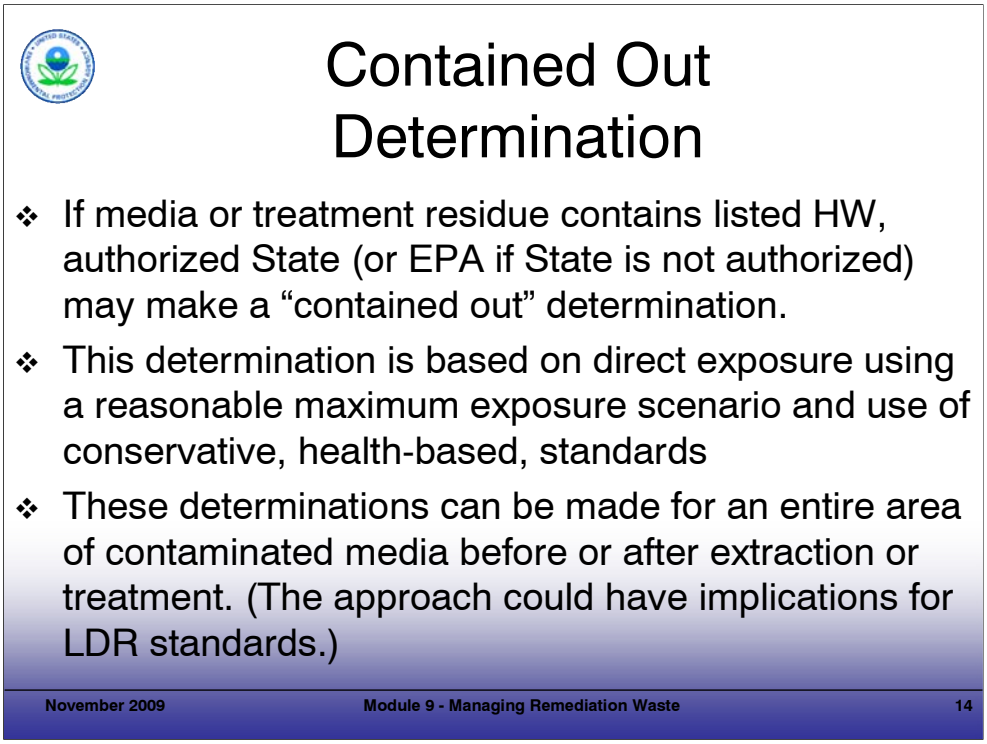
- Provide examples of the positive implications of applying the policies for contaminated media.

Key Points

- These photographs illustrate sites where facilities and regulatory agencies agreed that groundwater and soil did not have to be managed as HW, based on proper application of media policies. As a result, multiple treatment options were available to cost-effectively manage remediation waste.
- The photograph on the right shows a horizontal recovery well that is under construction. The activity is occurring in an established Area of Contamination so the environmental media are not subject to Subtitle C management standards.
- The photograph on the left shows part of a groundwater recovery and off-gas treatment system at a site where the source of contamination principle was applied; there were multiple sources of volatile organic compounds (VOCs) in the groundwater (some of which were listed and some were not), and because the precise source of the contamination was not known, the groundwater did not have to be handled as hazardous. Therefore, the treatment system could be designed at a fraction of the cost. For example, double-walled pipe (shown in the photograph) on the lower-right was not necessary.
- In both cases, media are managed as contaminated, and all appropriate health and safety considerations apply.

References

- None.



Notes:

Purpose of Slide

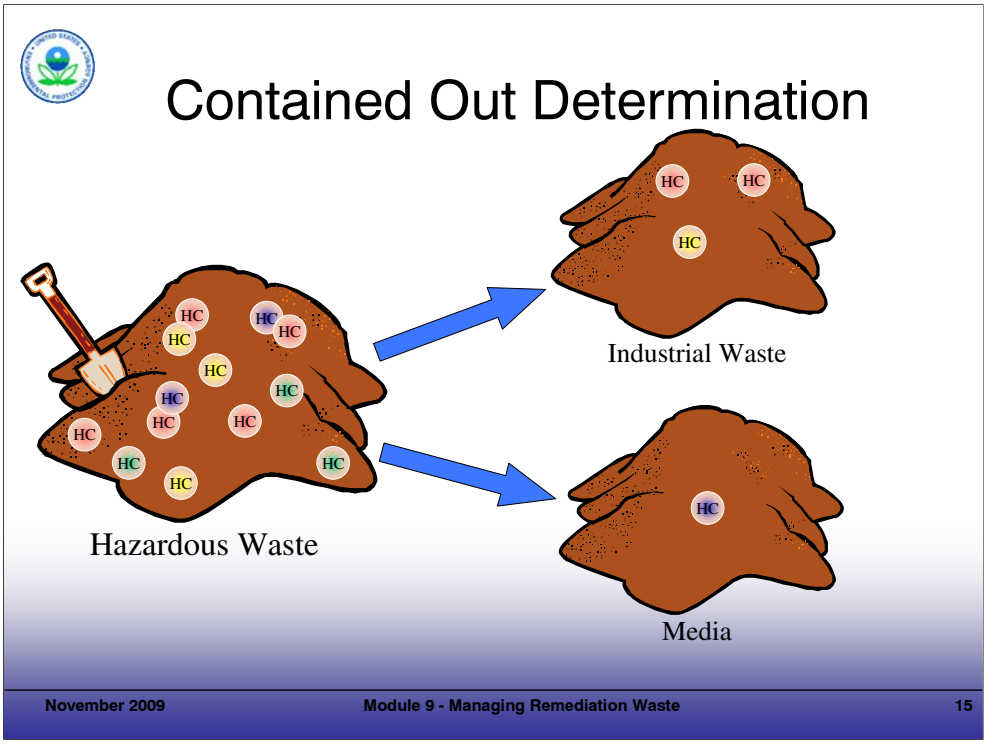
- Discuss the overall process for making a "contained-out" determination.

Key Points

- Media that contain a listed HW have to be managed as a HW. However, the State (or EPA if the State is not authorized) can make a "contained-out" determination if it finds that the levels of hazardous constituents from the associated listed waste do not exceed applicable health-based limits in the media. To determine the applicable hazardous constituents for a given listed waste, Appendix VII in 40 CFR Part 261 can be used to find the hazardous constituents for which the waste was listed. Alternatively, analysis of the original listed waste may be used to determine the applicable constituents.
- The health-based limits used to compare to hazardous constituent concentrations in contaminated media will vary from Region to Region and State to State but are generally based on direct exposure assumptions using a reasonable maximum exposure scenario. Since this determination involves development of site-specific health-based levels, the approval of an authorized State or EPA is required.

References

- CFR. 40 CFR Part 261.
- EPA. 1998. Management of Remediation Waste Under RCRA. EPA530-F-98-026. October.



Notes:

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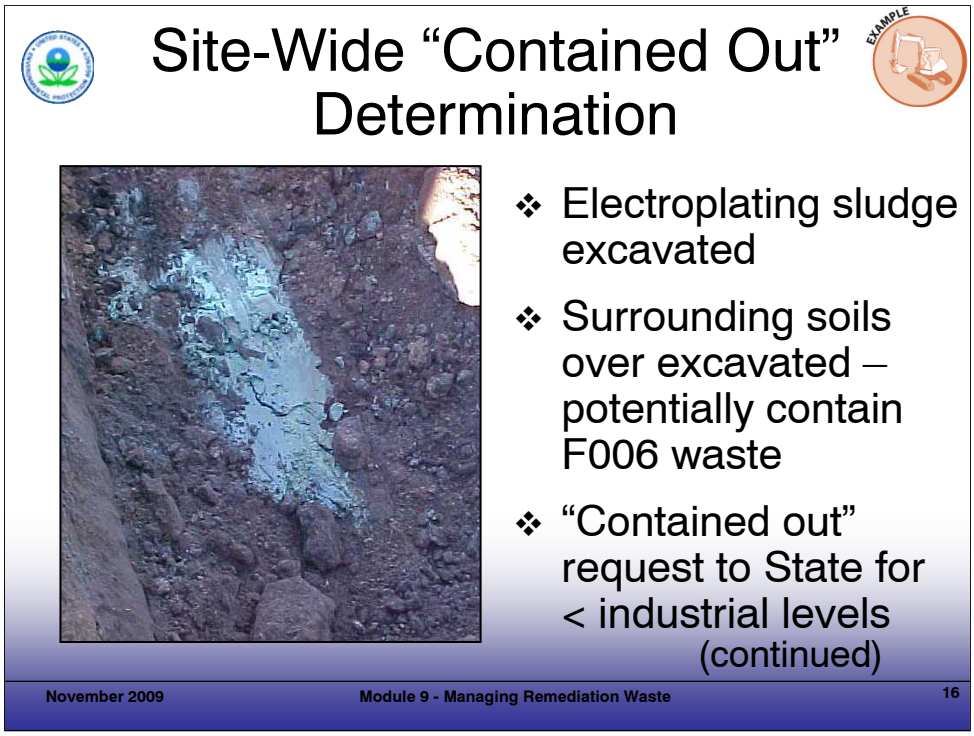


Notes:

Purpose of Slide

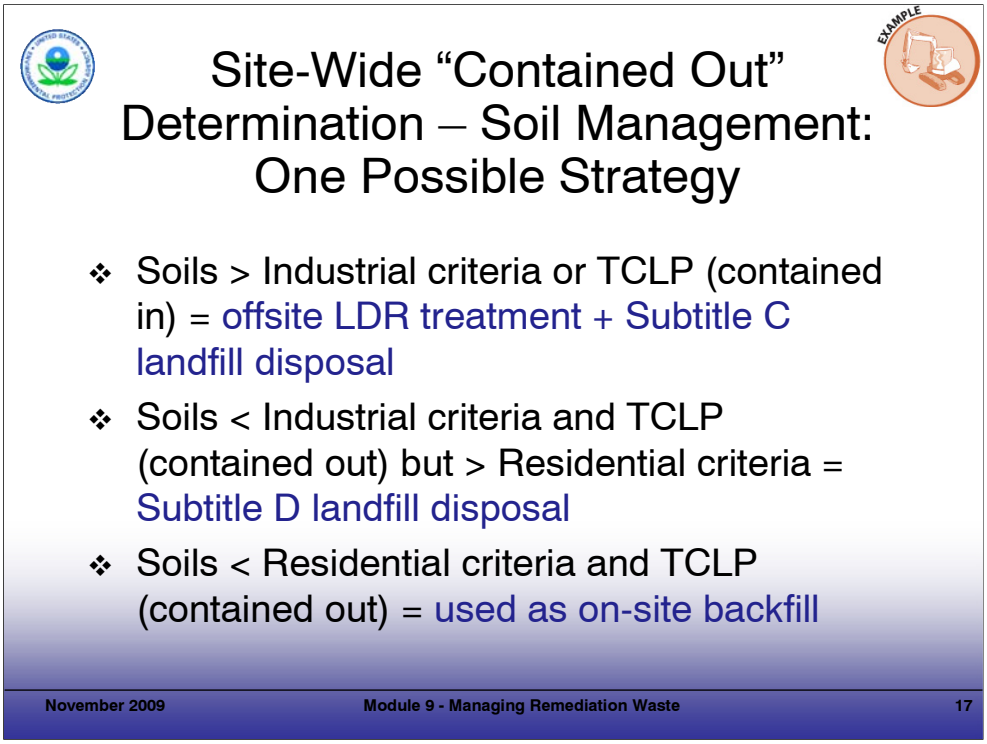
- Describe a case study illustrating the application of the "contained out" determination at a RCRA CA facility.

Key Points

- This facility had disposed of a listed HW, electroplating sludge (F006), in five landfills that were excavated as part of revitalization activities.
- The F006 sludge was visually detected during excavation of the landfills by its blue-gray appearance. After the sludge was excavated in a given area, an additional 6 to 12 inches of surrounding soil was removed to ensure that contaminants associated with the sludge were also remediated.
- Because of the proximity of the surrounding soils to the excavated sludge and small amounts of sludge commingled in the soils, the over-excavated soils were considered to potentially contain a listed HW (F006).
- Accordingly, the over-excavated soils were required to be characterized and a "contained out" determination was required to determine if the soils contained HW.
- According to Florida's Contaminated Media Policy, contaminated media may be "contained out" if: (1) representative sampling shows that contaminant concentrations in the media do not exceed the State's risk-based soil criteria (Soil Cleanup Target Levels [SCTLs]) and (2) certain media management practices are followed.
- If the contaminated soil concentrations fell under the State's Industrial SCTLs, the soil could be "contained out" and subsequently managed as a non-hazardous waste in a permitted Subtitle D (nonhazardous) landfill.
- This facility submitted the first formal petition to the State for a "contained out" determination. After a 30-day public notice period of the petition, the State issued a Final Order for its "contained out" decision.

References

- Florida DEP. 2002. Guidance Document: Management of Contaminated Media Under RCRA. August 21 (recently updated).



Notes:

Purpose of Slide

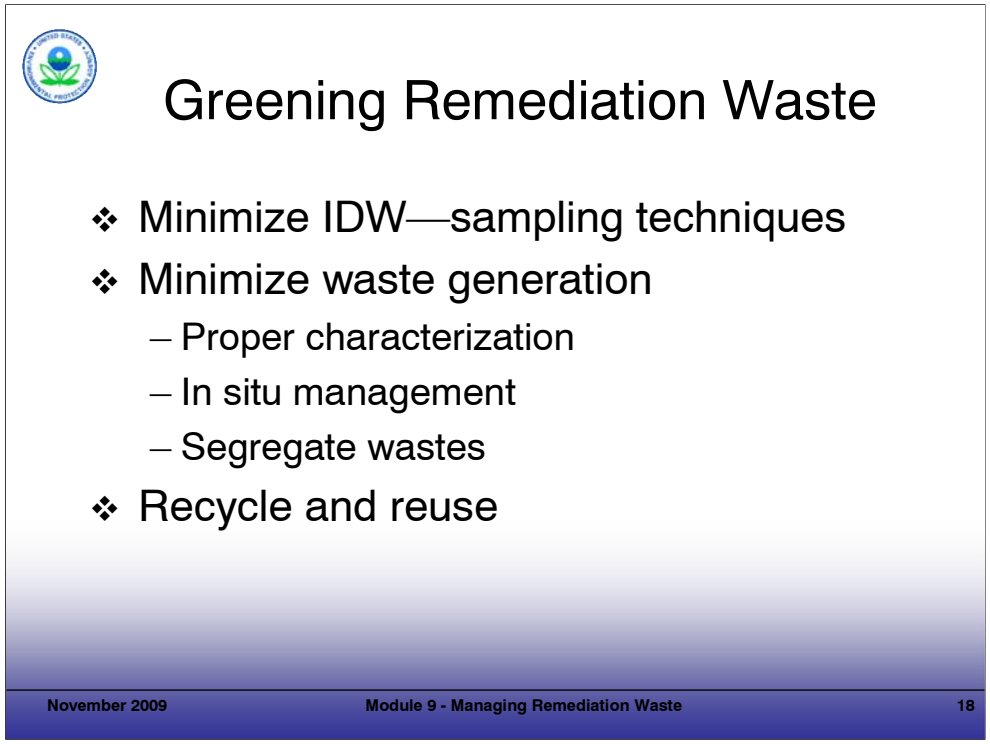
- Describe how "contained out" process was implemented at a RCRA CA facility.

Key Points

- This slide reviews the soil management approach approved for the site, using the "contained out" determination approved by the State.
- Using this "contained out" process for over-excavated soil, instead of automatically assuming the soil was hazardous under the "contained-in" policy, expedited cleanup by months.

References

- None.



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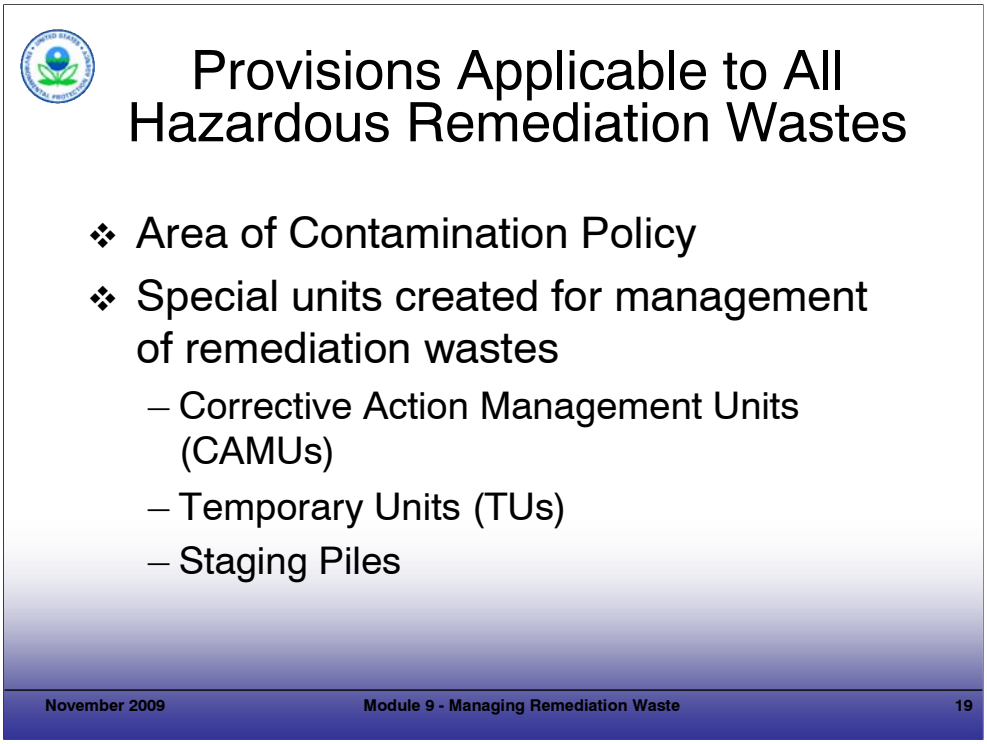


Notes:

Purpose of Slide

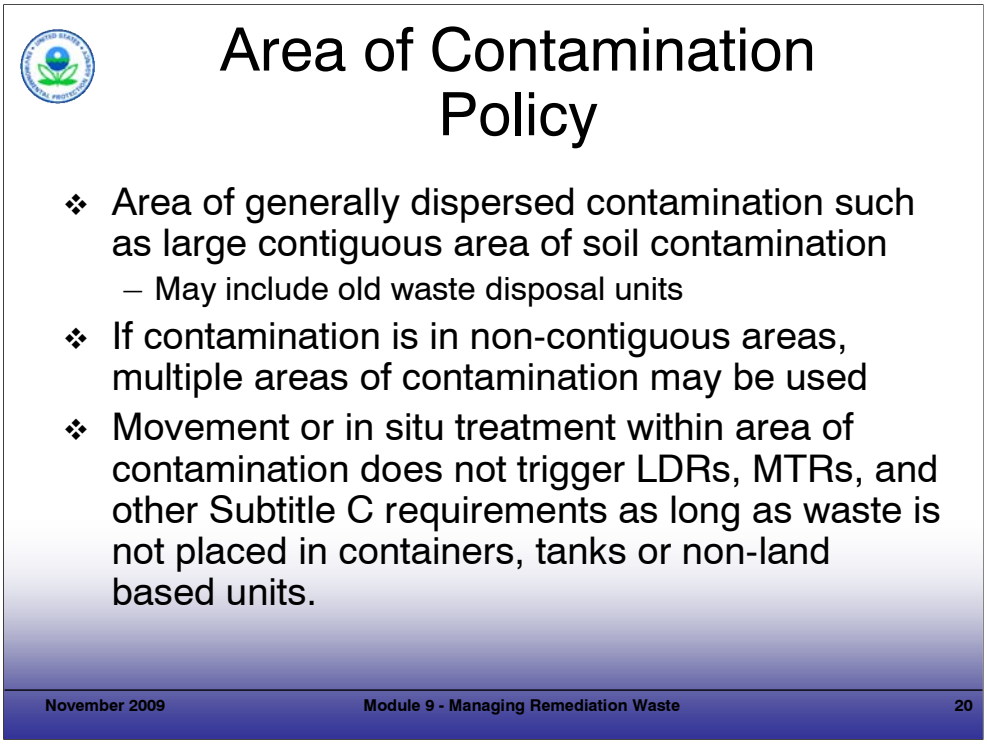
- Introduce a number of specific types of RCRA requirements and associated terms for waste management units.

Key Points

- If remediation wastes are hazardous or subject to Subtitle C regulations, EPA has developed regulations and requirements for several special types of waste management units to provide flexibility in managing hazardous remediation wastes. In most cases, use of these units allows on-site management of remediation wastes without triggering compliance with minimum technology requirements (MTRs) and LDRs.
- An Area of Contamination is not a specific unit, per se, but refers to a designated area of a site where management of remediation waste is allowed without triggering MTRs or LDRs.
- The area of contamination and special units created for managing remediation waste will be discussed in more detail in the following slides.

References

- EPA. 1998. Management of Remediation Waste Under RCRA. EPA 530F-98-026. October 14.



Notes:

Purpose of Slide

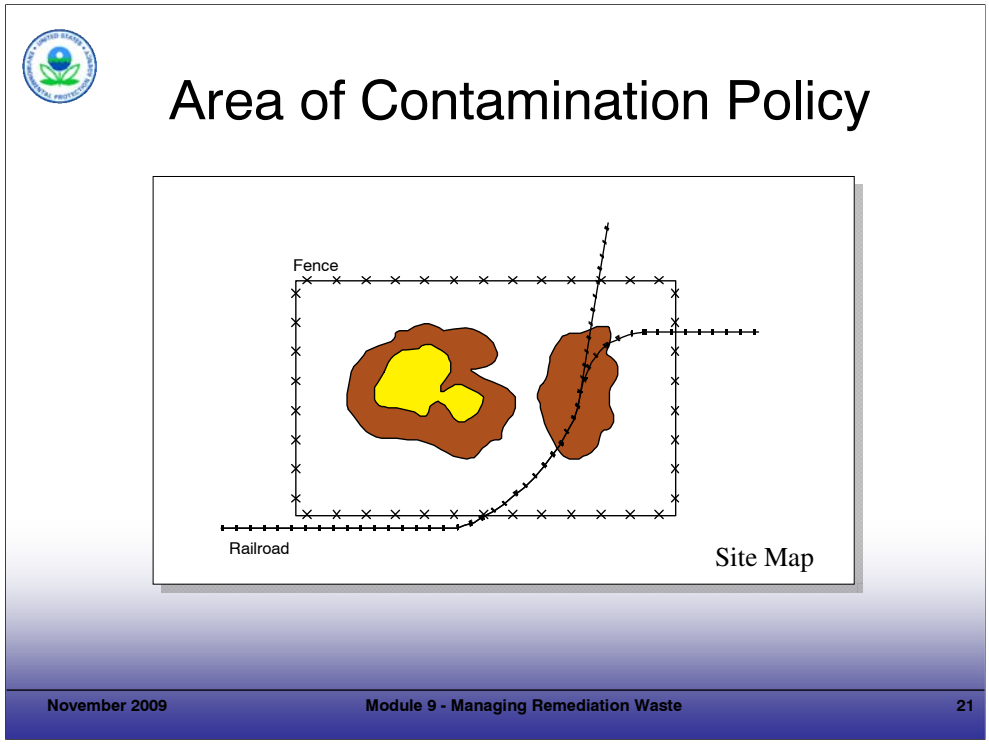
- Define and discuss the use of, and features of, area of contamination for management of remediation wastes. This acronym should not be confused with an enforcement "Administrative Order on Consent" or a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or Hazardous and Solid Waste Amendments (HSWA) "Area of Concern."

Key Points

- EPA introduced the area of contamination concept in the preamble to the National Contingency Plan (NCP).
- An area of contamination is defined as "a discrete area of generally dispersed contamination that can be equated with a RCRA landfill." An area of contamination is delineated by the areal extent (or boundary) of contiguous contamination. Such contamination must be contiguous, but may contain varying types and concentrations of hazardous substances.
- Areas of contamination can include old landfills or surface impoundments.
- Because the definition of "landfill" would not include discrete, widely separated areas of contamination, an area of contamination would not always encompass an entire site. To address noncontiguous contaminated areas at a site, multiple areas of contamination can be employed.
- Movement of wastes within an area of contamination does not trigger LDRs or MTRs. Consolidation and in situ treatment of HW within the area of contamination, as long as it is managed only in land-based units, does not constitute "disposal", and does not trigger LDRs or disposal unit standards.
- The area of contamination concept allows wastes to be consolidated or treated without triggering LDRs or MTRs. However, ex-situ treatment (such as incineration or treatment in a tank or container or other non-land based unit) or transfer to another area of contamination will trigger those RCRA requirements.

References

- Federal Register (FR). 1990. area of contamination Concept First Presented in National Contingency Plan. 55 FR 8758. March 8.
- EPA. 1996. Guidance: Use of the Area of Contamination Concept During RCRA Cleanups. Memorandum. March 13.



Notes:

Notes will be added for subsequent deliveries.

Notes:

Purpose of Slide

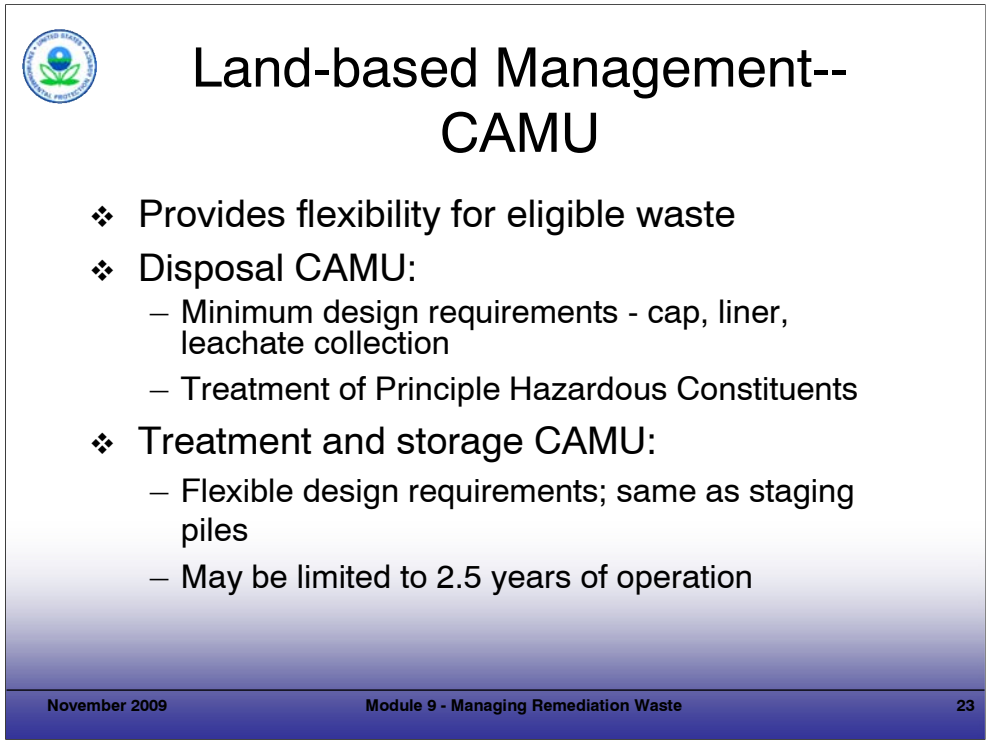
- Provide an example of application of area of contamination policy for managing contaminated media.

Key Points

- An empty underground storage tank that previously contained listed HW solvents was excavated as part of cleanup activities at this RCRA facility.
- The tank showed evidence of past leakage so several feet of surrounding soil was also excavated. The facility concluded that the soil contained HW because the source was known to be a RCRA HW.
- Excavated soil was stockpiled in the immediate area of the tank excavation pending characterization.
- The facility determined, and the State regulatory agency confirmed, that the stockpiled soil was within an area of contamination.
- By storing the contaminated soil in an area of contamination, the requirements associated with establishing a staging pile or CAMU did not have to be met.
- Based on sampling and analysis, concentrations of hazardous constituents in some of the excavated soil were below risk-based levels, so the regulatory agency determined that this soil did not "contain" HW and it was placed back in the excavation. The excavated soil containing hazardous constituents above "contained out" levels were transported to a HW disposal facility. Note, the hazardous soil could have been placed back in the excavation, but the regulatory and facility wished to minimize long-term care obligations.
- This example points out that the use of areas of contamination can streamline the cleanup activity (for example, time associated with permitting a staging pile or CAMU) and waste management costs (facilitating reuse of soil as opposed to off-site disposal).

References

- None.



Notes:

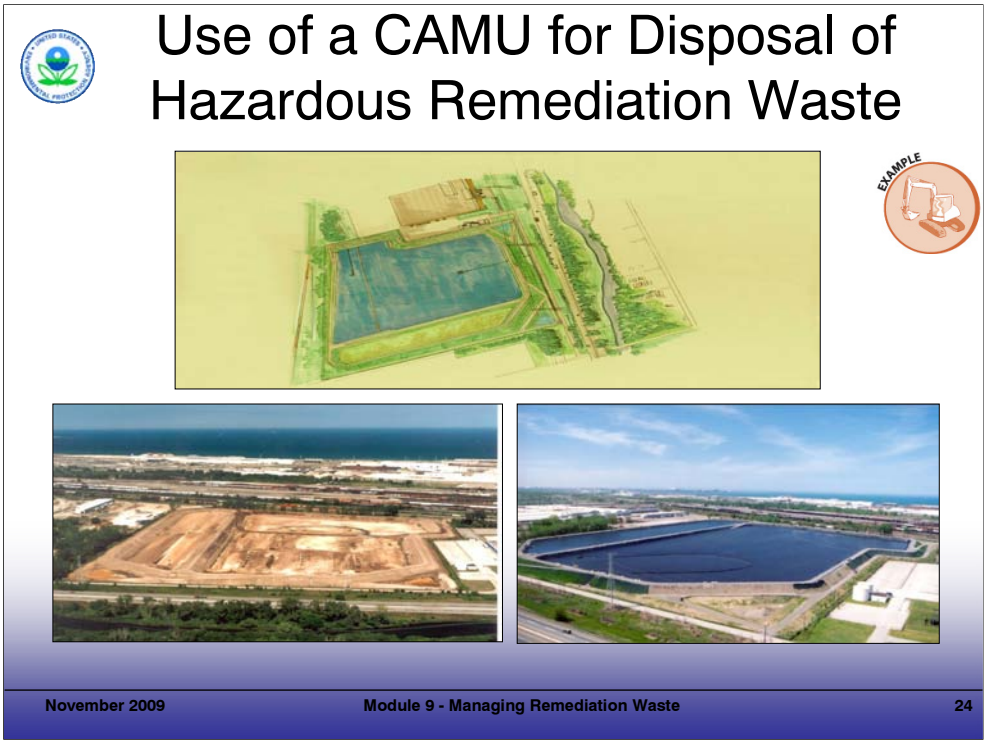
Purpose of Slide: Discuss use of CAMUs for management of remediation waste.

Key Points

- A CAMU is a special type of land-based unit used for on-site treatment, storage, or disposal of remediation waste. Use of CAMUs is intended to provide flexibility in managing remediation wastes. The CAMU Rule was promulgated in 1993, and used successfully for nearly 10 years. As a result of a law suit, the rules were revised in 2002 and specific restrictions were placed on the use of the CAMU. The final CAMU rule was issued on January 22, 2002.
- CAMUs must be approved by EPA or an authorized State and designated in a permit or order. In certain circumstances, EPA and states (including states that are not authorized for the CAMU regulations) may use other mechanisms to approve CAMUs.
- CAMUs can only be used to manage "CAMU-eligible waste" which includes solid and HW, contaminated media, and debris from cleanup activities. Wastes that are not "CAMU-eligible waste" include "as-generated" waste, waste in intact containers, and bulk and free liquids.
- There are two basic types of CAMUs: (1) disposal CAMUs, where waste will remain after closure and (2) treatment and storage CAMUs, which are used for a limited time and in which wastes will not remain after closure.
- Minimum design and operating standards for disposal CAMUs include: Requirements for a cap, composite liner, and a leachate collection system; CA for releases; and Principle hazardous constituents in the waste must be treated to the LDR Phase IV soil standards before disposal. Principal hazardous constituents are parameters that pose a risk to human health and the environment, either directly or via groundwater migration, that are substantially higher than the cleanup levels for the site (for example, carcinogens above a 10-3 cancer risk and non-carcinogens an order of magnitude or greater than the reference dose). The Phase IV soil standards will be described in later slides.
- Design and operating standards for treatment and storage CAMUs include: (1) same standards as staging piles, which will be discussed later in this module; (2) if a CAMU is used for longer than 2.5 years, it must meet the minimum design standards of disposal CAMUs; and (3) consolidation of cleanup wastes does not trigger compliance with LDRs or MTRs.
- 40 CFR Part 264.555 provides for disposal of CAMU-eligible waste in off-site permitted hazardous waste landfills, if certain conditions are met, including: (1) principal hazardous constituents are treated to applicable LDR Phase IV soil standards; (2) the landfill must be a RCRA hazardous waste facility whose permit authorizes receipt of CAMU-eligible wastes; and (3) the landfill must notify the regulatory agency of its intent to receive CAMU-eligible waste and receive notification of no objections.

References

- FR. 2002. Final CAMU Rule. 67 FR 2962. January 22.
- CFR. CAMU Regulations. 40 CFR Parts 264.550, .551, .552, and .555.



Notes:

Purpose of Slide

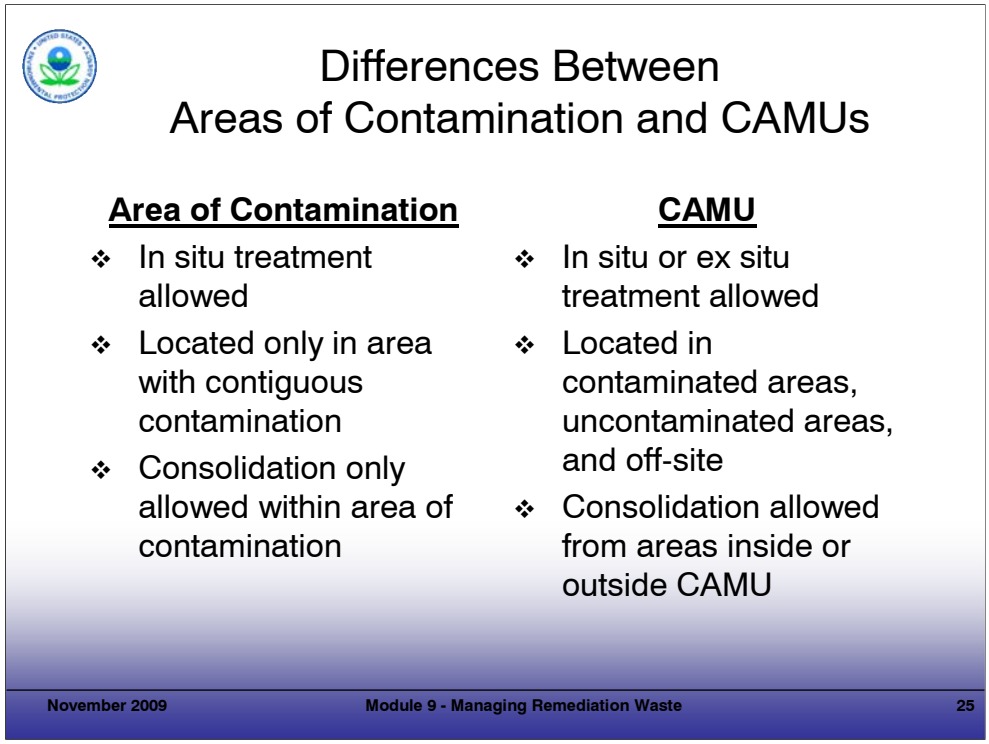
- Discuss use of CAMU to manage hazardous remediation waste.

Key Points

- A CAMU was used to manage remediation waste at the U.S. Smelter and Lead Refinery, Inc. (USS Lead) facility.
- This facility operated as a copper and lead refinery and secondary lead smelter.
- Remediation of the site involved excavation of large volumes of contaminated soil, sediment, slag, and debris.
- The remedy chosen involved excavation, consolidation, and on-site disposal using a CAMU.
- The CAMU design included a subsurface slurry wall around the 11-acre CAMU, an engineered final cover, and a long-term ground-water monitoring system.

References

- EPA. 2007. Fact Sheet: USS Lead, East Chicago, Indiana. October. Accessed On-line at: http://www.epa.gov/Region5/sites/usslead/pdfs/usslead-joint-factsheet-200710.pdf
- U.S. Steel. Undated. CAMU Photo Archive. Accessed On-line at: http://www.ussteel.com/corp/rcra/images/GCR%20Pictures/CAMU/Camu%20Aerial-07j.jpg.



Notes:

Purpose of Slide

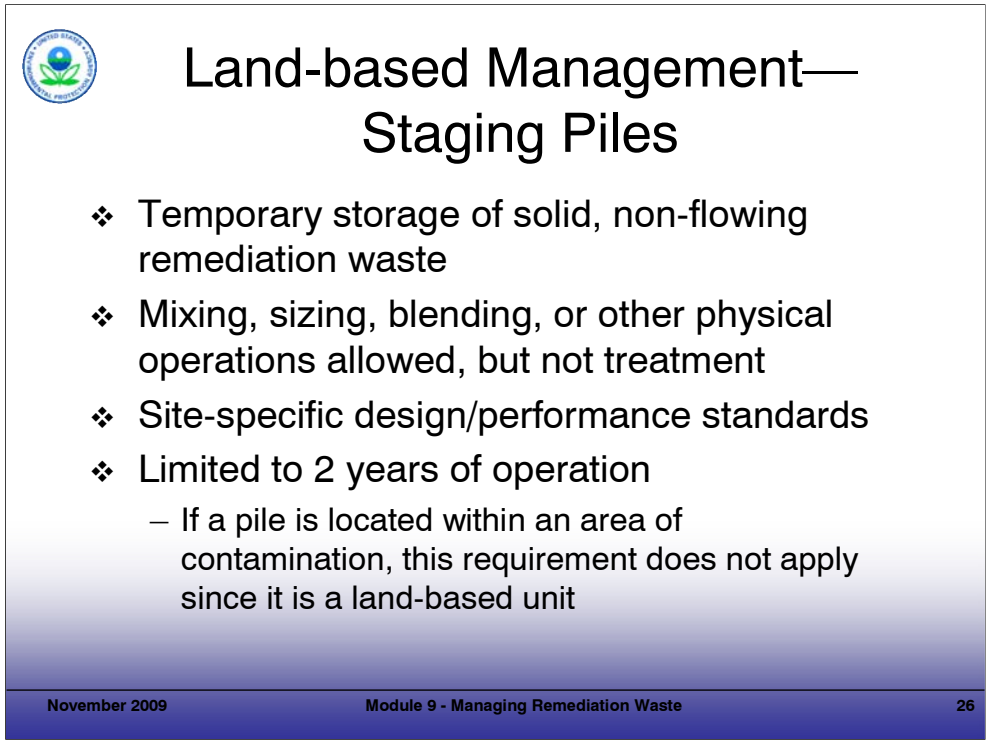
- Describe the significant differences between the use of areas of contamination and CAMUs.

Key Points

- The area of contamination policy addresses only consolidation and other in situ waste management techniques carried out within an area of contamination (that is, wastes may be consolidated or treated in situ within an area of contamination without triggering LDRs or MTRs). The area of contamination policy does not allow ex situ treatment of waste. However, waste may be treated ex situ and then placed in a CAMU.
- An area of contamination may only be located in an area of contiguous contamination, but a CAMU can also be located in uncontaminated areas of a site.
- Wastes cannot be consolidated from different areas of contamination at a site, but wastes from different areas of contamination can be consolidated in a CAMU.
- A further discussion of the differences between areas of contamination and CAMUs is included in the EPA guidance document referenced below.

References

- EPA. 1998. Management of Remediation Waste Under RCRA. EPA 530-F-98-026. October.



Notes:

Purpose of Slide

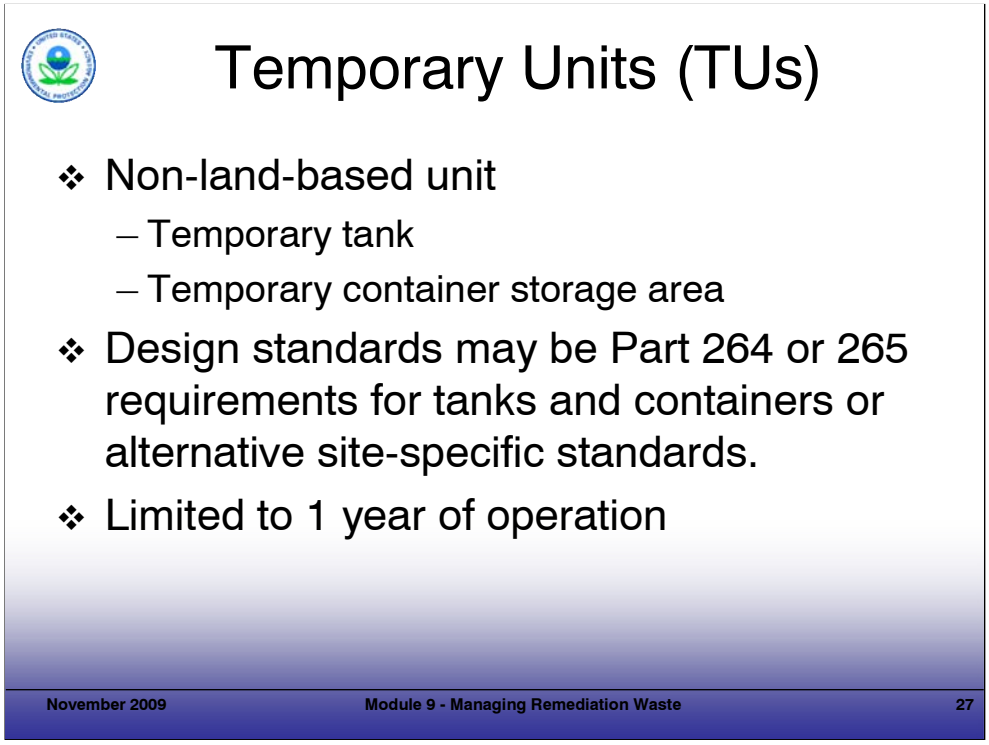
- Define and discuss the use of, and features of, staging piles for management of remediation wastes.

Key Points

- A staging pile is an accumulation of solid, non-flowing, remediation waste that is not a containment building and is used only during remedial operations for temporary storage at a facility. A staging pile is a non-land-based unit.
- By definition, staging piles cannot be used to treat remediation waste. However, in the amendments to the final CAMU rule in January 2002, EPA clarified that mixing, sizing, blending, and other physical operations intended to prepare waste for subsequent treatment or management could occur in staging piles.
- Staging piles can be used to store hazardous remediation waste only if standards and design criteria established for the staging piles are followed. Performance standards and design criteria are established by EPA or the authorized State. Staging piles are not subject to LDRs or MTRs.
- Performance standards for a staging pile require that the staging pile: (1) facilitate a reliable, effective, and protective remedy; (2) prevent or minimize releases of HW or constituents to the environment, and minimize cross-media transfer; (3) complete operations within two years unless a 180-day extension is granted (the two year limit starts the first day that the waste is placed in the staging pile); and (4) provide for proper and timely closure. Sufficient information must be provided to EPA or the State to establish site-specific standards and design criteria.

References

- CFR. 40 CFR 264.554.



Notes:

Purpose of Slide

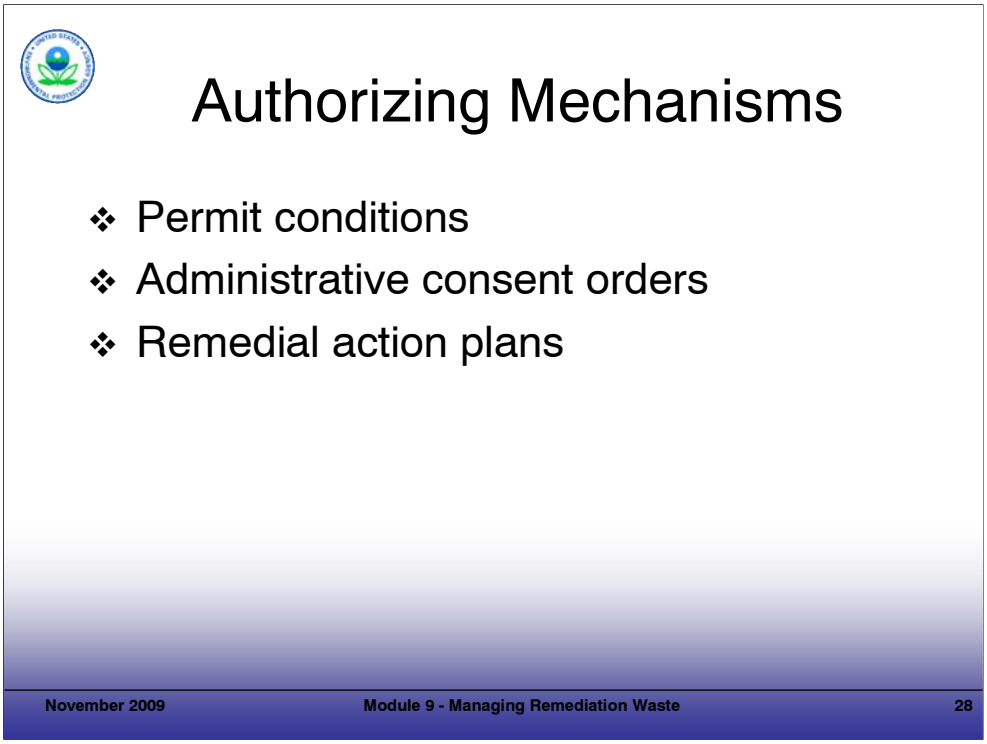
- Discuss use of temporary units (TUs) for management of remediation wastes.

Key Points

- The regulations for TUs were promulgated at the same time as the original CAMU final rule. A TU is a non-land-based unit used to manage hazardous remediation wastes. A TU can include temporary tanks and container storage areas.
- Alternative design, operating, and closure standards are available for TUs. EPA or authorized States may specify site-specific design, operation, and closure standards as alternatives to those specified for tanks and containers in Parts 264 or 265. For example, if a TU will be located in a widely contaminated area that will be remediated, it may not be necessary to require secondary containment for the TU.
- Placement of wastes in TUs is not considered land disposal; therefore, LDRs do not apply. However, wastes or treatment residuals that are removed from TUs may be subject to LDRs.
- TUs may only operate for a period of one year, with an opportunity for a one-year extension.

References

- FR. 1993. Final TU Rule. 58 FR 8658. February 16.
- CFR. 40 CFR Part 264.553.



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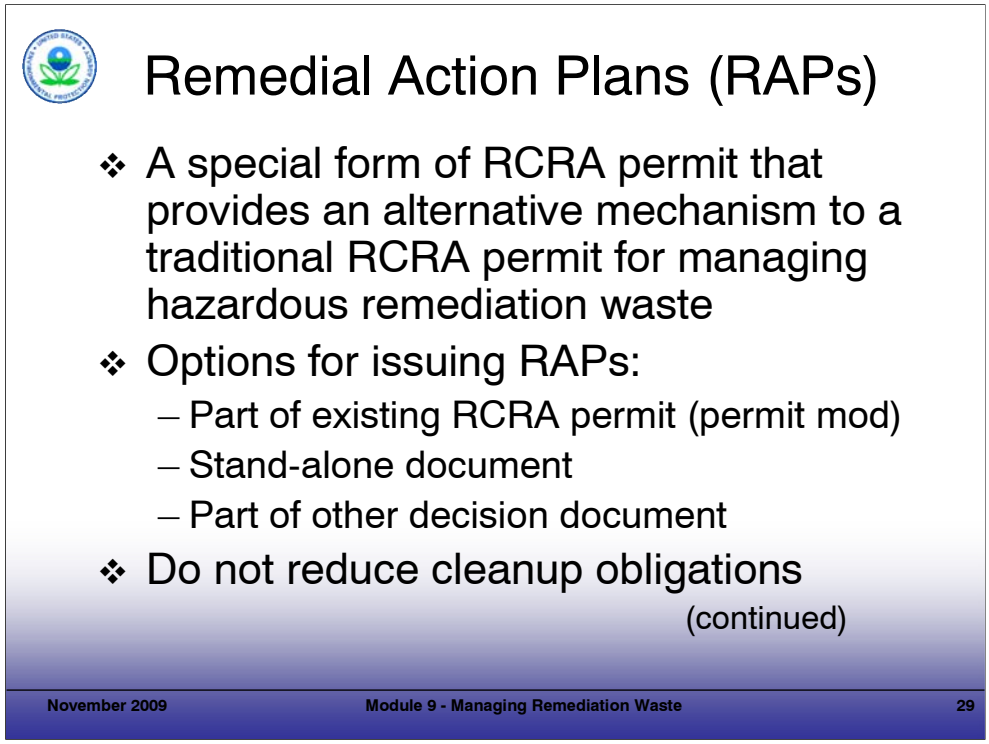


Notes:

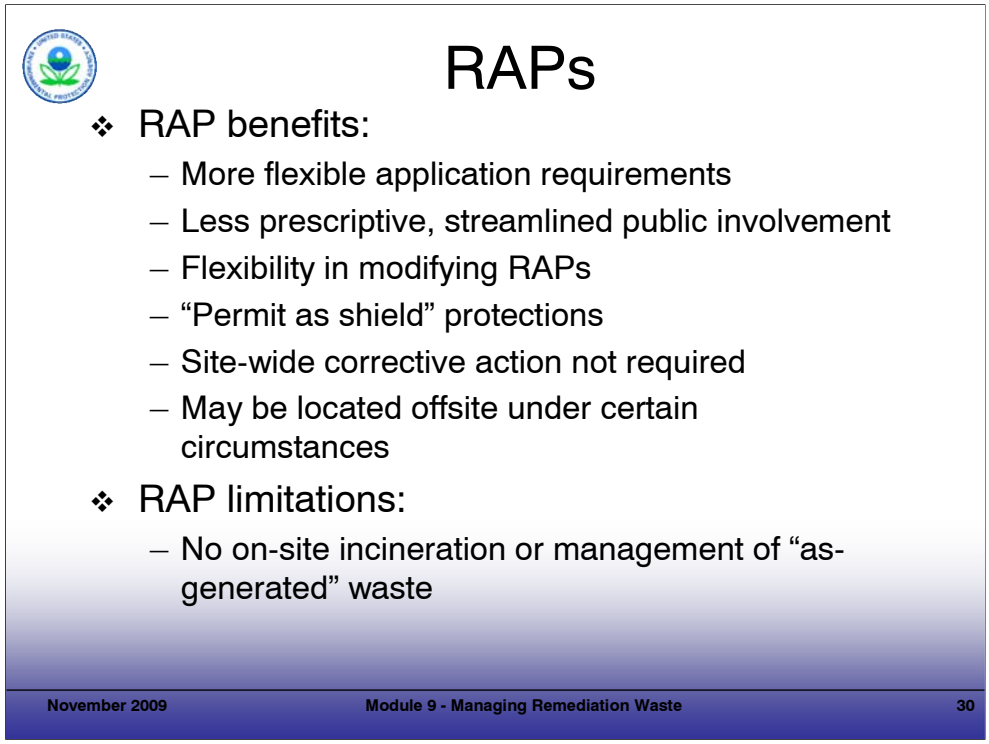
Purpose of Slide: Discuss use of Remedial Action Plan (RAPs) as an alternative to RCRA permits for management of hazardous remediation waste.

Key Points

- Often, remedies selected for cleanup sites involve treating, storing, or re-disposing of hazardous remediation waste. RCRA permits are required whenever you treat, store or dispose of HW (unless a specific permit exemption or exclusion applies). Treating, storing or re-disposing of hazardous remediation wastes required the same type of permit as that for as generated process waste management. Traditional RCRA permits, however, were designed for operating HW TSDFs managing as-generated process wastes. The permit procedures, requirements, and contents were designed specifically for those situations. Traditional RCRA permits also require facility-wide CA under RCRA Sections 3004 (u) and (v). Many of these requirements are not well suited to cleanup activities. The intent of the RAP is to expedite remediation efforts performed at sites where HW management is required, including Brownfields and abandoned contaminated lands, by making it easier for a site o/o to obtain permitting for a cleanup. RAPs involve application and approval procedures that differ from traditional RCRA permitting procedures for the management of hazardous remediation wastes. RAPs make permits for treating, storing, and disposing of remediation wastes faster and easier to obtain. Remediation waste management sites can be designated to avoid facility-wide CA. Previously, the process of obtaining a treatment, storage, or disposal permit triggered facility-wide CA requirements. This was a huge disincentive against undertaking cleanup activities requiring a permit. Under the revised definition of a remediation waste management site, this disincentive is removed by stipulating that remediation waste management sites do not constitute facilities requiring CA.
- If alternative state authorities are not practicable for a site, a RAP, which is a special form of a permit, can be used in lieu of a traditional RCRA permit to treat, store, or dispose of hazardous remediation waste at remediation waste management sites. Given this flexibility, EPA believes that it will be possible for EPA and authorized States to develop RAPs that are much more suited to cleanups than current RCRA permits are—that is, a RAP will generally fit the model of a Superfund Record of Decision or an approval of a cleanup workplan, rather than that of a RCRA Part B permit. EPA believes this flexibility is essential for an effective cleanup program. Note that RAPs are not part of State base RCRA programs.
- RAPs can be issued in several ways. A RAP may be issued to a facility with an existing RCRA permit through a permit modification. Alternatively, the RAP may be issued as a stand-alone document or it may be included as part of another document, such as Superfund Record of Decision (where they have been used to specify compliance with substantive RCRA regulations), applicable to remediation activities at a facility.
- The RAP approval process follows the general administrative procedures for issuing environmental permits, consisting of a determination that the application is technically adequate, agency preparation and public notice of a draft RAP, and issuance of the final RAP. RAP modification procedures are also similar to traditional permits. However, while the basic procedures are similar, the process has been significantly streamlined and simplified for RAPs.
- It is important to note that use of a RAP does not affect "how clean is clean" decisions about a facility or the legal obligations of the facility to conduct cleanup activities.

References

- CFR. 40 CFR Part 270 Subpart H (270.70 - 270.230).



Notes:

Purpose of Slide

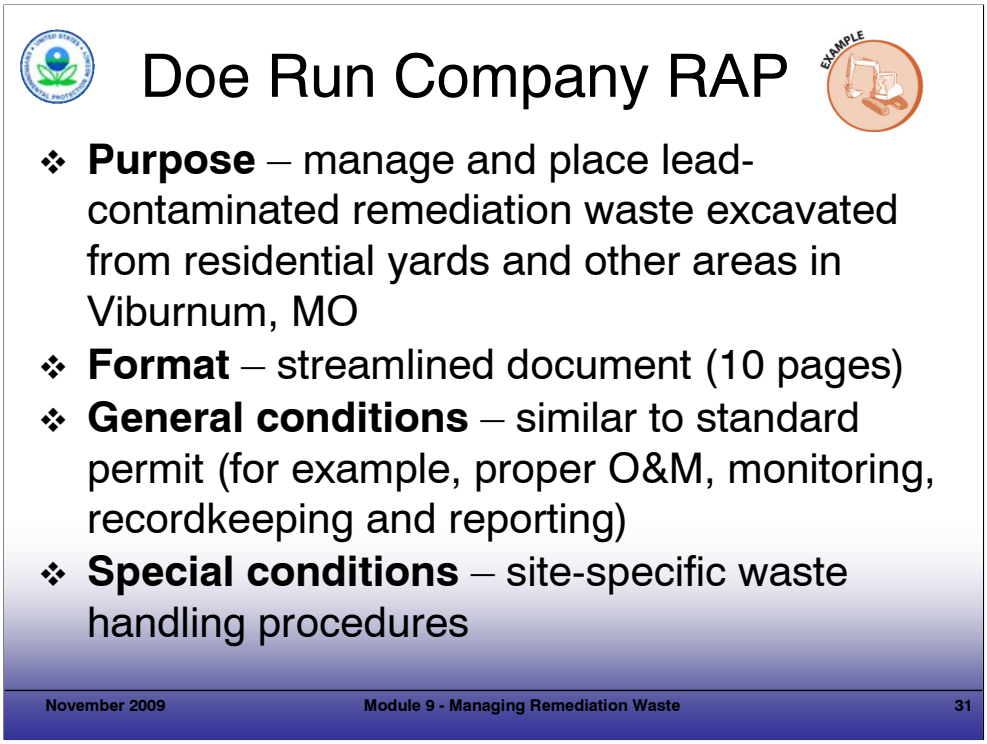
- Explain some benefits and limitations related to the use of RAPs.

Key Points

- RAPs provide several advantages to traditional RCRA permits, including:
  - The information requirements in RAP applications (40 CFR 270.110) replace the detailed information requirements in traditional Part B permit applications. The applicant is only required to provide site-specific information that is relevant to management of its hazardous remediation wastes. EPA or an authorized State may require additional information as needed.
  - Accordingly, the permit writer is freed from addressing prescriptive Part B requirements designed to address production wastes and can tailor the RAP requirements to address the site-specific cleanup setting.
  - The public involvement procedures for RAPs include flexibility for the regulatory agencies and minimal public notice requirements. For example, the following are not required: a facility mailing list, pre-application public meeting, and information repository.
  - The procedures for modifying existing RAPs are more flexible and streamlined than for traditional permits.
  - RAPs provide "permit as shield" protection in that as long as the terms of the RAP are met, the facility is considered to be in compliance with RCRA Subtitle C for enforcement purposes.
  - In order to encourage cleanup, EPA revised the definition of a remediation waste management site and eliminated the requirement for site-wide CA at sites conducting remediation only (that is, no management of production wastes) under RAPs or traditional permits.
  - RAPs are generally issued for on-site remediation purposes. However, an o/o may request a RAP for remediation waste management activities at an off-site location if the o/o believes that such a location would be more protective than the contaminated area or areas in close proximity. An off-site RAP is subject to expanded public participation requirements.
- RAPs have several limitations in their use, including that RAPs may not be used for on-site combustion of hazardous remediation wastes or for the management of "as-generated" HW.

References

- CFR. 40 CFR Part 270 Subpart H (270.70 - 270.230).



Notes:

Purpose of Slide

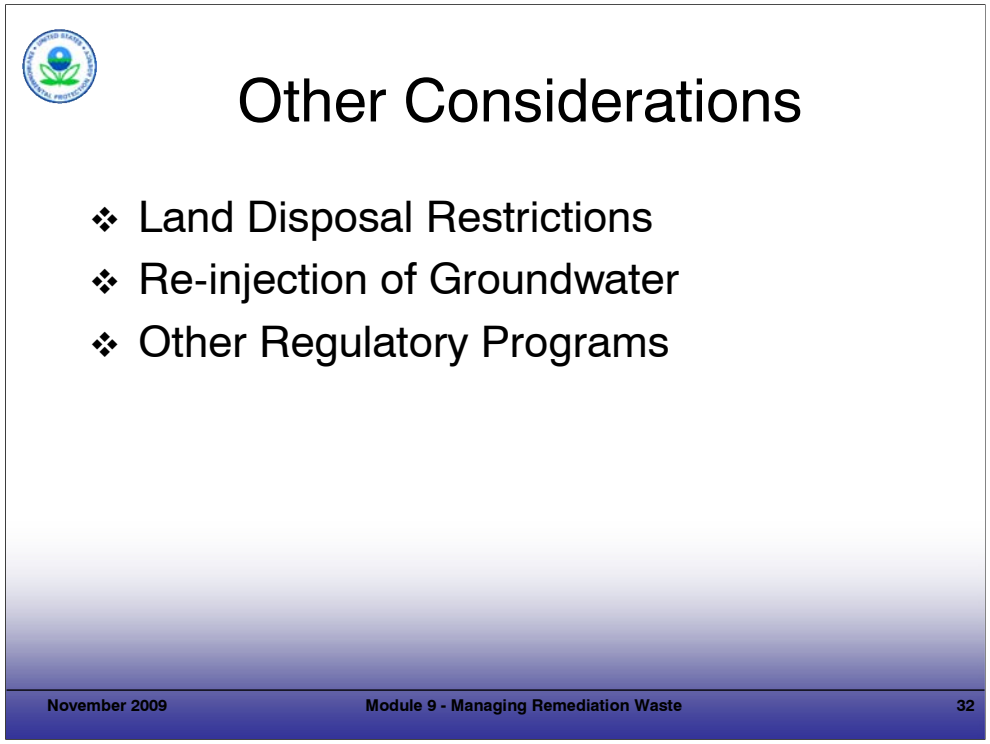
- Provide an example of a RAP issued in Region 7.

Key Points

- The Doe Run Company (Doe Run) Viburnum Facility RAP, issued in 2006 by EPA (MO did not have RAP authorization at the time of issuance) allowed the Permittee to stage, sample, transport, treat and place lead-contaminated remediation waste excavated from residential yards into a CAMU associated with a site cleanup in the area of Viburnum, MO. Some soils also were removed from other areas as a part of a RCRA CA. Portions of the removed waste may be characteristically hazardous for lead (TCLP). In its RAP application, the Permittee requested approval to dispose of an estimated 100,000 tons of remediation waste from the lead-impacted Superfund and RCRA CA sites into the CAMU.
- Unlike the lengthy and all-encompassing requirements of a traditional RCRA permit, the Doe Run RAP distilled the general and site-specific conditions into a 10-page document.
- The general conditions in the RAP read similarly to the general conditions in most RCRA permits, addressing: duty to comply, maintaining proper O&M and site conditions, and recordkeeping/reporting.
- What sets the RAP apart from most traditional RCRA permits is that it is self-contained – most (if not all) of the conditions are spelled out in the RAP itself, such as:
  - Site-specific methods for wastes handling and management;
  - Specific waste characterization protocols (for example, waste sampling frequency and analytical methods);
  - Waste treatment method (2% tri sodium phosphate [TSP] treatment of soils);
  - Specific engineering controls and decontamination requirements; and
  - Decision making protocols for different management methods (for example, treatment of soils with TSP is followed by mixing and curing of soils, which is followed by TCLP analysis for lead); the prescribed management method for the treated soil is then based on TCLP results and comparison of this data to the lead UTS.

References

- EPA. 2006. Draft Remedial Action Plan for Management of Hazardous Remediation Waste, Viburnum Facility, Viburnum, MO, EPA ID # MOD 000 823 252. May 30.



Notes:

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Notes:

Purpose of Slide: Introduce key concepts regarding the applicability of LDRs to remediation waste; reaffirm that LDRs do not "attach" in areas of contaminations or CAMUs.

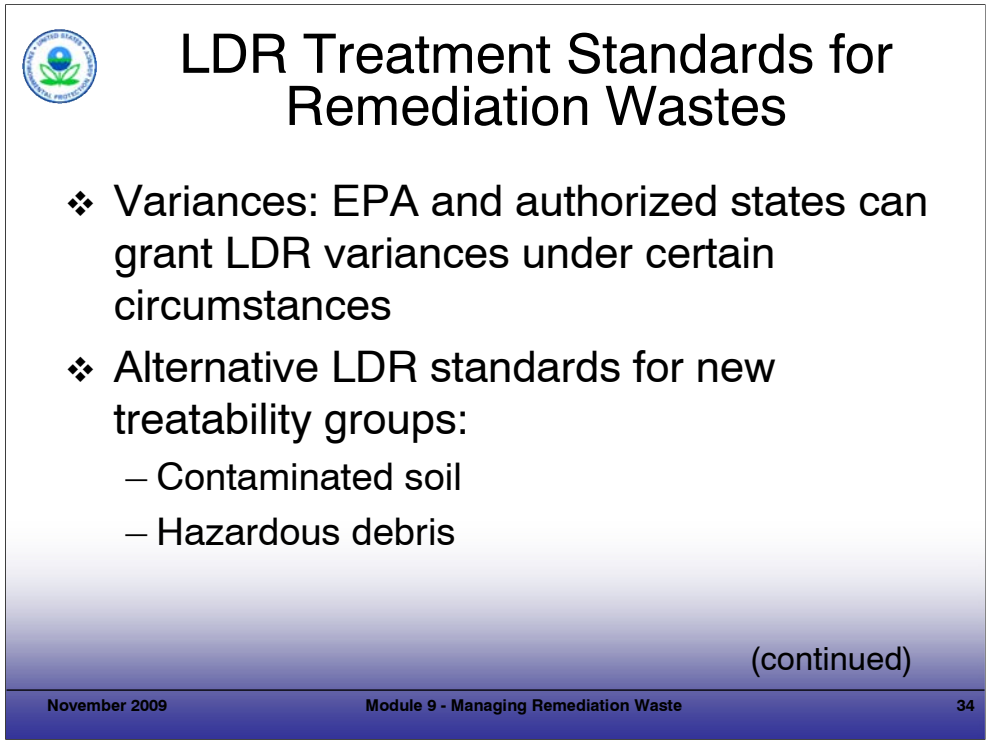
Key Points

- The point of generation for remediation wastes is when they are first removed from the land or area of contamination. If these remediation wastes contain listed HW, then LDRs "attach" when they are generated or "actively managed," regardless of the date of their original disposal. Active management is defined as physically disturbing remediation waste through removing, excavating, mixing with other waste, or other on-site treatment.
- Excavation of soil contaminated from a recent or current spill of HW or product would represent a new point of generation in the affected media and the soil would be prohibited from land disposal until it meets applicable LDR treatment standards (unless a site-specific risk-based variance is obtained) because the contaminating waste (spill of HW or product that is considered hazardous when disposed of) was prohibited from land disposal and LDR treatment standards were not met prior to the spill.
- Deliberately mixing HW with media to change the treatment requirements (for example, to the Phase IV LDR soil treatment standards) is prohibited.
- Normal mixing of soil during remediation is allowed (from 63 FR 10 page 28621; May 26, 1998):

  The Agency notes that the normal mixing of contaminated soil from various portions of a site that typically occurs during the course of remedial activities or in the course of normal earthmoving and grading activities is not considered intentional mixing of soil with non-media or prohibited soil with non-prohibited soil and, therefore, is not a type of impermissible dilution.
- LDRs "attach" to remediation wastes depending on the circumstances of disposal, as described in the following examples:
  - If a HW was disposed prior to the LDR effective date for that waste, then LDRs have not yet attached to that waste (or associated soil or debris). If a successful "contained out" determination is made for the remediation waste while it remains in situ, then the remediation waste can be managed as non-hazardous and does not have to meet the LDR treatment standards.
  - Under the above disposal scenario, if the remediation waste is excavated (that is, "actively managed") before a "contained out" determination is made, then LDRs "attach" at the time of the active management and will continue to apply even after a successful "contained out" determination is made. In this case, LDRs must be met or an LDR variance would be required.
  - If the HW was disposed of after the LDR effective date for that waste, then LDRs have already attached to that waste (and associated soil and debris) and will continue to apply regardless of when a "contained out" determination is made. In this case, LDRs must be met or an LDR variance would be required.

References

- FR. 1993. Land Disposal Restrictions for First Third Scheduled Wastes. Final Rule. 53 FR 31148.
- FR. 1988. Phase IV LDR Rule. 63 FR 28751. May 26.



Notes:

Purpose of Slide

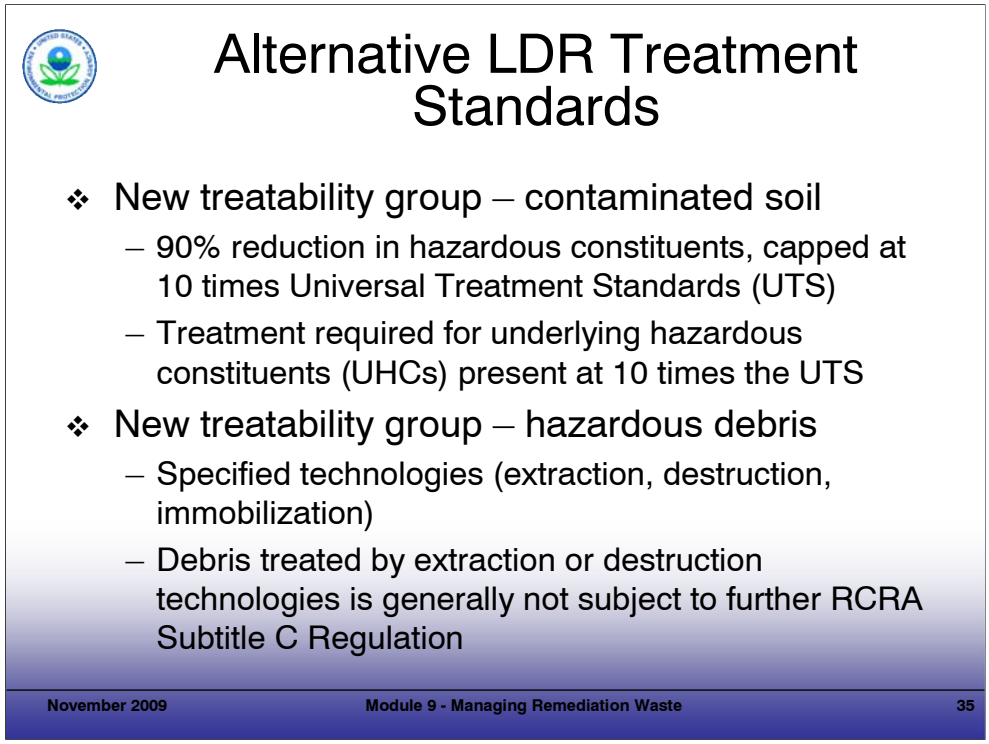
- Introduce concept of variances and alternative LDR treatment standards applicable to contaminated soil and hazardous debris.

Key Points

- The Phase IV LDR Rule created a new treatability groups — contaminated soil and hazardous debris.
- "Soil" was defined in the rule as unconsolidated earthen material or a mixture of earth material with liquids, sludges, or solids that is inseparable by simple mechanical removal methods and is comprised primarily of soil. Deliberate mixing of HW with soil to change its treatment classification is not allowed.
- Debris is defined as solid material exceeding a 60-millimeter (mm) particle size that is intended for disposal and that is: (1) a manufactured object, (2) plant or animal matter, or (3) natural geologic material. Some materials, such as lead acid batteries and scrap metal, are not included in this definition. Debris that contains a listed HW or exhibits a HW characteristic is considered hazardous debris under RCRA and is subject to the LDRs.

References

- FR. 1998. Phase IV LDR Rule. 63 FR 28751. May 26.
- CFR. Universal Treatment Standards. 40 CFR 268.48.
- CFR. Alternate Treatment Standards for Contaminated Soil. 40 CFR 268.49.
- EPA. 2001. Land Disposal Requirements: Summary of Requirements. EPA 530-R-01-007. August.
- EPA. 2002. Guidance on Demonstrating Compliance with the LDR Alternative Soil Treatment Standards. EPA 530-R-02-003. July.



Notes:

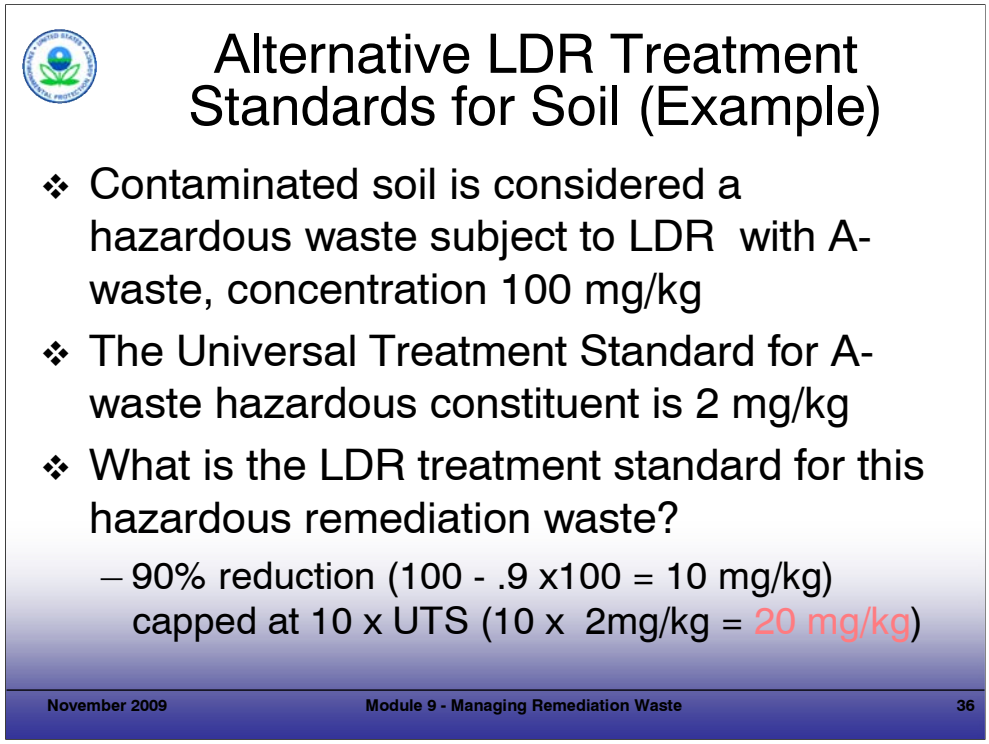
Purpose of Slide: Introduce concept of alternative LDR treatment standards applicable to contaminated soil.

Key Points

- Contaminated soil that exhibits a characteristic or contains a listed HW may meet either the soil LDR treatment standards or industrial waste treatment standards.
- The contaminated soil LDR treatment standards require a 90 percent reduction in hazardous constituents subject to treatment. However, that treatment does not have to reduce constituent concentrations to below 10 times the Universal Treatment Standards (UTS) for those constituents.
- Some characteristic HWs may require treatment of underlying hazardous constituents (UHCs) in addition to the property being treated (for example, corrosivity). UHCs are constituents that can be expected to be present in the waste at levels above applicable UTSs. Only UHCs that are present at concentrations greater than 10 times their respective UTSs must be treated.
- Hazardous debris must be treated for each "contaminant subject to treatment," using the technology or technologies listed in the alternative treatment standards for hazardous debris in 40 CFR 268.45. The alternative treatment standards for hazardous debris list various extraction, destruction, and immobilization technologies. The extraction technologies include physical extraction technologies (abrasive blasting, grinding, scarification, spalling, vibratory finishing, or high pressure steam or water washing), chemical extraction technologies (water washing and spraying, liquid-phase solvent extraction, vapor-phase solvent extraction), and thermal extraction technologies (high temperature metals recovery thermal desorption). Destruction technologies include biological destruction, chemical destruction (chemical oxidation using specified reagents such as peroxides, chemical reduction using reducing agents such as sulfur dioxide), and thermal destruction (treatment in an RCRA-regulated incinerator or boiler or industrial furnace). Immobilization technologies include macroencapsulation, microencapsulation, and sealing.
- Hazardous debris must be treated using the alternative treatment standards for hazardous debris before being land disposed. RCRA provides a conditioned exclusion for debris treated using either the extraction or destruction technologies (for example, concrete that has been sandblasted). Under the exclusion, hazardous debris that has been treated by one of the technologies specified in the alternative treatment standards and that does not exhibit a characteristic of HW after treatment is not a HW and need not be managed in a permitted HW disposal facility. However, if hazardous debris contaminated with a listed waste is treated only by an immobilization technology specified in the alternative treatment standards, then that hazardous debris must still be managed in a Subtitle C facility.

References

- FR. 1998. Phase IV LDR Rule. 63 FR 28751. May 26.
- CFR. Universal Treatment Standards. 40 CFR 268.48.
- CFR. Alternate Treatment Standards for Contaminated Soil. 40 CFR 268.49.
- EPA. 2001. Land Disposal Requirements: Summary of Requirements. EPA 530-R-01-007. August.
- EPA. 2002. Guidance on Demonstrating Compliance with the LDR Alternative Soil Treatment Standards. EPA 530-R-02-003. July. FR. 1992.
- Alternative LDR Treatment Standards for Debris. 57 FR 37196.
- CFR. 40 CFR 268.45.



Notes:

Purpose of Slide

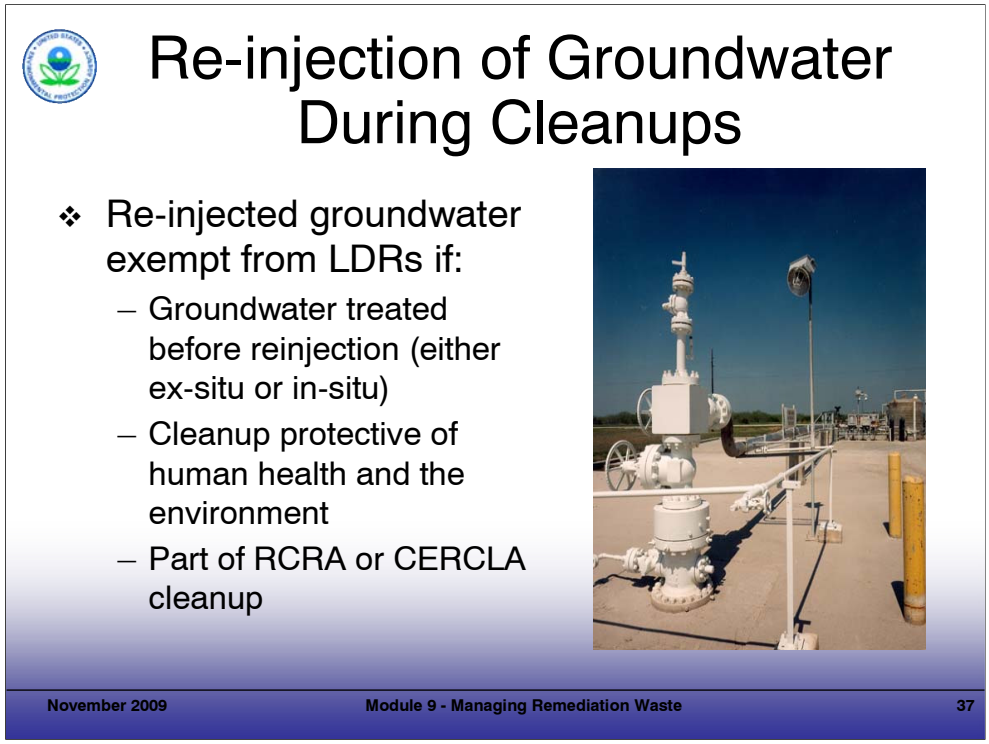
- Illustrate concept of alternative LDR treatment standards applicable to contaminated soil using an example.

Key Points

- The instructor will review the example to illustrate LDR treatment standards for soil.

References

- FR. 1998. Phase IV LDR Rule. 63 FR 28751. May 26.
- CFR. Universal Treatment Standards. 40 CFR 268.48.
- CFR. Alternate Treatment Standards for Contaminated Soil. 40 CFR 268.49.
- EPA. 2001. Land Disposal Requirements: Summary of Requirements. EPA 530-R-01-007. August.
- EPA. 2002. Guidance on Demonstrating Compliance with the LDR Alternative Soil Treatment Standards. EPA 530-R-02-003. July. FR. 1992.
- CFR. Alternative LDR Treatment Standards for Debris. 57 FR 37196.
- CFR. 40 CFR 268.45.



Notes:

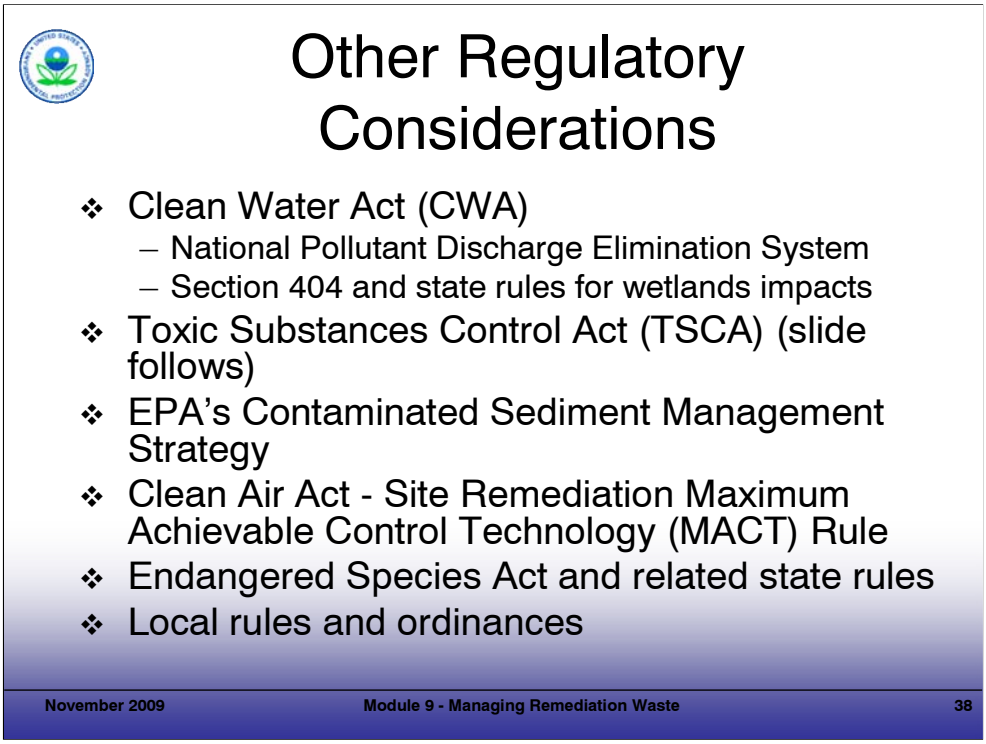
Purpose of Slide: Review policies regarding the reinjection of groundwater during cleanups.

Key Points

- Underground injection of groundwater contaminated with HW frequently occurs as part of RCRA and CERCLA cleanups to facilitate groundwater remedies. For example, groundwater containing HW may be extracted, treated, and reinjected into an aquifer as part of a pump and treat remediation system.
- Section 3020 of RCRA addresses underground injection of HW in the context of RCRA and CERCLA cleanups. RCRA Section 3020(a) bans HW disposal by underground injection into, or above, a formation which contains an underground source of drinking water (within one-quarter mile of the well). RCRA Section 3020(b), however, exempts reinjection of treated contaminated groundwater from LDRs if certain conditions are met.
- Under EPA policy, reinjected groundwater is exempt from compliance with LDRs if: (1) it is treated before reinjection and the treatment is intended to "substantially reduce" hazardous constituents in the groundwater. The "substantial reduction" may occur either before of after reinjection; (2) the cleanup is protective of human health and the environment; and (3) the injection is part of RCRA or CERCLA cleanup under RCRA CA or CERCLA 104 or 106 actions.
- EPA interpreted Section 3020 in a December 27, 2000, memorandum. That document discusses the applicability of Section 3020 requirements to groundwater reinjection associated with in-situ groundwater bioremediation, chemical oxidation, and injection of other materials as follows:
  - Amending extracted contaminated groundwater with nutrients, microorganisms, chemical oxidants, or other treatment materials is consistent with the RCRA Section 3020 treatment requirement, as long as the extracted groundwater is amended (or otherwise treated) before reinjection, and as long as the treatment is intended to achieve a substantial reduction of hazardous constituents after reinjection (that is., nutrients or microorganisms are added to groundwater at the surface to assist treatment even if the reduction occurs later).
  - When a commercial chemical is injected into groundwater for in-situ treatment but no groundwater is withdrawn and reinjected, RCRA does not regulate or prohibit the material's injection.

References

- Section 3020 of RCRA.
- EPA. 2000. Applicability of RCRA Section 3020 to In-Situ Treatment of Ground Water. December 27.
- EPA. 1998. Management of Remediation Wastes Under RCRA. October.



Notes:

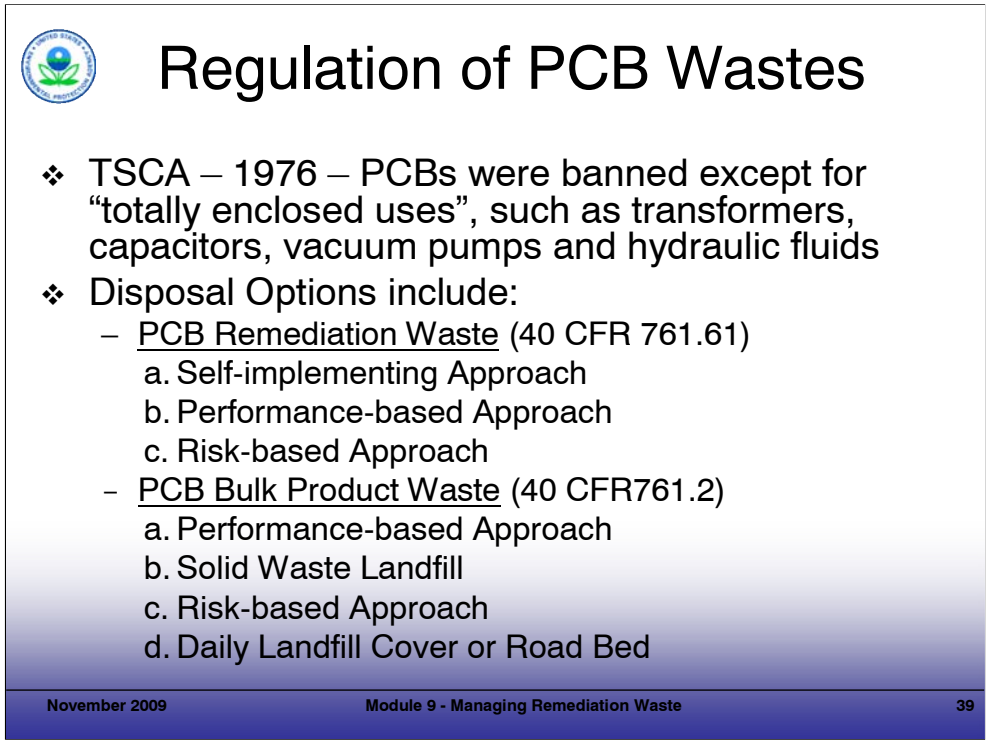
Purpose of Slide: Discuss several other regulatory concerns associated with remediation waste management.

Key Points: Project managers should recognize that a number of regulatory programs other than RCRA can apply to CA effort.

- Superfund cleanups are exempted from obtaining permits to comply with other environmental regulations; however, RCRA CA cleanups are not. In planning RCRA CA cleanups, project managers should consider the timeframes and costs associated with obtaining the required environmental permits, such as National Pollutant Discharge Elimination System (NPDES) or Section 404 permits (for dredged spoils), applicable to their sites.
- PCBs released from electrical and other equipment may be present at RCRA facilities; where such contamination is identified in soil, both the TSCA and RCRA may apply to the remediation. TSCA regulations regarding cleanup and disposal options for PCB remediation waste are found at 40 CFR 761.61. The regulations establish three cleanup options for PCB remediation waste: self-implementing; performance-based disposal; and risk-based disposal. Clean up and disposal of PCBs performed under 40 CFR 761.61 is based on the concentration at which the PCBs are present. Under the RCRA LDR program, UTS have been established for PCBs (0.10 mg/L in wastewater and 10 mg/kg in non-wastewaters). PCBs may be considered UHCs in contaminated soil that exhibits a characteristic, and therefore, treatment may be necessary.
- EPA created a Contaminated Sediment Strategy to address the ecological and human health risks that contaminated sediment poses in many U.S. watersheds. The Strategy establishes four goals to manage the problem of contaminated sediment and describes actions the Agency intends to take to accomplish these goals. The goals are: (1) to control sources of sediment contamination and prevent the volume of contaminated sediment from increasing; (2) to reduce the volume of existing (in-place) contaminated sediment; (3) to ensure that sediment dredging and dredged material disposal are managed in an environmentally sound manner; and (4) to develop a range of scientifically sound sediment management tools for use in pollution prevention, source control, remediation and dredged material management.
- In 2003, EPA promulgated the Final National Emission Standard for Hazardous Air Pollutants ("NESHAP") for Site Remediation under 40 CFR Part 63, Subpart GGGGG, also known as the "Site Remediation MACT Rule." It establishes national emission standards for hazardous air pollutants ("HAPs") from remediation of contaminated environmental media, such as soils, groundwater, or surface water. The affected sources subject to control are: process vents, remediation material management units, and equipment leaks. Site remediation activities subject to the final MACT Rule are required to control emissions of 97 specific organic HAP compounds by meeting emissions limitations and work practice standards consistent with application of the MACT. If site remediation does not involve cleanup of materials containing the listed HAPs, then the site is not subject to the rule. The rule exempts emissions from site remediation when covered under CERCLA or RCRA CA programs because those programs require consideration of the same HAP emissions and the RCRA and CERCLA statues apply more specifically to the remediation process than does MACT under the CAA and, unlike the CAA, authorize site specific means of dealing with remediation activities and their associated HAP emissions. The Final Rule does not apply to a site remediation to clean up leaking underground storage tanks located at a gasoline service station. The Final Rule does not apply to any site remediation conducted at a farm or residential site. Also, the Final Rule does not apply to site remediation conducted at a research and development facility that meets the requirements of CAA Section 112(c)(7). The Rule also exempts certain "short duration" cleanups, but it does not exempt cleanups conducted under alternative authorities, such as state voluntary programs. Under the short-term site remediation exemption, a site remediation at a facility subject to the Final Rule is not subject to the emissions limitations and work practice standards in the final NESHAP for Site Remediation if the site remediation can be completed within 30 consecutive calendar days (as determined from the day on which actual work begins at the site to physically clean up the remediation materials).
- Other potential regulatory requirements associated with protecting endangered species and with local rules and ordinances also should be considered.

References

- 1998. EPA's Contaminated Management Strategy, April. EPA 823-R-98-001.
- FR. 1998. Disposal of PCBs. Final Rule. 40 CFR Parts 750 and 761. 63 FR 35383. June 29.
- FR. 2000. Proposed Rule: Deferral of Phase IV LDRs for PCBs. 65 FR 7809. February 16.
- EPA. 2000. Environmental Fact Sheet on Proposed Deferral of Phase IV LDRs for PCBs as an Underlying Constituent in Soil. EPA 530-F-00-008. February
- FR. 2003. Volume 68, No. 195. 40 CFR Part 63, Subpart GGGGG. National Emission Standards for Hazardous Air Pollutants: Site Remediation; Final Rule. October 8.
- CFR. 40 CFR 761.61.



Notes:

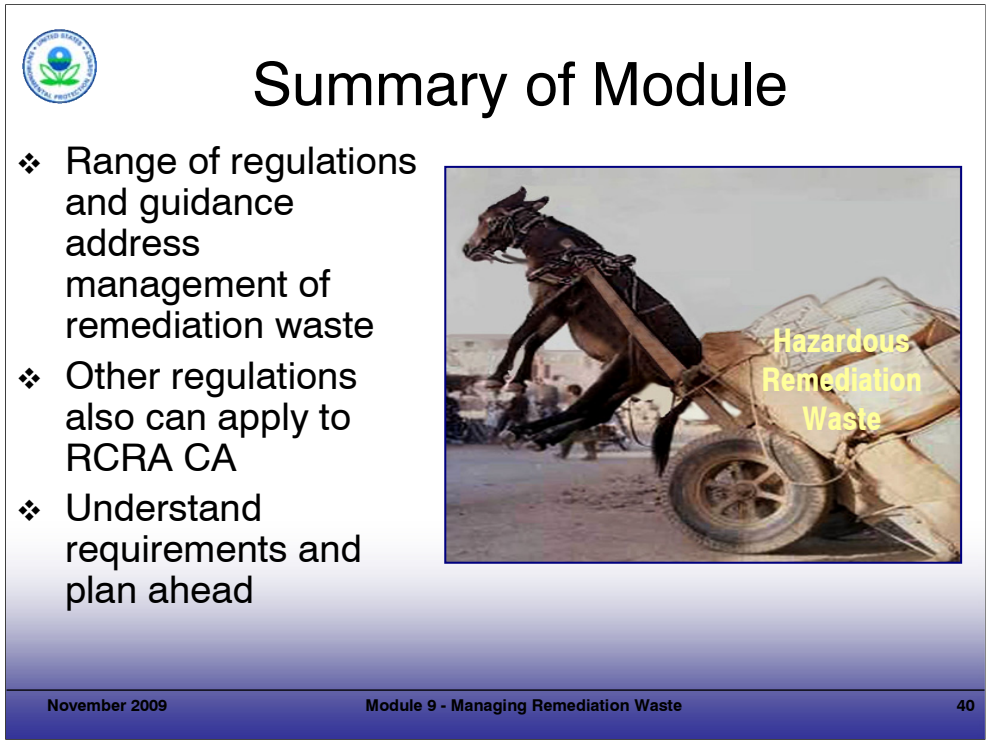
Purpose of Slide: Describe the law and regulations for the management, disposal and remediation of PCBs.

Speaker Key Points

- TSCA Section 6(e) was enacted in 1976 and required EPA to regulate PCBs.
- The TSCA PCB regulations (40 CFR Part 761) place prohibitions on the manufacture, processing, distribution in commerce, use, and disposal of PCBs and PCB items.
- PCB regulations include owners and/or operators of PCB-contaminated property where the PCB contamination exceeds allowable concentrations under the regulations.
- TSCA authority is only delegated to EPA regions. It can not be delegated to states.
- At the EPA Headquarters level, the use of PCBs is handled under the Office of Pollution Prevention and Toxic Substances (OPPTS), while cleanup and disposal of PCBs are handled by the Office of Resource Conservation and Recovery.
- "PCB Remediation Waste" is waste containing PCBs as a result of a spill, release, or other unauthorized disposal if:
  - Disposed prior to April 18, 1978, and with PCBs currently present at ≥ 50 parts per million (ppm);
  - Original PCB source ≥ 500 ppm beginning on April 18, 1978, and currently any concentration (≥ 1 ppm);
  - Original PCB source ≥ 50 ppm beginning on July 2, 1979, and currently any concentration (≥ 1 ppm); and
  - Any concentration of PCBs, if from an unauthorized source.
- "PCB Bulk Product Waste" is waste containing PCBs if the waste is derived from manufactured products containing PCBs in a non-liquid state, at any concentration where the PCB concentration at the time of designation for disposal was ≥ 50 ppm PCBs.

References

- EPA. Toxic Substances Control Act (TSCA) Regulations, Section 6(e).
- 40 CFR 761 (PCB Regulations). PCB Manufacturing, Processing, Distribution Commerce and Use Prohibitions.
- EPA PCB Web Site. Accessed On-line at: http://www.epa.gov/epaoswer/hazwaste/pcbs/index.htm.
- Toxic Substances Control Act (15 USC 2605(e)).



Notes:

Purpose of Slide

- Summarize the key take home points associated with Module 9, Managing Remediation Waste.

Key Points

- Remediation wastes will be generated during CA.
- Planning for management of these wastes should be integrated into CA planning.
- Project managers should be familiar with the regulations and polices/guidance for remediation waste management. These allow flexibility in managing remediation waste.
- In considering remediation waste management, understand the regulations and plan ahead to apply the best approach for your site, while ensuring wastes are properly managed.

References

- None.