

Considering RCRA Requirements in Remedy Selection

NEWMOA Waste Site Cleanup Group
Remedy Selection: Planning for Success
& Lessons Learned



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UMass Lowell Inn and Conference Center
50 Warren Street
Lowell, MA

Characterization of Remediation Waste: Applicable Laws & Regulations

- Hazardous Waste Regulations.
 - State and Federal.
 - Can vary from state to state.
- Solid Waste/Special Waste Regulations & Statutes.
 - Vary from state to state.
- Remediation Standard Regulations.
 - Most of the NEWMOA States have them.
 - 3 NEWMOA States license environmental professionals - (CT, MA, NJ).



Important Waste Characterization Concepts

- Point of Generation.
- Listed vs. Characteristic waste.
- “Contained-in” Policy for Contaminated Environmental Media.
- “Area of Contamination” Policy.
- Requirements for treatment.
- Land Disposal Restrictions (“LDRs”).



Point of Generation



- General Principle: A waste that is placed into storage or disposal prior to the effective date of RCRA is not a waste until it is removed from storage or disposal. As a result:
 - Environmental media that was contaminated with hazardous waste before the effective date of RCRA is not hazardous waste as long as it is in the ground.
 - Once it is removed from the ground (e.g., dug up or pumped out), it is “generated” and becomes a waste - and potentially a hazardous waste.
- This does not apply to environmental media that was contaminated with hazardous waste after the effective date of RCRA.
- “Effective date of RCRA” is 11/19/1980 for most wastes. Could be later for wastes that were added to the definition of HW after 11/19/1980.
- Point of generation → must begin complying with HW requirements.

Generator's Sole Responsibility- Determination

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- Responsibility for hazardous waste determination rests solely with the hazardous waste generator. Any opinions from other parties, including regulatory agencies do not relieve the generator of this responsibility.

Listed vs. Characteristic Waste:

Characteristic Waste

- Characteristic Hazardous Waste - waste that is hazardous by virtue of a characteristic that it exhibits:
 - Ignitability (D001): liquids with a flash point < 140, ignitable solids, ignitable compressed gases, DOT oxidizers.
 - Corrosivity (D002): pH \leq 2.0 or \geq 12.5.
 - Reactivity (D003): react with water, explosives, some cyanide and sulfide bearing wastes.
 - Toxicity (D004 - D043): fail TCLP test for one or more constituents.
 - Contaminated environmental media containing these wastes is only hazardous if it exhibits a characteristic (after the point of generation).
 - NOTE: “Media” = soil, groundwater, or sediment.



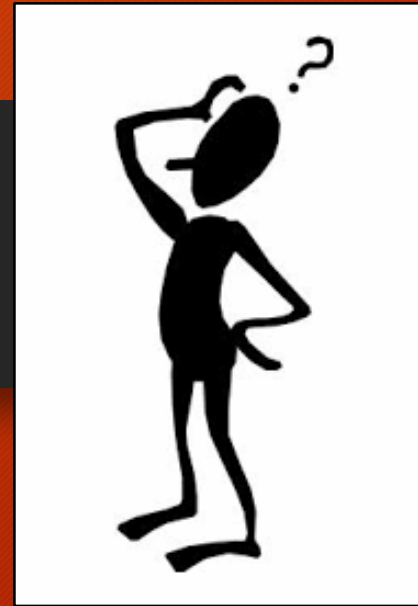
Listed vs. Characteristic Waste:

Listed Waste



- Listed Hazardous Waste - waste that meets a certain definition or “listing.” The most common listings include:
 - Listed Spent Solvents (F001 - F005).
 - Metal Finishing Wastes (F006 - F019).
 - Spill & Container Residues of Commercial Chemical Products (U- and P-listed).
 - Must be unused.
 - Must be the commercially pure grade of the chemical, or a product which contains the chemical as the “sole active ingredient.”
 - State-specific listed wastes in some NEWMOA states (check state HW Regs).
- “Contained-in” Principle:
 - Contaminated environmental media that contains listed HW is regulated as a listed hazardous waste (after the point of generation).

Listed vs. Characteristic Waste: Listed Waste (Cont.)



- What if you don't know what the source of the contaminant was?
 - If, after good faith efforts to determine whether or not the source contaminant is listed, documentation is unavailable or is inconclusive, it is not necessary to assume that it is listed.
- What if you don't know when the contamination happened?
 - Similar approach.
 - If, after good faith efforts to determine date of contamination, you are unable to do so because documentation is unavailable or inconclusive, it is not necessary to assume that the contamination is listed.
- “Documentation” = manifest data, inspection reports, company & town records, former employees, etc.

“Contained-in” Policy for Contaminated Environmental Media



- EPA policy allows states to establish health-based criteria by which contaminated environmental media may be considered to no longer contain listed hazardous waste.
- All of the NEWMOA states have established such criteria.
- Timing of “contained-in” determination is important:
 - If performed before “generation” → was never a hazardous waste.
 - If performed after “generation” → was a hazardous waste up until the determination was completed.
 - Important for applicability of LDRs (more on this later).
- Caution: Some states may require formal approval of a “contained-in” determination prior to disposal in their state.

“Area of Contamination” Policy

- EPA policy supported by most NEWMOA States (check w/ your state).
- AOC = a single, contiguous area of continuous contamination.
- Policy allows certain activities to occur within the AOC without triggering “generation” and the associated RCRA treatment and LDR requirements:
 - Consolidation of waste within the AOC.
 - In-situ treatment within the AOC.
- Does not cover:
 - Movement of waste outside the AOC.
 - Movement of waste between AOCs.
 - Ex-Situ treatment.



Requirements for Treatment of Contaminated Environmental Media



- General rule: treatment of hazardous waste requires a RCRA permit.
- Notable exceptions may include:
 - Treatment of waste that has been “contained-out” (no longer HW).
 - Treatment in accordance with the AOC Policy (not generated yet).
 - Generator treatment in tanks or containers (check with your state for specifics).
 - Treatment in RCRA-exempt wastewater treatment units.
 - Treatment in authorized [CAMUs or TUs](#).
- Treatment of non-hazardous media may require a state permit.
 - Example: mobile soil treatment company.
- Air or Water permits may also be required in some cases.
 - Examples: Soil venting, groundwater pump and treat systems.

Land Disposal Restrictions ("LDRs") [40 CFR 268]



- Purpose: to ensure the safe disposal of hazardous wastes and residuals from the treatment of hazardous waste.
- Apply (“attach”) at the point of generation, and continue to apply even after a waste is treated and rendered non-hazardous.
- Hazardous waste may not be placed on the land (on or off-site) unless and until it meets applicable LDR standards.
- LDR standards are based on hazardous waste code(s), and can be based on a concentration or a specified treatment technology.
- EPA Guidance (see especially flow chart on p. 55).
- Interplay with Contained-in Policy:
 - If waste is “generated” before it is “contained out” → LDRs apply.
 - If waste is “generated” after it is “contained out” → LDRs do not apply.

Alternative LDR Treatment Standards For Certain Types of Hazardous Waste



- Check with your state re applicability.
- Contaminated Soil [40 CFR 268.49]:
 - Must achieve 90% reduction in contaminant concentration; and,
 - Cannot exceed 10 x Universal Treatment Standard.
- Hazardous Debris [40 CFR 268.45]:
 - “Debris” is > 60 mm (~ 2 ½ in.) in size and either a manufactured object, plant or animal matter, or natural geologic material.
 - Crushed drums, building materials, piping, etc.
 - Can be treated by any of several allowed technologies.
 - Examples: High-temperature metals recovery, microencapsulation.

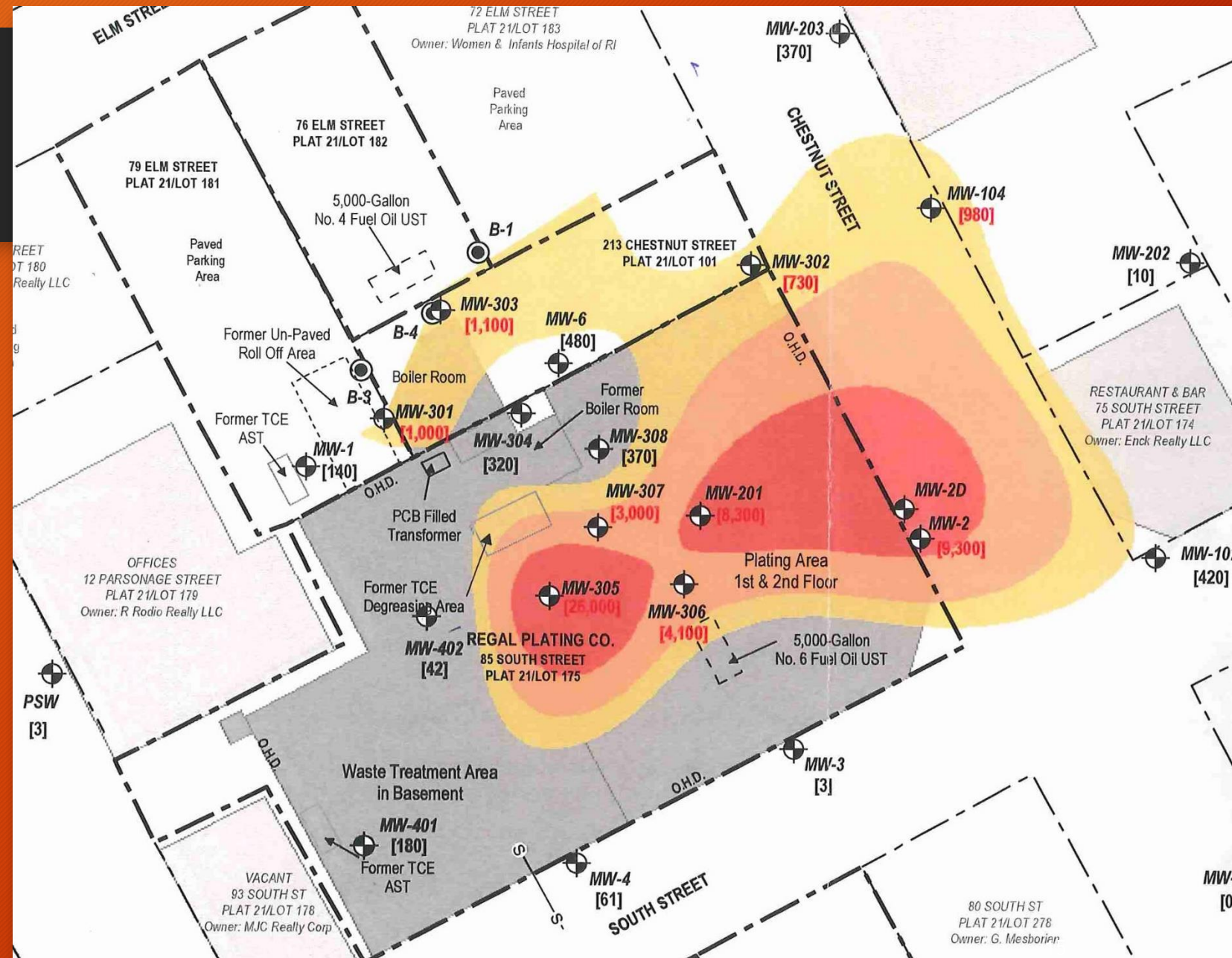
Solid Waste/Special Waste/Use as Fill



- Even if contaminated soil or sediment is not hazardous, it may still be regulated as a solid waste.
- Some states classify it as a “special waste.”
- Disposal facility may require a state permit. Examples:
 - Landfill.
 - Soil burner facility.
- State remediation standard regulations may apply.
- Use as fill may be restricted or may require approval by state.
- See [NEWMOA Soil Reuse web page](#) for state-specific information.

Regal Plating Providence

- TCE Plume
- Operated 1950-2003
- Release of TCE and Cyanide et.al.
- Placement and removal of tanks when overlaid with plume gives an idea of timing of release.



Regal Plating- Management of Soils

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- Generator determined some release of listed waste
- Impacted soils divided into 2 piles:
- 80 cubic yards TCLP > 0.5 mg/l disposed of as hazardous waste at a licensed RCRA TSDF.
- 120 cubic yards of moderately impacted soils.
 - Below TCLP limits in our Hazardous Waste Regulations
 - Contamination above GA leachability and Residential Direct Exposure Limits
 - Contamination below GB leachability and Industrial/Commercial Direct Exposure standards Used as alternate daily cover

Source: Resource Control Associates Site Investigation 2008

Examples/Case Studies



LESSONS LEARNED

- 1) Soil excavated, placed in a pile outside the AOC, and not discovered to be hazardous until sample results came back.
- 2) Soil w/ listed solvents excavated and placed in roll-offs, “contained out,” and sent to a SW LF, but did not meet LDRs.
- 3) Wood-block flooring not discovered to be contaminated with a listed solvent until removed and staged in outdoor piles.

Waste Characterization Should Be an Integral Part of Site-Wide Project Management

- Tempting to focus on cleanup and worry about characterization later.
- Allows Law of Unintended Consequences to kick in:
 - Enforcement actions/penalties.
 - Unexpected need for approvals/permits.
 - Unnecessary delays and cost overruns.
- Opportunities to minimize disposal cost can be missed:
 - Timing of “Contained-in” determinations.
 - Contaminated soil management and staging.
 - In-situ vs. ex-situ treatment.
- Consider including a RCRA expert in the project design.
 - In-house.
 - Contracted out.



Future NEWMOA Training



- Future NEWMOA training being planned on remediation waste management.
- Possible topics:
 - Focused presentation on waste characterization and listed HW.
 - Focused presentation on AOC and “Contained-In” policies.
 - Focused presentation on waste piles.
 - Focused presentation on LDRs and waste treatment.
 - Other ideas? Let us know!

Questions?



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