



RCRA Corrective Action Inspection Training

Office of Site Remediation
Enforcement

January 14, 2015 Webinar

U.S. Environmental Protection Agency

1



Course Outline

1. Introduction
2. Typical Corrective Action (CA) Process Steps
3. Preparing for a CA Inspection
4. Conducting a CA Inspection
5. Preparing a CA Inspection Report
6. Developing the Case

01/14/15 Webinar

U.S. Environmental Protection Agency

2

1. Introduction – includes a definition of corrective action (CA) oversight and inspection [slides 3 – 9]
 2. Typical CA Process Steps [slides 10 - 32]
 - RCRA Facility Assessment (RFA)
 - RCRA Facility Inspection (RFI)
 - Interim Measures (IM)
 - Corrective Measures Study (CMS)
 - Statement of Basis, Public Comment Period and Decision on Final Remedy / Response to Comments
 - Corrective Measures Implementation (CMI)
 3. Preparing for a CA Inspection [slides 33 - 41]
 4. Conducting a CA Inspection [slides 42 - 48]
 5. Preparing a CA inspection Report [slides 49 - 54]
 6. Developing the Case [slides 55 - 58]
- Additional References [slide 59]
- Summary [slide 60]



Section 1: Introduction

What are the goals of this training?

- Provide a fundamental understanding of the corrective action process
- Describe how to inspect a facility to help ensure compliance with corrective action requirements

- This training will provide a fundamental understanding of the corrective action process from start to finish.
- An emphasis will be placed on the inspections of corrective action (CA) sites. If the CA inspection is to be a full review of the CA process, then the inspection should include an evaluation of the effectiveness of the current approach and recommendations to troubleshoot stalled investigations or remedy selections, as well as for ineffective CA measures or remedies.
- For more information on RCRA CA Code Events, see <http://www.epa.gov/epawaste/hazard/correctiveaction/pdfs/ca-evcde.pdf>



Intro: Who is the Audience?

- Corrective Action Project Managers (PMs) from EPA region or authorized state
- RCRA regulatory and corrective action inspectors
- Permit writers who have responsibility for corrective action
- Attorneys who have responsibility for corrective action

- This training is intended for a broad audience of federal and state personnel who have responsibility for ensuring compliance with corrective action requirements:
 - Corrective Action Project Managers (PMs) from EPA regional offices or authorized states;
 - RCRA regulatory and corrective action inspectors;
 - Permit writers who have responsibility for corrective action; and
 - Attorneys who have responsibility for corrective action.



Intro: The State of the Program

- Focused on nearly 4,000 facilities across the nation
- Includes chemical manufacturing plants, oil refineries, lead smelters, wood preservers, steel mills, commercial landfills, and others
- “Facilities” range in size from less than one acre to 2 million acres



01/14/15 Webinar

U.S. Environmental Protection Agency

5

- The CA program is focused on nearly 4,000 facilities across the nation. To more accurately reflect the program workload, EPA and the states established the 2020 Corrective Action Universe or 2020 Corrective Action Baseline. The list includes facilities that have been cleaned up, those that are being cleaned up, and those that were deemed most likely to need a cleanup under the CA program. For more information, see <http://www.epa.gov/waste/hazard/correctiveaction/facility/index.htm#2020>
- RCRA CA facilities include current and former chemical manufacturing plants, oil refineries, lead smelters, wood preservers, steel mills, commercial landfills, and a variety of other types of entities.
- Sites range in size from hazardous waste treatment facilities of less than one acre to former military bombing ranges covering 2 million acres.
- For more information, see the April 2013 “RCRA Corrective Action: Case Studies Report” at: <http://www.epa.gov/epawaste/hazard/correctiveaction/pdfs/rcracorrective.pdf>



Intro: The State of the Program

- 43 states are authorized to implement the RCRA corrective action program
- Oversight responsibilities primarily rest on the states and EPA regions



43 States Authorized for RCRA CA (gray)

01/14/15 Webinar

U.S. Environmental Protection Agency

6

- The oversight responsibilities primarily rest on the states and EPA. EPA regions have work-sharing agreements with both authorized and unauthorized states regarding which agency has the lead on oversight and implementation at particular facilities.
- A total of 43 states are authorized to implement the CA program.
- Unauthorized states include:
 - Region 2 New Jersey
 - Region 3 Maryland, Pennsylvania
 - Region 4 Mississippi
 - Region 7 Iowa, Nebraska
 - Region 10 Alaska
- The District of Columbia also is not authorized to implement the corrective action program.



Intro: Corrective Action Oversight

Definition: management by the lead agency of **all** activities related to corrective action at the site

- reviewing, commenting on, and approval or disapproval of required documents
- visiting and inspecting facilities
- tailored to site-specific circumstances

- Corrective action oversight is the management of **all** activities related to corrective action at the site. It primarily consists of:
 - reviewing documents such as draft work plans and reports; and
 - visiting and inspecting facilities.
- EPA guidance recommends tailored oversight based on site-specific circumstances.
- Corrective action oversight definition is from “Results-Based Approaches to Corrective Action” (July 26, 2000); see <http://www.epa.gov/epawaste/hazard/correctiveaction/resources/guidance/pdfs/results.pdf>



Intro: Corrective Action Inspection

Definition: an evaluation of a site's compliance with the corrective action requirements of a permit or order.

- also known as Corrective Action Compliance Evaluation (CAC)
- is a component of corrective action oversight
- may be conducted concurrently with other types of inspections

- This definition is from Appendix D of the March 18, 2010 *Compliance Monitoring Strategy for the Resource Conservation and Recovery Act (RCRA) Subtitle C Program*; see <http://www.epa.gov/compliance/resources/policies/monitoring/rcra/rcracms.pdf>
- Other types of inspections that may include a corrective action inspection include:
 - **Compliance Evaluation Inspection (CEI)** - primarily an on-site evaluation of the compliance status with regard to all applicable RCRA regulations and permits (with the exception of groundwater monitoring and financial assurance requirements).
 - **Groundwater Monitoring Evaluation (GME)** – a detailed evaluation of the adequacy of the design and operation of a site's groundwater monitoring system; from the *Handbook of Groundwater Protection and Cleanup Policies for RCRA Corrective Action*; see <http://www.epa.gov/wastes/hazard/correctiveaction/resources/guidance/pdfs/gwhb041404.pdf>
 - **Operation and Maintenance Inspection (OAM)** - a periodic inspection of how well a groundwater monitoring system continues to function once it is considered well designed.
- Other types of concurrent inspections may be under authority of other statute(s) as long as inspector has authority to enter under other statute(s).



Intro: Corrective Action Inspection

Differences between
RCRA Credentialed Inspector
and
Corrective Action Project Manager



01/14/15 Webinar

U.S. Environmental Protection Agency

9

- Pursuant to RCRA Section 3007, a duly designated inspector can inspect any generator; treatment, storage and disposal (TSD) facility; transporter; or handler of hazardous waste.
 - Inspection authority includes:
 - requesting the site to provide information;
 - copying information;
 - entering the site at reasonable times; and
 - inspecting the site and taking samples.
 - Inspectors must go through training and a credentialing process.
 - If an inspector is denied access to a site, a search warrant would be sought to gain access.
- The Corrective Action Project Manager (PM), if not credentialed, is not authorized to conduct inspections.
 - Access rights and the ability to copy records for a particular site are usually spelled out in the site's permit, corrective action order or agreement.
 - Typically, access language in orders give the PM the same authority at the site of an inspector (e.g. copy records, take samples).
- A site that is not under permit/order/agreement may voluntarily allow a PM onto the site. However, the site could deny access without any repercussions.



Section 2: Typical CA Process Steps

Where is it?
What is it?
Is it a risk?

RCRA Facility Assessment
RFA



RCRA Site Investigation
RFI

01/14/15 Webinar

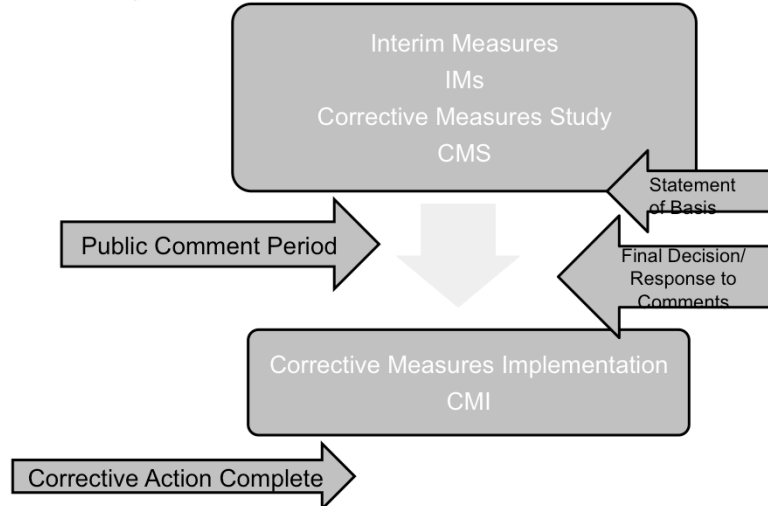
U.S. Environmental Protection Agency

10

- The next two slides provide a general description of typical RCRA CA process steps; the steps are covered in more detail later in this section.
- These steps may be combined or conducted in phases.



Section 2: Typical CA Process Steps





Typical CA Process Step 1

- **RCRA Facility Assessment (RFA)** is an initial facility assessment that is used to identify:
 - Solid Waste Management Units (SWMUs)
 - Hazardous Waste Management Units (HWMUs)
 - Areas of Concern (AOCs)
 - All other readily available or observable information about environmental conditions at and from the facility

01/14/15 Webinar

U.S. Environmental Protection Agency

12

RCRA Facility Assessment (RFA) - the first element in most cleanup programs is an initial site assessment. During this phase, information is gathered on site conditions, releases of hazardous waste, potential releases, and exposure pathways to determine whether a cleanup may be necessary.

- Identify the following:
 - **Solid Waste Management Units (SWMUs)*** - any discernible units at which wastes have been placed at any time irrespective whether the units were intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released.
 - **Hazardous Waste Management Units (HWMUs)** – a subset of SWMUs containing hazardous waste.
 - **Areas of Concern (AOCs)** - areas that have received, at any time, solid or hazardous waste through the deliberate placement of the waste or because of accidental releases or spills.
- Determine if there is evidence of releases that have occurred or the potential for releases from each SWMU/AOC.
- The RFA is generally conducted by the state or EPA.

Note: RFA is also known as the Preliminary Assessment/Visual Site Inspection or Preliminary Review/Visual Site Inspection (PA/VSI or PR/VSI).

**See May 1, 1996 "Advance Notice of Proposed Rulemaking for Corrective Action for Releases from Solid Waste Management Units at Hazardous Waste Management Facilities" 61 FR 19442-19443.*



Typical CA Process Step 2

- **RCRA Facility Investigation (RFI)**
 - Determine nature and extent of migration of hazardous waste or hazardous constituents from SWMUs, AOCs, or other source areas
 - Gather data to support Corrective Measure Study (CMS) or potential Interim Measures (IMs)

01/14/15 Webinar

U.S. Environmental Protection Agency

13

RCRA Facility Investigation (RFI) – determine the nature and extent of any contamination of a RCRA facility.

- A release assessment is an optional step that may be performed as the first phase of an RFI to focus or streamline the RFI. A release assessment may help determine if the RFI should focus on one area before another and/or if interim measures are necessary.
- An RFI Work Plan or equivalent Sampling and Analysis Plan (SAP) lays out the initial approach to the investigation of the releases to the environmental media (i.e., soil, surface water, groundwater or air) including the media to be sampled, the locations, the methods for collecting the samples and methods for analyzing the samples.
- The plans are based on known or observed historical hazardous materials and/or hazardous waste managed and/or known or potential releases at the site/facility and the suspected locations of those waste management units, areas or releases.
- Ensure that representative samples of observed or suspected releases have been appropriately collected pursuant to an established Quality Assurance Project Plan (QAPP).
- Other data may be gathered to support Corrective Measure Study (CMS) or Interim Measures; may evaluate the need for further investigation and/or CA.
- Assess the validity of the Conceptual Site Model (CSM), potential impacts to nearby receptors (e.g., water well survey) and need for Human Health Risk Assessment and Screening Level Ecological Risk Assessment.
- The RFI is conducted by the owner/operator of facility.



Typical CA Process Step 2

- **RCRA Facility Investigation (RFI)**

Common Sampling Types	
General sampling	Groundwater
Surface soil	Air
Subsurface	Surface water
Soil gas	Benthic sediment

01/14/15 Webinar

U.S. Environmental Protection Agency

14

RCRA Facility Investigation (RFI)

- Common sampling types:
 - Groundwater - monitoring wells
 - Surface soil
 - Air – indoor air sampling may be needed when there is potential vapor intrusion (VI) from contaminated groundwater or soils. There is potential interference from household chemicals.
 - Subsurface
 - Surface Water
 - Benthic Sediment Sampling - sediment at the bottom of a lake or river in which the presence or lack of presence of certain organisms indicates the health of the water body.



Case Example

- Arkansas facility manufactured refrigerators, trash compactors and ice makers
- Main COC is trichloroethylene (TCE)
- Confirmed elevated levels of TCE in the soil and groundwater
- Groundwater plume has TCE levels greater than MCL



01/14/15 Webinar

U.S. Environmental Protection Agency

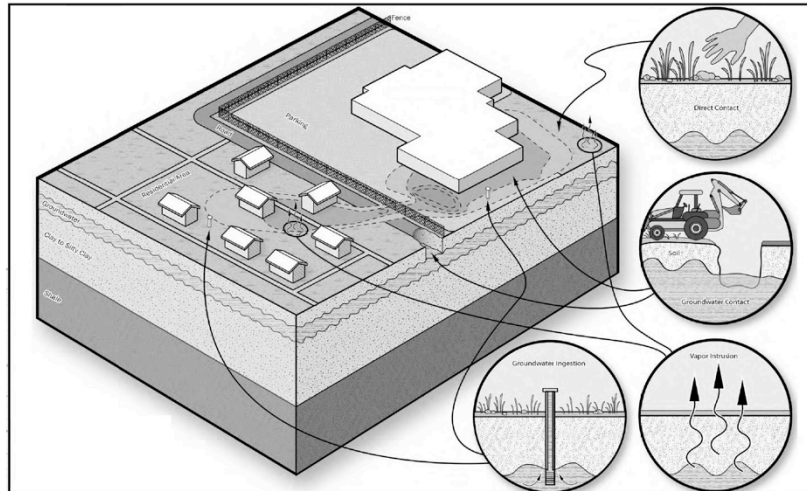
15

Case Example

- In the State of Arkansas there is a facility that manufactured refrigerators, trash compactors and ice makers.
- The main Contaminant of Concern (COC) is trichloroethylene (TCE).
- Numerous rounds of sampling confirmed elevated levels of TCE in the soil and groundwater.
- The on-site and off-site groundwater plume has TCE levels greater than the Maximum Contaminant Level (MCL).



Case Example: Conceptual Site Model



01/14/15 Webinar

U.S. Environmental Protection Agency

16

Case Example

Conceptual Site Model

- Potential human exposure:
 - Groundwater ingestion
 - Vapor intrusion
 - Groundwater contact (waters)
 - Direct soil contact (workers and trespassers)
- Potential on-site risks for current and future exposure to personnel:
 - Routine workers
 - Maintenance workers
 - Construction workers
- Potential off-site risks for current and future exposure to personnel:
 - Residents
 - Routine workers
 - Maintenance workers



Typical CA Process Step 3

- **Interim Measures (IMs)**
 - Control or abate ongoing threats to human health or the environment
 - May become part of the final Corrective Measures

01/14/15 Webinar

U.S. Environmental Protection Agency

17

Interim Measures (IMs)

- While site characterization is underway or before a final remedy is selected, there is often a need for interim measures to control or abate ongoing risks to human health and the environment in advance of the final remedy selection. Identify and implement IMs if appropriate.
- IMs are often implemented for efficiency or opportunity such as hot spot removal, but also may be used to address more urgent threats like high potential for exposure or contaminants migrating off site toward drinking water wells.
- IMs may become part of the final remedy.
- Many of the technologies and other aspects of this section also apply to Corrective Measures Implementation (CMI) inspections.
- IMs are implemented by the owner/operator of the facility.



Typical CA Process Step 3

- **Interim Measures (IMs)**

- Corrective Action Management Units (CAMUs)



RCRA cap in Kent, WA

Interim Measures (IMs)

- Corrective Action Management Units or CAMUs are special units created under the Resource Conservation and Recovery Act (RCRA) to facilitate treatment, storage, and disposal of hazardous wastes managed for implementing cleanup.
- CAMUs also remove the disincentives to cleanup that the application of RCRA to these wastes can sometimes impose (e.g., triggering Land Disposal Restrictions). For more information, see <http://www.epa.gov/wastes/hazard/correctiveaction/resources/guidance/acamur.htm>
- While CAMUs are relatively rare, they may be important options for Interim Measures because they provide increased flexibility for managing remediation wastes during corrective action.



Typical CA Process Step 3

- **Interim Measures (IMs)**
 - SWMU and/or AOCs



01/14/15 Webinar

U.S. Environmental Protection Agency

19

Interim Measures (IMs) can include:

- Waste excavation or removal;
- Soil stabilization;
- Physical containment such as groundwater barrier systems and fencing;
- Hydraulic containment such as groundwater pumping and treatment systems; and / or
- Soil vapor extraction.

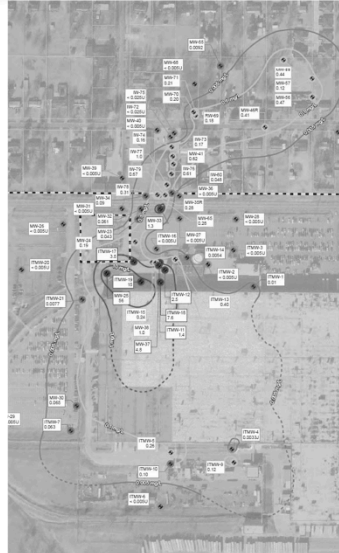


Case Example

At the same site in Arkansas, interim measures involved “Hot Spot” removal of TCE contaminated soils on site with the intent to lower the concentration in the groundwater



Case Example: Plume map before removal



01/14/15 Webinar

U.S. Environmental Protection Agency

21



Case Example: Future In-Situ Chemical Oxidation Locations



01/14/15 Webinar

U.S. Environmental Protection Agency

22



Typical CA Process Step 4

- **Corrective Measure Study (CMS)**

- Identify and evaluate potential alternatives for the remediation of releases of hazardous waste or constituents that have been identified at and moving from the facility



01/14/15 Webinar

U.S. Environmental Protection Agency

23

Corrective Measures Study (CMS)

- Identify and evaluate potential alternatives for the remediation of releases of hazardous waste or constituents that have been identified at and moving from the facility.
- Before choosing a cleanup approach, program implementers and facility owners and operators will typically analyze a range of alternatives and evaluate their advantages and disadvantages relative to site-specific conditions.
- Corrective action and remediation goals (i.e., cleanup standards) are proposed in association with the recommended remedy for EPA/state approval.
- Additional studies may be needed to confirm the selection and implementation of the remedy.
- The CMS is conducted by owner/operator of facility.
- See <http://www2.epa.gov/enforcement/guidance-rcra-corrective-action-inspection> for more information on common activities and issues for this phase of the RCRA CA process.



Typical CA Process Step 4

- **Corrective Measure Study (CMS)**

- Bench Study: small laboratory-scale treatment study
- Pilot-Scale Study: treatment study based on actual site conditions



01/14/15 Webinar

U.S. Environmental Protection Agency

24

Corrective Measure Study (CMS)

- Often the CMS is limited to activities that do not involve lab or field work that would be subject to inspections. Some exceptions to this could include:
 - A **Bench Study**, which is a laboratory study in which small volumes of media are tested for the individual parameters of a treatment technology.
 - may not reflect the reality of conditions at the site
 - shipment and handling of waste material may not be in compliance with regulations
 - depending on the case, wastes after the completion of the bench study may have to be sent back
 - A **Pilot-Scale Study**, which is an on-site simulation of physical and chemical parameters of a full-scale treatment process.
 - may not be representative of actual waste materials
 - treatment, storage, and disposal may not be in compliance with regulations
 - depending on the case, wastes after the completion of the pilot-scale study may have to be sent back
- Inspectors who are not CA specialists should consult with CA specialists about their role in inspecting such studies.
- For more information on pilot scale studies, see <http://www2.epa.gov/enforcement/guidance-rcra-corrective-action-inspection>



Case Example

Pilot Tests

On-site pilot test In Situ Chemical Oxidation (ISCO):

- Effectiveness limited by aquifer transmission

Off-site pilot test In Situ Chemical Oxidation (ISCO):

- Effectiveness limited by aquifer transmission

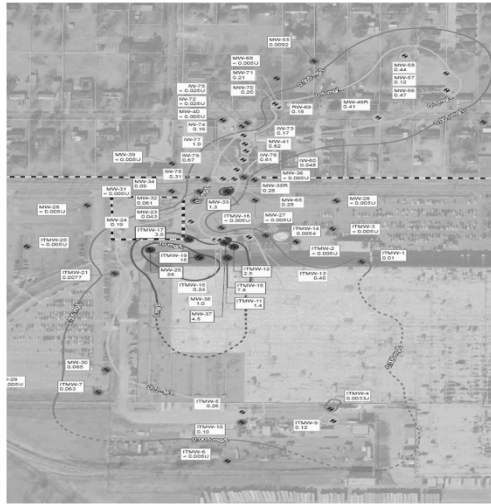
Case Example:

- **Pilot Tests**

- On-site pilot test In Situ Chemical Oxidation (ISCO):
 - Effectiveness limited by aquifer transmission
- Off-site pilot test In Situ Chemical Oxidation (ISCO):
 - Effectiveness limited by aquifer transmission



Case Example: Plume Map 2012



01/14/15 Webinar

U.S. Environmental Protection Agency

26



Typical CA Process: Decision on Final Remedy

- Statement of Basis
- Public Comment Period
- Decision on Final Remedy / Response to Comments

01/14/15 Webinar

U.S. Environmental Protection Agency

27

Decision on Final Remedy:

- **Statement of Basis** – document that seeks public input on the rationale for a proposed final remedy:
 - draft an order or permit with a draft Statement of Basis;
 - inform the public and solicit public comment; and
 - drafted by the state or EPA.
- **Decision on Final Remedy / Response to Comments** – publicly available record that documents the decision by the state or EPA about the final remedy for the facility:
 - follows public comment period;
 - finalize order or permit with responsive summary to the public comments received; and
 - drafted by the state or EPA.



Typical CA Process Step 5

- **Corrective Measures Implementation (CMI)**
 - Implement chosen corrective measures: often a combination of treatment and disposal of remediation waste on and off of the facility, measures above and below the surface, and often involves engineering and institutional controls

01/14/15 Webinar

U.S. Environmental Protection Agency

28

Corrective Measures Implementation (CMI)

- This is the implementation of the cleanup remedy, based on the Statement of Basis, and typically involves remedy design, remedy construction, remedy operation and maintenance, and remedy completion:
 - monitor and analyze the performance of the corrective measures;
 - may include both engineering and institutional controls; and
 - conducted by the owner/operator of the facility.
- For more information, see:
<http://www2.epa.gov/enforcement/guidance-rcra-corrective-action-inspection>



Typical CA Process Step 5

- **Corrective Measures Implementation (CMI)**

- Common Activities



01/14/15 Webinar

U.S. Environmental Protection Agency

29

Corrective Measures Implementation (CMI)

- Common activities include:
 - Contaminated soil / debris excavation
 - Soil vapor extraction
 - Bioremediation (in situ and ex situ)
 - Capping
 - Air stripping
 - Carbon filtration (liquids and gases)
 - Solidification and stabilization (in situ and ex situ)



Case Example

Remedies Evaluated

- No Actions
- Institutional controls
- Soil:
 - Containment
 - Removal
- Groundwater:
 - Extraction
 - In situ chemical oxidation (ISCO)
 - Permeable texture beds
 - In situ enhanced bio degradation
 - Monitored natural attenuation (MNA)

01/14/15 Webinar

U.S. Environmental Protection Agency

30

Case Example:

Remedies Evaluated

- No Actions
- Institutional controls
- Soil:
 - Containment
 - Removal
- Groundwater:
 - Extraction
 - In situ chemical oxidation (ISCO)
 - Permeable texture beds
 - In situ enhanced bio degradation
 - Monitored natural attenuation (MNA)



Case Example

Chosen Remedy

- Site-wide institutional controls (ICs)
- Soil with asphalt cover with soil gas monitoring
- Groundwater with in situ chemical oxidation (ISCO) and monitored natural attenuation (MNA)

Case Example:

Chosen Remedy

- Site-wide institutional controls (ICs)
- Soil with asphalt cover with soil gas monitoring
- Groundwater with in situ chemical oxidation (ISCO) and monitored natural attenuation (MNA)



Case Example: Soil gas monitoring



01/14/15 Webinar

U.S. Environmental Protection Agency

32



Section 3: Preparing for a CA Inspection

- Begin with the end in mind . . .
- Prepare early, at least 30 days before the inspection



01/14/15 Webinar

U.S. Environmental Protection Agency

33

- Begin with the end in mind . . . what would be needed to win a case if it were to go to trial? Understand what information is needed to determine compliance with or to prove a violation of CA obligations.
- Preparation is the key to a successful inspection:
 - start preparing 30 days before the inspection;
 - understand all of the CA activities at the facility;
 - know most recent permit issuance or modification (as applicable); and
 - more compliance points means more time needed to prepare and to conduct actual inspection; actual preparation time will vary depending on site.



Preparing: Coordination

Communicate with all appropriate offices:

- Permitting
- Compliance
- Enforcement
- Corrective action



- If the inspector does not normally oversee CA activities at a facility, include the CA PM or CA specialist assigned to the facility in the inspection and post-inspection analysis and evaluation.
- At a minimum, CA PMs should be interviewed prior to the inspection to obtain information about the type of CA activities present at the facility.
- CA PMs have the responsibility to ensure the inspector has information about the site.
- Identify priority areas/issues with CA PM.



Preparing: Define Purpose and Scope

- Determine inspection objectives
- If not in 2020 CA Universe
 - Identify any releases
 - Check permit and order status of facility



01/14/15 Webinar

U.S. Environmental Protection Agency

35

- Determine inspection objectives:
 - determine compliance with permit or order;
 - verify compliance with CA requirements, land/groundwater use;
 - identify specific areas of the facility or specific processes that need to be inspected; and
 - identify new waste management units or releases.
- Consider scope of corrective action when assessing the details of the inspection:
 - if complicated, the inspection may be solely related to corrective action.
- Review Environmental Indicators (Eis)
 - EPA HQ is measuring the intermediate success of the program against two Eis: Current Human Exposures Under Control (aka "Human Exposure EI") and Migration of Contaminated Groundwater Under Control (aka "Groundwater EI").
 - For more information on Eis, see <http://www.epa.gov/epawaste/hazard/correctiveaction/eis/index.htm>



Preparing: Define Purpose and Scope

- Determine CA activity being conducted by owner/operator
- Review Environmental Indicators



01/14/15 Webinar

U.S. Environmental Protection Agency

36

- Determine CA activity being conducted by owner/operator:
 - review the current CA phase;
 - prepare to evaluate engineering controls, institutional controls (ICs) and financial assurance (FA) requirements to determine compliance status; and
 - determine effectiveness of remedy and whether Environmental Indicator(s) are still being met.
 - Inspector may need to coordinate with the project manager or other people more familiar with CA activities at a facility.
 - If one or both EIs were met prior to the inspection, the inspector should verify if that is still the case.
 - If conditions changed at the facility that caused one or both of the EIs to no longer be met, the inspector should document the changed conditions at the facility.
 - If appropriate, the inspector should sign an updated EI form.



Preparing: Define Purpose and Scope

- Identify specific resources necessary to conduct on-site inspection



01/14/15 Webinar

U.S. Environmental Protection Agency

37

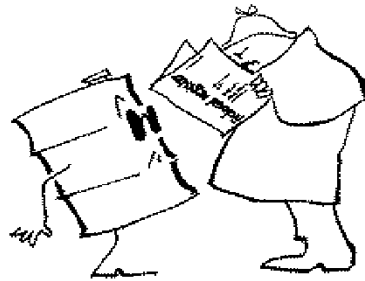
- Identify specific resources necessary to conduct on-site inspection:
 - site map, including Areas of Concern (AOCs) and Solid Waste Management Units (SWMUs);
 - inspection tools such as notebooks, checklists, cameras;
 - clothing and personal protective gear; and
 - if sampling is planned, make arrangements in advance with appropriate personnel and develop:
 - Health and Safety Plan; and
 - Sampling and Analysis Plan.
 - Quality Assurance Project Plan (QAPP)
 - The QAPP documents how quality assurance (QA) and quality control (QC) are applied to an environmental data operation to assure that the results obtained are of the type and quality needed and expected.
 - A good QAPP and Sampling and Analysis Plan (SAP) are essential for EPA and state enforcement of RCRA CA requirements. Representative samples must be beyond question in order to support legal enforcement actions as well as to determine the need or status of a CA at a facility.
 - An inspector may have to prepare because such plans may not exist for a particular facility. For information on QAPPs, see <http://www.epa.gov/quality/qapps.html>. For more information on EPA's quality assurance and quality control program, see <http://www.epa.gov/quality/qs-docs/overview-final.pdf>



Preparing: Review Background Info

The Inspector should be familiar with:

- Regulatory / permitting / order status
- Site uses
- EPA tracking databases
- Potential hazards at the facility



01/14/15 Webinar

U.S. Environmental Protection Agency

38

- Review background information on facility such as:
 - regulatory and permit status, including other existing permits like air or water;
 - current and historical site uses, including land and groundwater. For example, any sort of large industrial operation with cooling towers operating in the 1930-80 time frame probably used pentachlorophenol as a biocide, and it should be screened for in the list of potential contaminants;
 - surrounding property and uses, such as residential, recreational, commercial, industrial, and other potential sources of contamination in the area; and
 - EPA tracking databases such as:
 - RCRAInfo;
 - ECHO – provides compliance history for all programs; and
 - TRI – indicates releases to air, water or land.



Preparing: Review Facility Documents

Review key facility documents such as:

- Permits or Orders
- CA Work Plans or Reports
- Existing SWMU/AOC Maps
- Previous inspection reports and notes



01/14/15 Webinar

U.S. Environmental Protection Agency

39

- Review **key documents** such as:
 - permits and orders as well as any scopes of work in those documents;
 - approved work plans;
 - SWMU/AOC site map or Conceptual Site Model;
 - reports, field notes and observations from previous inspections;
 - aerial and onsite photographs;
 - Environmental Indicator forms / memos;
 - Remedy Implementation or Construction Complete reports;
 - Monthly/Quarterly/Annual Reports; and
 - company records such as regularly required inspections and maintenance and repair records.



Preparing: Obtain Other Information

- Contact other federal, tribal, state and local agencies
- Use web-based search engines
- Review reports and data submitted under other programs



01/14/15 Webinar

U.S. Environmental Protection Agency

40

- Contact Other Agencies such as:
 - state, local health department and / or EPA for reports of spills and complaints; and
 - obtain information from National Response Center.
- Use Web-based Search Engines such as:
 - Google, Google Earth, Bing, Ask; and
 - obtain widely available data about the property or site.
- Review Inspection Reports and Data from Other Environmental Statutes or Programs such as:
 - Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA);
 - Clean Air Act (CAA);
 - Clean Water Act (CWA);
 - Toxic Substances Control Act (TSCA); and
 - state programs/statutes such as a State Voluntary Cleanup Program.



Preparing: Develop a Checklist

- ✓ Objectives of inspection
- ✓ Facility background
- ✓ Priority areas to review including operation and maintenance (O&M) areas
- ✓ Tasks to be performed
- ✓ Quality Assurance Project Plan (QAPP)
- ✓ Sampling Analysis Plan
- ✓ Health and Safety Plan
- ✓ Resources (personnel and equipment)
- ✓ Compliance Schedule
- ✓ Performance Monitoring
- ✓ Remedy Optimization
- ✓ Institutional controls (ICs)
- ✓ Financial assurance (FA) requirements



- Based on the preparation, an inspector should be able to identify specific Areas of Concern, SWMUs, CAMUs, etc.
- Additionally, if the inspector observes a previously unidentified AOC, SWMU, or CAMU, the inspector should document (photographs, statements, etc.) for follow up action, including enforcement action.



Section 4: Conducting a CA Inspection

- Accessing facility . . .
- Checking records . . .
- Inspecting / touring . . .
- Documenting . . .



01/14/15 Webinar

U.S. Environmental Protection Agency

42

- Possible violations of corrective action requirements may be present during any phase (RFA, RFI, CMS, or CMI) and may be new or different than noted in a previous inspection. Inspectors should be aware of these aspects during all corrective action compliance inspections.
- Have appropriate paperwork ready:
 - EPA/state credentials;
 - health and safety training, including respiratory clearance; and
 - proper protective gear.
- Inspections are generally unannounced so as to give the inspector a true picture of the site and its operations. Inspections should take place during normal business hours.



Conducting: Access to Facility



01/14/15 Webinar

U.S. Environmental Protection Agency

43

- EPA's general practice is for an inspector to present his or her credential and issue a notice of inspection to the establishment owner or person in charge of the facility at the time of the inspection.
- Inspectors are authorized by law to conduct inspections and are advised not to provide any personal information, including badge number, driver's license number, or home address (or other information subject to the Privacy Act of 1974) prior to or during an inspection.
- The case attorney should be prepared to seek an administrative warrant quickly if the owner/operator denies access to all or any part of a facility.



Conducting: Review Documents

- Controlling document – Permit, Order or Work Plan
- Relevant facility documents
- Reports



01/14/15 Webinar

U.S. Environmental Protection Agency

44

- Review schedules under Permit / Order / Work Plan and determine if schedules have been met, including:
 - engineering controls;
 - Institutional controls (ICs) schedules; and
 - Financial assurance (FAs) requirements.
- Review company records and note any potential violations.
- Review hydrogeologic reports to understand:
 - hydrology;
 - probable location of the contaminants – “floaters” (LNAPL - light non-aqueous phase liquid) or “sinkers” (DNAPL- dense non-aqueous phase liquid);
 - operational history;
 - type of equipment being used; and
 - operation and maintenance requirements for the system.
- Review document / data repository.
- Copy records, reports, MSDS, chemical analysis and other appropriate documents.
- See *Ensuring Effective and Reliable Institutional Controls at RCRA Facilities*:
http://www.epa.gov/wastes/hazard/correctiveaction/resources/guidance/ics/ic_memo.pdf



Conducting: Identify and Document Releases

- Look for releases
- Gather information about the release



01/14/15 Webinar

U.S. Environmental Protection Agency

45

- Look for releases at:
 - SWMUs / AOCs or new area;
 - loading / unloading areas;
 - secondary containment structures; and
 - waste collection areas, including track-out, and run-on / run-off.
- If a release is found, gather as much information as possible about the release:
 - estimate the size of the release (e.g. 20' x 20' stained soil);
 - note dead vegetation and animals, chemical product, or waste; and
 - photograph from various angles.
- Sample if prepared to do so. If not, go back and sample release as soon as possible.
- Document the cause of the release.
- Ask company if release was reported.
- Ask how the site was cleaned up and how waste was disposed of.
- Release reporting requirements will be found in the permit or order; inspectors should also be aware of CERCLA reporting requirements.

For an explanation about the nature and proper handling of remediation waste, see the Office of Resource Conservation and Recovery training module at: <http://www.epa.gov/epawaste/hazard/correctiveaction/training/vision/mod9.pdf>



Conducting: Inspect and Review

- Each SWMU or AOC
- Each CAMU



01/14/15 Webinar

U.S. Environmental Protection Agency

46

- For each SWMU or AOC, the inspector should review:
 - what type of inspection reports are required -- check dates and status;
 - what maintenance is required for that measure; and
 - compliance with O&M plan.
- For each CAMU, the inspector should review:
 - what type of stabilization is used;
 - integrity of cap;
 - walk over the cap to check the integrity of the upper layers and to observe the maintenance of that area
 - look for trees and unwanted vegetation
 - check for erosion and slumping of the cap
 - operation and placement if monitoring wells exist;
 - integrity of required fencing; and
 - depressurized ventilation for vapor intrusion (VI) concerns.



Conducting: Other Elements

- Verify land/groundwater uses
- Management of remediation waste
- Other issues



01/14/15 Webinar

U.S. Environmental Protection Agency

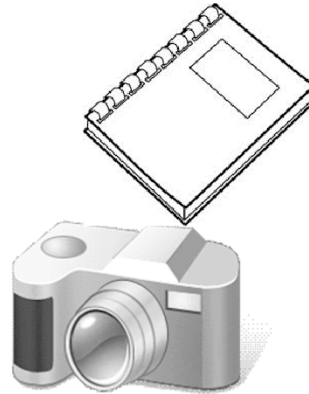
47

- Verify land and groundwater uses:
 - interceptor trench / sump subsurface drain;
 - application of dust suppressant (water or chemical);
 - metal precipitation from liquids;
 - slurry walls;
 - run-on and run-off controls;
 - temperature controls for thermal desorption;
 - drum overpacking; and
 - erosion or poor vegetative cover of landfill caps.
- Inspect management of remediation waste.
- Ensure in situ technology performance monitoring is robust enough to detect any secondary contamination.
- Review nearby receptors and any mechanisms are in place by the facility to monitor threats to those receptors: surface water, groundwater use, vapor intrusion potential.
- Check for violations of state air or water permits.



Conducting: Document ...Document...Document

- Be organized!!!
- Complete the checklist
- Keep detailed notes
- Collect evidence
- Maintain chain of custody
- Take accurate statements
- Copy pertinent documents



01/14/15 Webinar

U.S. Environmental Prote

48

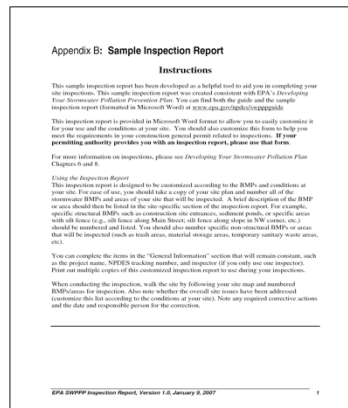
The better the documentation, the more weight is given to the evidence.

- Be organized!!!
- Complete appropriate checklists.
- Keep detailed notes, including time, place and who was present.
- Collect evidence such as photographs and samples.
 - For a regional example of sample and evidence management procedures, see <http://www.epa.gov/region4/sesd/fbqstp/Sample-and-Evidence-Management.pdf>
- Maintain chain of custody for the evidence collected.
- Be accurate when taking statements. Don't assume words or viewpoints. Statements can only be recorded with the permission of the person being recorded. Please confirm with your case attorney.
- Copy pertinent documents such as work plans, schedules, and compliance reports.
- Training and related information for inspectors is available on the US EPA website. Note: this Inspector Wiki is free and available to all government employees; if you do not have an EPA LAN account, you may set up an account to view this information. See https://wiki.epa.gov/inspector/index.php/3500.1_Required_Training#.E2.96.BANETI_eLearning_Center



Section 5: Preparing a CA Inspection Report - Tell the Story

- Remember . . . begin with the end in mind
- Use a narrative description
- Support the story with evidence
- Confirm any non-compliance
- Identify potential problems
- Coordinate with legal staff and CA PM



01/14/15 Webinar

U.S. Environmental Protection Agency

49

- Remember . . . begin with the end in mind: understand what information is needed to determine compliance with or to prove a violation of CA obligations if a compliance issue is observed.
- All site visits should have a report, even if the visit is not intended to be an inspection because observations are evidence of compliance or a possible violation.
- Use a narrative description, as well as clear and concise language when writing your report.
- Support the story with evidence obtained in the inspection.
- Identify potential problems and deviations from requirements.
- Confirm any non-compliance with legal staff and the CA PM. Because non-compliance may result in an enforcement action by the regulating agency, the appropriate response needs to be decided by the case team after the inspection, including emergency response if appropriate.
- In addition to collecting information to support a finding of a violation, other relevant information should be gathered and shared with the case team so they can understand potential defenses and propose the most appropriate resolution to the problem.



Reporting: Use an Outline

Example Outline of Inspection Report

- A. General Information
- B. Narrative Summary of Inspection
- C. Identify Potential Problems
- D. Appendices

Example Outline of Inspection Report

This sample will be discussed in detail on the next few slides.



Reporting: Use an Outline

Example Outline of Inspection Report

A. General Information



01/14/15 Webinar

U.S. Environmental Protection Agency

51

- **Example Outline of Inspection Report**

- A. General Information:

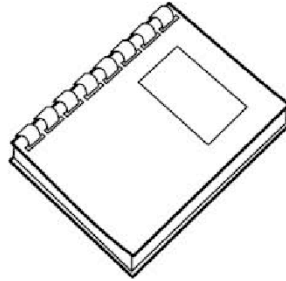
- facility information (Name, address, phone number, lat/long coordinates, type of facility and description of operations and practices of concern in inspection);
 - date of inspection;
 - start and end times of the inspection;
 - facility representatives (names, titles, contact information);
 - inspection representatives (names, titles, contact information);
 - state coordination information;
 - purpose and scope of inspection; and
 - information provided to the facility such as:
 - presentation of credentials;
 - compliance assistance information; and
 - discussion of company's right to claim Confidential Business Information (CBI).



Reporting: Use an Outline

Example Outline of Inspection Report

B. Narrative Summary of Inspection



01/14/15 Webinar

U.S. Environmental Protection Agency

52

Example Outline of Inspection Report

- B. Narrative Summary of Inspection:
- description of corrective action activities being performed at the facility at the time of the inspection;
 - description of inspection activities -- use references and cites from preparation material to highlight why particular aspect of inspection was conducted;
 - data analysis, which may include
 - data from facility owner/operator;
 - data from sampling conducted at inspection;
 - comparison to historic data; and
 - comparison to requirements from work plan or other site specific document.



Reporting: Use an Outline

Example Outline of Inspection Report

- C. Identify potential problems and deviations from requirements



01/14/15 Webinar

U.S. Environmental Protection Agency

53

Example Outline of Inspection Report

- C. Identify actual and potential problems and deviations from requirements.
 - Problems could include actual or impending harms to health or the environment as well as information about legitimate potential threats to potential receptors.
 - For each potential violation, identify the requirements of the violation and the evidence needed to support that violation. Example:
 - Failed to maintain extraction wells according to the work plan.
 - What does work plan say about extraction wells?
 - How are the wells non-compliant?
 - Provide photographs, statement from employees, facility records.
 - Inspection report should have citations to specific permit, order or regulatory provisions.



Reporting: Use an Outline

Example Outline of Inspection Report

D. Appendices



01/14/15 Webinar

U.S. Environmental Protection Agency

54

Example Outline of Inspection Report

D. Appendices

- Photographs
- Maps
- Statements
- Data tables/sample results
- Copied documents
- Checklists
- Permit or order language violated



Section 6: Developing the Case

- Work closely with case attorney to develop enforcement case
- Each violation needs to have supporting evidence to back it up



01/14/15 Webinar

U.S. Environmental Protection Agency

55

- Work closely with case attorney to develop the enforcement case.
- Each violation needs to have supporting evidence to back it up:
 - field notes and observations;
 - photos;
 - company records;
 - statement from employees;
 - sampling test results; and / or
 - any records from EPA, state or other government office.
- Bottom line: no evidence = no violation.



Developing: Select the Best Tools

- Determine if enforcement action is necessary
- If necessary, select the best tools to ensure compliance



01/14/15 Webinar

U.S. Environmental Protection Agency

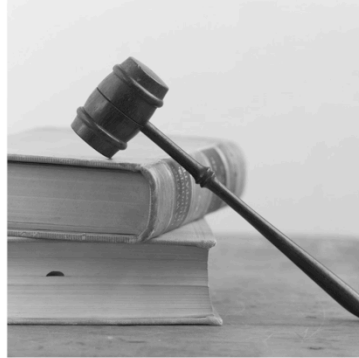
56

- Determine if enforcement action is necessary.
 - Sometimes a simple phone call can clear up a potential problem or misunderstanding.
 - Review previous reports to determine if there has been a repetitive compliance issue.
- If enforcement action is necessary, select the best tools to ensure compliance and meet cleanup goals for enforcement or compliance assurance:
 - Non-compliance letter;
 - Notice of Violation (NOV);
 - RCRA Section 3007 Information request letter;
 - order;
 - demand for Stipulated Penalties; or
 - referral to DOJ for judicial enforcement.



Developing: Make the Case

- Determine
 - Penalty
 - Any relief necessary
 - Appropriate corrective action
- Consider
 - Supplemental Environmental Projects (SEPs)
 - Financial assurance
 - Criminal referral if egregious



01/14/15 Webinar

U.S. Environmental Protection Agency

57

- Determine
 - penalty;
 - any relief which is needed (at CMS stage); and / or
 - appropriate corrective action.
- Consider
 - green remediation approaches;
 - Supplemental Environmental Projects (SEPs) in appropriate cases;
 - Financial assurance; and
 - referral to criminal investigators if violation is especially egregious.

For more information on EPA's SEP policy, please see:
<http://www2.epa.gov/enforcement/supplemental-environmental-projects-seps>



Case Example

Facility X was subject to a RCRA Section 3008(h) interim status corrective action order

- Order required pumping and treating groundwater
- Failed to maintain pumps
- Led to drinking well contamination
- Consent agreement final order with civil penalty for \$650,000



Additional References

- Groundwater Sampling Guidelines for Superfund and RCRA Project Managers (May 2002, EPA-542-S-02-001). [PDF file]
- Handbook of Groundwater Protection and Cleanup Policies for RCRA Corrective Action (April 2004 updated, EPA/530/R-01/015)
- Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures (April 1996, EPA/540/S-95/504). [PDF file]
- RCRA Ground-water Monitoring: Draft Technical Guidance [PDF, 2.87 MB, 236 pages, About PDF] (November 1992)
- Recommended Procedure for Low-Flow Purging and Sampling of Groundwater Monitoring Wells (October 15, 1997, Bulletin No. QAD023)

- **Groundwater Sampling Guidelines for Superfund and RCRA Project Managers (May 2002, EPA-542-S-02-001).** This Groundwater Forum issue paper provides sampling guidelines for groundwater monitoring wells to yield representative results during Superfund and RCRA Corrective Action activities. [PDF file]
- **Handbook of Groundwater Protection and Cleanup Policies for RCRA Corrective Action (April 2004 updated, EPA/530/R-01/015).** Compendium of RCRA corrective action's groundwater policies with hyperlinks to all references available on the internet.
- **Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures (April 1996, EPA/540/S-95/504).** A paper issued by EPA Office of Solid Waste and Emergency Response and Office of Research and Development describing procedures for low-flow purging and sampling. [PDF file]
- **RCRA Ground-water Monitoring: Draft Technical Guidance [PDF, 2.87 MB, 236 pages, About PDF] (November 1992).** Guidance for implementing groundwater monitoring for regulated units contained in 40 CFR Part 264 Subpart F.
- **Recommended Procedure for Low-Flow Purging and Sampling of Groundwater Monitoring Wells (October 15, 1997, Bulletin No. QAD023)** - Region 3's recommended procedures for low-flow purging and sampling.



Summary

- Corrective action inspection process
 - Preparation
 - Inspection
 - Reporting
 - Developing case if necessary

- Questions?

Summary:

- Prepare for CA inspection
- Conduct CA inspection
- Prepare CA inspection report
- Develop case if necessary