RCRA Corrective Action

MWCC Seminar
October 20, 2014
RCRA Corrective Action Process

1. RCRA Facility Assessment (RFA)
2. RCRA Facility Investigation (RFI)
3. Corrective Measure Study (CMS)
4. Corrective Measure Implementation (CMI)
5. Final Clean-up Goals Achieved
Statutory Authorities

The 1984 HSWA provided EPA authority to address releases of hazardous wastes and constituents from solid waste management units at treatment, storage, and disposal facilities (TSDFs), regardless of the time of disposal.

Section 3004(u) and (v)

Section 3008(h)
- authority to issue orders to compel corrective action at "interim status" treatment, storage, and disposal facilities (EPA interpreted this to extend to facilities that have, had, or should have had interim status)
- retained by EPA following corrective action authorization, though authorized States may have similar authority
Statutory Authorities (cont.)

- Other authorities can be used to address corrective action needs:
  - RCRA 7003 - with evidence of past or present handling of solid or hazardous waste, EPA can require any action necessary when a situation may present an imminent and substantial endangerment
  - RCRA 3013 - authority to require monitoring, testing, analysis, and reporting
  - RCRA 3007 information gathering authority may help determine if there are releases at a facility
  - State cleanup authorities
State Authorization

Base program authorization

– requirements effective in States when adopted by the State
– authorized State program operates in lieu of the federal program
– State must adopt requirements as stringent as the federal program, and update those requirements as the federal program changes
– permits are issued by authorized States
– only Alaska and Iowa are not authorized for base program
State Authorization (cont.)

Corrective action authorization

- HSWA requirements immediately effective in States and implemented by EPA
- authorized State program operates in lieu of the federal program
- State must adopt requirements of Part 264.101, and are required to implement the program consistent with Agency guidance
- HSWA conditions are added to permits by the State in States authorized for corrective action; EPA issues the HSWA portion in States that have not obtained corrective action authorization
- States not authorized for corrective action – AK, IA, MD, MS, NE, NJ, PA also DC.
Region 7 Organization

• RCRA program in the Air & Waste Management Division
  – Waste Remediation & Permitting Branch
  – Waste Enforcement Materials Management Branch
Region 7 States

- Base Program – KS, MO, NE authorized
- Corrective Action – MO & KS (Sept. 2013)
Corrective Action Sites

- AK Steel
- Bayer Cropscience
- BP Sugar Creek
- MCI Maintenance Base
- DOE Bannister Plant
“There are no comprehensive cleanup regulations under RCRA. Instead, EPA and authorized states primarily use guidance to implement corrective action and impose requirements at individual facilities through their permits or orders.”
Proposed a new Subpart S in the Part 264 regulations to define requirements for conducting RFIs, evaluating potential remedies, and selecting and implementing remedies at RCRA facilities.

- Established standards for States to become authorized to administer CA requirements.
- Proposed rule served as guidance for the program.
Subpart S ANPR (May 1, 1996)

EPA issued an Advance Notice of Proposed Rulemaking in 1996. The ANPR generally:

• provided a status report on the CA Program and how it had evolved since the 1990 proposal,
• provided guidance on a number of topics not fully addressed in 1990, and
• emphasized areas of flexibility within the program.

**The ANPR replaced the 1990 proposed Subpart S rule as the primary guidance for the program.**
Identified basic operating principles that guide corrective action program implementation and development:

- Corrective action decisions should be based on risk.
- Program implementation should focus on results not process.
- Interim actions and stabilization should be used to reduce risks and prevent exposures.
- Activities at corrective action facilities should be phased.
- Program implementation should provide for meaningful inclusion of all stakeholders.
- Corrective action obligations should be addressed using the most appropriate tool for any given facility.
- States will be the primary implementers of the corrective action program.
Subpart S ANPR (cont.)

Discussed the concept of parity:
Generally cleanup under RCRA corrective action or CERCLA will substantively satisfy the requirements of both programs:

– should be no need to review or repeat investigations or studies

– remedies acceptable to one program can be presumed to meet the standards of the other

The same principle should apply to State CERCLA analogous programs.
Corrective Action Process

Included discussion of five elements proposed in 1990, and clarified that they should be viewed as evaluations necessary to make good cleanup decisions, not prescribed steps along a path:

– Initial site assessment
– Site characterization
– Interim actions
– Evaluation of remedial alternatives
– Remedy selection
Announced Corrective Action Program Priorities

- Prioritize the corrective action universe and focus on high priority areas at high priority facilities.
- Increase the amount of corrective action (e.g., continue to authorize States; do not duplicate work; encourage alternate state authorities to conduct analogous work; increase the number of voluntary actions; divest in oversight at lower priority facilities and high priority facilities where the owner/operator has proven capable).
- Continue to stabilize facilities and use the EIs as stabilization measures.
- Streamline the corrective action process where possible (e.g., implement stabilization actions where possible, then divest and move on to other facilities).
- Continue to involve the public in all stages of the corrective action process.
The 1990 Proposal was intended to support a flexible approach to corrective action. Unfortunately, EPA believes the proposal has at times been interpreted too narrowly, and much of the intended flexibility has been under used.”
Subpart S Withdrawal (October 7, 1999)

EPA made the decision to withdraw most provisions of the July 27, 1990 Subpart S proposal.

Withdrew because believed that such regulations are not necessary to carry out the Agency's responsibilities under 3004(u) and (v), and because promulgating regulations might have disrupted the then existing 33 authorized programs.
October 7, 1999 Federal Register

- Page 54607 – “However, the 1996 ANPRM updates our position on many of the issues discussed in the 1990 proposal, and should be considered the primary corrective action implementation guidance.”
Post-Closure Rule (October 22, 1998)

Removed the requirement for a post-closure permit to allow EPA and authorized states to use a variety of authorities to impose requirements on non-permitted land disposal facilities needing post-closure care.
RCRA Cleanup Reforms

• EPA introduced RCRA Cleanup Reform efforts in 1999 and 2001
• Reforms 1 focused on:
  – achievement of results, rather than on process
  – fostering flexibility
  – enhancing public access to information
• Reforms 2 focused on:
  – Piloting innovative approaches
  – Accelerating changes in culture
  – Connecting communities to cleanup
  – Capitalizing on redevelopment potential
http://www.epa.gov/epawaste/hazard/correctiveaction/resources/guidance/index.htm
General Corrective Action - 14
Site Characterization/Monitoring - 6
Risk - 7
Remediation Waste - 22
Land Use - 2
Remedy Evaluation and Selection - 11
Environmental Indicators - 4
RCRA Institutional Controls - 8
Groundwater - 11
Public Involvement/Communication - 4
Land Revitalization and Brownfields - 3
Quality Assurance - 1
HAZARDOUS WASTE

Early Goals Have Been Met in EPA’s Corrective Action Program, but Resource and Technical Challenges Will Constrain Future Progress
EPA Needs to Improve Its Process for Accurately Designating Land as Clean and Protective for Reuse

Report No. 14-P-0364

September 29, 2014
2020 Universe

• By 2020, 95% of universe to achieve
  – Final Remedy Constructed
  – Human Exposures Under Control
  – Migration of Contaminated Groundwater Under Control
What is Lean?

- Lean - a collection of principles and methods that focus on the systematic identification and elimination of non-value added activities involved in producing a product or delivering a service to customers.
LEAN Corrective Action Process

RCRA Corrective Action Program applied Lean principles to the RFIs and Corrective Measure Studies processes.

- Stabilization / Interim Measures
- Environmental Indicators

RA Facility Assessment → RCRA Facility Investigation Completed → Corrective Measures Study and Remedy Decision → Remedy Construction → Performance Standards Attained
## Event Participants

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
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<tbody>
<tr>
<td>Don Lininger</td>
<td>R7</td>
</tr>
<tr>
<td>Kurt Linstead</td>
<td>R7</td>
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<tr>
<td>Pat Murrow</td>
<td>R7</td>
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<tr>
<td>Rich Nussbaum</td>
<td>MDNR</td>
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<tr>
<td>Paul Gotthold</td>
<td>R3</td>
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<tr>
<td>Luis Pizarro</td>
<td>R3</td>
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<tr>
<td>Jutta Schneider</td>
<td>VDEQ</td>
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<tr>
<td>Belinda Holmes</td>
<td>ORC R7</td>
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<td>Consultant</td>
<td>Brian Broderick</td>
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<td>Industry</td>
<td>Ed Peterson</td>
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<td>Chris Greco</td>
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<td>Tom Rinehart</td>
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<td>Mathy Stanislaus</td>
<td>HQ – observer</td>
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<tr>
<td>Lisa Feldt</td>
<td>HQ – observer</td>
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<tr>
<td>Shawn Garvin</td>
<td>R3 – RA – observer</td>
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<tr>
<td>John Armstead</td>
<td>R3 – DD – observer</td>
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<tr>
<td>Peter Neves</td>
<td>HQ – OECA – observer</td>
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<td>Cynthia Mason</td>
<td>observer</td>
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<tr>
<td>Superfund</td>
<td>Dave Charters</td>
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<td>Jeremy Johnson</td>
<td>R7</td>
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<td>Becky Weber</td>
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<td>Wayne Naylor</td>
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<td>Donna Weiss</td>
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<tr>
<td>Sandra Connors</td>
<td>HQ</td>
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<tr>
<td>Sonya Sasseville</td>
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<td>Darlene Byrd</td>
<td>HQ</td>
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<td>Scott Bowles</td>
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<td>ASTSWMO</td>
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<td>Suzanne Rudzinski</td>
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<td>Karl Brooks</td>
<td>R7 – RA – observer</td>
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<td>Jeff Scott</td>
<td>Lead Region – observer</td>
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<tr>
<td>Superfund</td>
<td>Bruce Means</td>
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Key Pain Points Identified

1. No agreement upfront on objectives with respect to site clean up
2. Lack of initiative to elevate issues to determine streamline options
3. Multiple phases require approval for permit requirements
4. No-pro-active investigation strategy due to unclear objectives up front
5. Takes a long time to get up to speed (new people), revisiting decisions, etc. before proceeding
6. Lack of accountability to achieve quality product
7. No documentation / historical documents
8. Poorly defined data quality objectives
9. Insufficient knowledge of site conceptual model
10. Competing objectives across parties
11. Varying perspectives around uncertainty tolerance
12. Lack of defined product standards

Primary “root” causes in the process resulting in delay
### RCRA Facility Investigation

#### RFI Lean

**RESULTS:**

Typical Worst Case Scenario: 19.4 years

Average Region 3 & 7 Process: 10 Years

Potential Time Savings – A reduction of 50-70%

<table>
<thead>
<tr>
<th>Process Stats</th>
<th>Current Process</th>
<th>Future Process</th>
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<tbody>
<tr>
<td># of Hand-offs - Internal to Agency</td>
<td>44</td>
<td>11</td>
</tr>
<tr>
<td># of Review / Approvals</td>
<td>33</td>
<td>7</td>
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<tr>
<td># of Loopbacks / Re-sos</td>
<td>25</td>
<td>2</td>
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<tr>
<td># of Documents generated</td>
<td>94</td>
<td>15</td>
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<tr>
<td>Total Avg. wait time in process</td>
<td>4.6 years</td>
<td>0.4 years</td>
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<tr>
<td>Total Avg. work time per process steps</td>
<td>14.8 years</td>
<td>4.7 years</td>
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<tr>
<td>TOTAL Avg. Cycle Time in Process</td>
<td>19.4 years</td>
<td>5.1 years</td>
</tr>
<tr>
<td>% Value Add activity in Process</td>
<td>10%</td>
<td>51%</td>
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</table>


TAKE AWAYs FROM RFI LEAN EVENT

1. Upfront planning and information-sharing is essential.

2. Upfront scoping of goals and expectations can save time later in the process.

3. Identify delays and elevate problems.

4. Using metrics to measure progress and adjust process if necessary.
## Summary of Key Differences

### Current Process
- First document is the RFI work plan
- No upfront decisions on sampling and analysis, conceptual site model, interim measures, etc.
- No standard process for resolving technical disagreements

### Future State
- First document is the CAF – shifts work to front end
- Decisions on sampling and analysis, conceptual site model, interim measures, etc. are required prior to submittal of the RFI work plan
- Formal elevation process to resolve technical disagreements
- Reproducible (training, other Regions)
RFI Process Milestones:

- **Start RFI**
- **Retain Contractor**
- **Team Assembled**
- **CAF Agreement**
- **Approved RFI Work Plan**
- **RFI Work Plan Investigation Complete**
- **RFI Approved**

**Historical Region 7 Timespan from RFI Imposed to RFI Workplan Approved**

- RFI Workplan approved
  - From 2.55 year → 0.63 years
  - A time savings of 1.93 years
  - A reduction of 75%
  - Savings of 1/3 FTE per RFI

- Projections
  - 1 – 1.5 years investigation, potential 50% reduction
CAF Agenda Outcomes

I-V. Common understanding of the roles and responsibilities of the regulatory authority (EPA and/or State) and facility as well as understanding the CAF process/meeting objectives;

VI. Common understanding of the physical setting and constraints;

VII. Common understanding of current conditions and site conceptual model (including data gaps);

VIII. Discussion and identification of goals and expectations for the regulatory authority (EPA and/or State) and facility including identifying methods to address any differences;
CAF Agenda Outcomes Con’t.

IX. Common understanding of planned Interim Measures and/or a process to address Interim Measures that may be needed;

X-XI. Common understanding of RFI Workplan tasks with the goal of creating an approvable document with no revisions; and

XII. Finalized summary of the CAF meeting and schedule of deliverables (e.g., workplan)
RFI Tools

On Website

• Corrective Action Framework Meeting Agenda
• Corrective Action Framework Guide
• Corrective Action Framework Template

http://www.epa.gov/epawaste/hazard/correctiveaction/lean_effort.htm
CAF Pilot

• 9/13 – CAF Meeting
• 1/14 – CAF Completed
• 3/14 – RFI Workplan Received
• 4/14 – RFI Workplan Approved
CAF RCRAInfo Codes

• CAF101 - LEAN Meeting Held
• CAF102 - LEAN Corrective Action Framework (CAF) Completed
• CAF107 - LEAN Dispute Elevated
• CAF108 - LEAN Dispute Resolved
• CAF121 - Investigation Workplan Elevated
• CAF181 - Investigation Implementation Completed
CMS Event
TAKE AWAYS FROM REMEDY SELECTION LEAN EVENT

- Facility Investigation Remedy Selection Track (F.I.R.S.T.)
- 3 different tracks for CMS
  - CMS not needed
  - CMS potentially needed
  - CMS needed
RSP Flowchart

Inputs:
1. Approved RCRA Facility Investigation
2. Consensus Site Conceptual Model
3. Threshold Remedy Selection Criteria

Remedy Selection Process MTG
Goal: Develop consensus corrective action objectives
Goal Met?

Do we need a CMS to select a Remedy to achieve CAOs?

Need Data, pilot test, long term care plan other support

Work Plan approved

Go directly to Statement of Basis
## Remedy Selection Process Results

<table>
<thead>
<tr>
<th>Category</th>
<th>Current Process</th>
<th>TO BE Process</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Hand-Offs*</td>
<td>23</td>
<td>27</td>
</tr>
<tr>
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<td>26</td>
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<tr>
<td># of Loopbacks / Re-dos/ Re-submissions</td>
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<tr>
<td># of Documents Generated</td>
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<td>8</td>
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<tr>
<td># of Decision Points</td>
<td>9</td>
<td>4</td>
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<tr>
<td>Total avg. work time per step</td>
<td>2,464 days</td>
<td>352-717 days**</td>
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<tr>
<td>Total avg. wait time within steps and between steps</td>
<td>6.75 years</td>
<td>1-2 years</td>
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<tr>
<td>% Improvement in time</td>
<td>75 - 85%**</td>
<td></td>
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<tr>
<td>% of Value Add activity in end to end process</td>
<td>20%</td>
<td>97%</td>
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</table>

* “Types” of hand-offs have been added together (internal to agency, external to agency and internal to industry)

** Range has been calculated and provided for the “3” potential paths within the process

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Remedy Selection (CMS)

Up to 40% of Facilities still need Remedy Selection

Average Remedy Selection Time: 6 Years
(Range: 4-8 years)

Estimated Improvement in Time: 75-85%

Regions 3 and 7 – All sites a “go”
### Remedy Selection Process: Milestones and Goals

**Goal for Total Process Time: 1-2 years (for all 3 possible routes)**

<table>
<thead>
<tr>
<th>Possible Routes:</th>
<th>Time Goal:</th>
<th>Time Goal:</th>
<th>Time Goal:</th>
<th>TOTAL Process Time Goal:</th>
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<tr>
<td><strong>No CMS</strong></td>
<td>0 days</td>
<td>60 days / 2 mos.</td>
<td>292 days / 9 mos.</td>
<td>352 days / 1 year</td>
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<tr>
<td><strong>Work Plan</strong></td>
<td>150 days / 5 mos.</td>
<td>275 days / 9 mos.</td>
<td>292 days / 9 mos.</td>
<td>717 days / 1.96 yr.</td>
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<td><strong>Focused</strong></td>
<td>150 days / 5 mos.</td>
<td>95 days / 3 mos.</td>
<td>292 days / 9 mos.</td>
<td>537 days / 1.47 yr.</td>
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Under Development

- RSP Guide
- RSP Meeting Agenda
- RSP Model Template
- FIRST Decision Matrix
Lean RFI + Lean CMS = F.I.R.S.T
Facilities Investigation Remedy Selection Track

Start RFI
- Retain Contractor
  - Team Assembled
  - CAF Agreement (Time goal: 6 months)
  - Approved Work Plan (Time goal: 120 days)
  - RFI Work Plan Objectives (Time goal: 3 years or <)
  - RFI Approved (Time goal: 120 days or <)

RFI Approved
- No CMS Required

MILESTONE I
- CMS Agreed Upon

MILESTONE II
- Approval of Remedy Selection

MILESTONE III
- Issue Final Remedy Selection

MILESTONE IV
- Begin RS

Determination
- RFI fully supports CMS

Start RS

= F.I.R.S.T
Validated Root Causes & Findings Summary

Root Causes
1. Insufficient agreement upfront on objectives with respect to site clean up
2. Insufficient accountability to achieve quality product

Findings Summary
Insufficient Information and Ineffective Transfer of Information throughout the process hinders the ability to drive and direct activity, support decision making and build trust between parties.

Understanding sources of process constraints provided the ability to address them head on.

Increases in efficiency and effectiveness will happen once the new process is underway and being “controlled” using the Lean tools.
RFI Replicability & RSP Rollout

• Model Tools & Metrics development
• Website - tools, models, case studies
• Outreach (focus on key principles/best practices)
  – Webinars, Conference Calls, Presentations
  – Regional Pilots
  – Hands on work at the Regional/State Level
    • Staff “shadowing” at Corrective Action Facility meetings
    • Trainings / workshops
• Outreach to States
• Outreach to industry
LEAN Website

http://www.epa.gov/epawaste/hazard/correctiveaction/lean_effort.htm