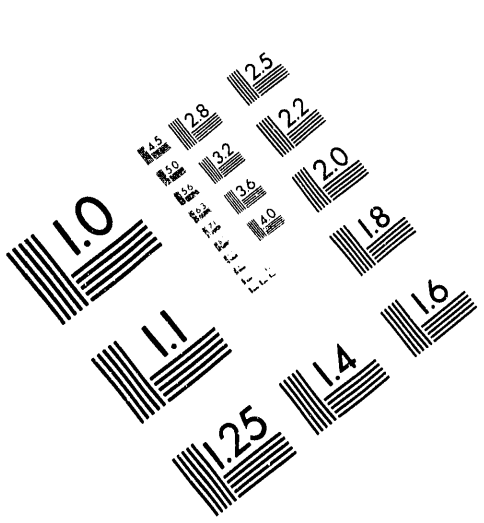



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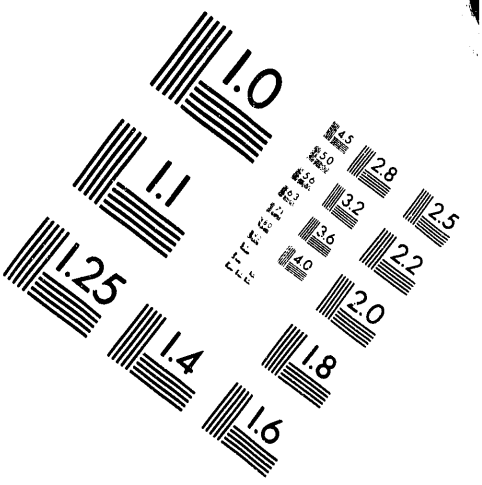



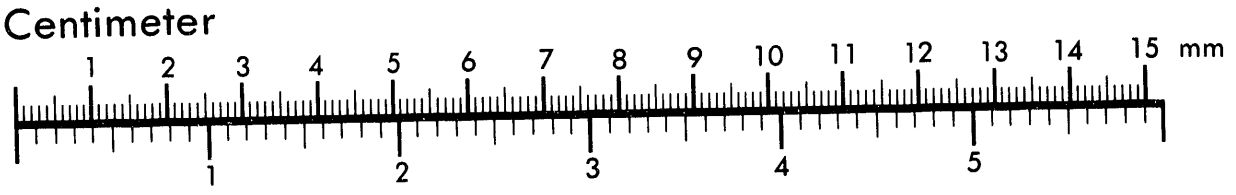


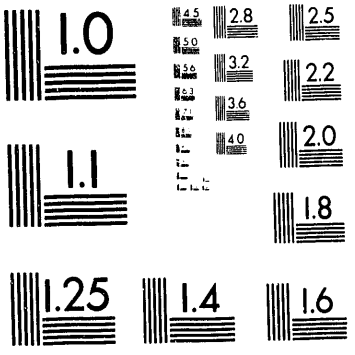

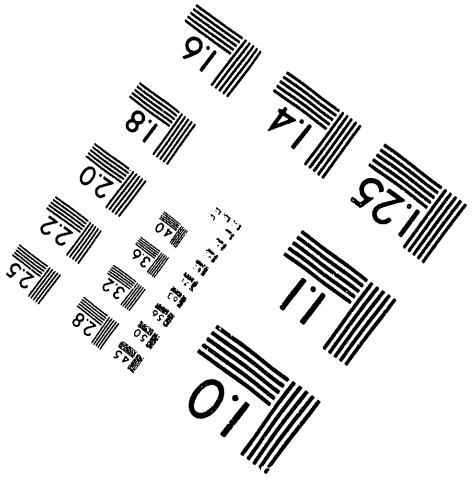

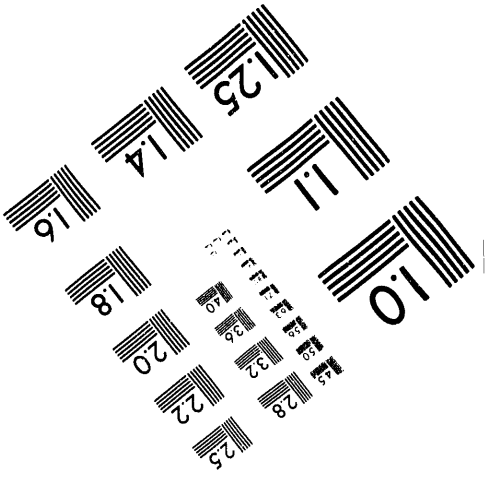

1 of 1

# IMPLEMENTATION OF THE HAZARDOUS DEBRIS RULE

[57 FR 37194, August 18, 1992]

PRESENTATION BY JAMES E. SAILER, SENIOR SCIENTIST
WESTINGHOUSE IDAHO NUCLEAR COMPANY, INC.

FOR EXECUTIVE ENTERPRISES;

FEDERAL FACILITIES AND GOVERNMENT CONTRACTORS
THE ENVIRONMENTAL REGULATIONS COURSE
February 9, 1992

## DISCLAIMER





1/5/93

## ADDITIONAL INFORMATION

- Hazardous Debris Rule - Related Federal Register Citations

  Advance Notice of Proposed Rulemaking - 56 FR 24444, May 30, 1991

  Notice of Proposed Rulemaking - 57 FR 958, January 9, 1992

  Final Rulemaking - 57 FR 37194, August 18, 1992

- Hazardous Debris Final Rule Technical Support Document, U.S. EPA, June 30, 1992

## HAZARDOUS DEBRIS RULE (§268.45)

### I. Introduction

A. What is hazardous debris and where does it come from?

1. Generally, hazardous debris includes objects contaminated with hazardous waste. Debris has in the past been informally regulated under the contained in policy developed for groundwater. Under this policy, debris could be considered hazardous if it contained a characteristically hazardous or listed waste contaminant. Examples of debris include: tree stumps, timbers, boulders, tanks, piping, crushed drums, personal protective equipment, etc. Most of the hazardous debris encountered comes from Superfund site and other facility remediation, although generators and treaters of hazardous waste also generate hazardous debris.

B. How did the regulated community handle contaminated debris prior to the hazardous debris rule?

1. Treatment to meet waste-specific LDR standards;
2. Utilization of variances to the LDR restrictions to allow disposal in a subtitle C facility without treatment.
3. Application of the "triple rinsing" procedures for empty containers [§261.7(b)(3)(i). Albeit application of this procedure to other than containers was not considered acceptable by the agency without agency approval.

C. Major problems associated with disposal of debris included:

1. inappropriateness of many waste treatments to debris,
2. difficulties in obtaining representative samples,
3. costs associated with applying waste specific treatments to debris.
4. Subtitle C landfill space was being used for many low hazard debris types.

D. These factors brought about the need for debris treatment technologies and regulations that addressed these issues. The goal of such regulation was to provide treatment "to destroy or remove the contamination (if possible) and if tnis is achieved, to dispose of the cleaned debris as a nonhazardous waste." [57 FR 37194]

E. EPA has accomplished this goal through promulgation of the Hazardous Debris Rule, August 18, 1992. [57 FR 37194]

**II. What does the hazardous debris rule do for the regulated community?**

A. EPA has codified the "contained in" principle in the definition of hazardous debris in this rule [57 FR 37225] giving a clear statement concerning what is hazardous debris. This principle has long been implemented through agency policy letters to management of contaminated groundwaters and soil, and occasionally to debris.

B. The debris rule sets forth LDR treatment technologies for contaminated debris. 17 treatment technologies were

promulgated in the Final Rule. In addition, options for equivalent technology petitions are available. EPA has indicated in the preamble to the rule that they intended the rule to be flexible to accommodate treatment of a diverse group of media.

C. Hazardous debris treated by the debris specified technologies [§268.45] that is not inherently characteristic exits RCRA Subtitle C Regulation. This is the first time we have seen treatment used as a means for a listed waste, albeit a contained in waste, to exit RCRA subtitle C. The only other method currently available for a listed waste to exit RCRA subtitle C is through use of the delisting procedures (§260.22)

**III. Definition of Debris**

A. Debris is defined by EPA to be a solid material exceeding 60 mm in size that is intended for disposal and that is:

1. a manufactured object;
2. plant or animal matter;
3. or natural geologic material.

B. Debris includes:

1. mixtures of debris and non-debris items if the mixture is predominantly debris; EPA has referred to this as the "Primary Material Test" (For Example: hazardous debris piping caked with soil that is primarily debris is considered to be debris.)

a. The "primary material" test does not apply to intact, non-empty containers.

b. Filters that are used in hazardous waste management are debris if they pass the primary material test. [57 FR 37224 & 37225]

3. Containers that are ruptured, or crushed containers that retain less than 75% of their capacity are debris.

C. Certain materials are not considered to be debris.

1. Any "material" with a specified treatment technology in §268 subpart D (such as cadmium batteries) [57 FR 37226] are not considered debris. These materials must be treated to the waste-specific treatment standards.

2. Process residuals such as smelter slag, waste treatment residues, wastewaters, sludges or air emission residues.

3. Intact containers are not debris. Empty, non-ruptured containers that retain 75% of their capacity are considered an "intact container" and must be managed

under §261.7, "Residues of Hazardous Waste in Empty Containers." [57 FR 37225]

## IV. Definition of Hazardous Debris

A. EPA has codified the "contained in" principle in the definition of hazardous debris [57 FR 37225]. Prior to promulgation of this rule the contained in policy was instituted through policy as the name implies.

B. Debris, that "contains" listed hazardous wastes, must be managed as that listed hazardous waste. Similarly, debris that exhibits a characteristic of a hazardous waste either inherently or through contamination must be managed as that hazardous waste. For Example; a pump used to transport listed waste in a treatment process at a TSD (Treatment, Storage, Disposal Facility) is considered on disposal to be a hazardous debris since it contains the listed waste.

C. EPA has also codified the corollary part of the "contained in" principle:

> "debris that no longer 'contains' listed hazardous waste would no longer be subject to subtitle C regulation, provided that it does not exhibit any hazardous waste characteristic." [57 FR 37226]

1. Therefore, debris which has undergone the specified treatment technologies and which is not inherently hazardous will exit subtitle C. Regulation.

2. In addition, the EPA Corollary to the Contained in Principle includes a new Regulatory Exclusion under §261.3(f)(2). EPA has provided a regulatory means for the Regional Administrator to deem debris no longer hazardous based on the extent of contamination. [57 FR 37238 & 37239]

   a. §261.3(f) "....the following materials are not subject to regulation under 40 CFR 260, 261 to 266, 268 and 270."

   b. §261.3(f)(2) "Debris .... that the Regional Administrator, considering the extent of contamination, has determined is no longer contaminated with hazardous waste."

   c. Use of this exclusion will likely be prevalent when the waste contaminating debris is a mixture rule or derived from waste that includes very low levels of listed waste constituents. For example; personal protective equipment stained with derived from listed waste scrubber sludge or contained in policy soil.

   d. Use of the exclusion to the hazardous waste regulations for debris, if appropriate, will mean additional waste minimization benefits to the generator. In addition, waste minimization will be

realized at TSD facilities since residues will not be generated from low hazard debris wastes.

D. What are the "Contaminants Subject to Treatment"? [§268.45(b)]

1. Contaminants Subject to Treatment through Debris Treatment Technologies include:

   a. Toxicity Characteristic Debris

      i. This could include debris contaminated with toxic metals to a degree that the debris exhibits a characteristic or;

      ii. could include inherently hazardous debris. For example; lead piping.

   b. Debris Contaminated with Listed Waste

      i. The regulatory definition for listed waste "Contaminants Subject to Treatment" [§268.45(b)(2)] does not list wastes with specified treatments in §268.42 Table 2 [57 FR 37278].

      ii. However, EPA has indicated this is an error and treatment with the debris specified

technologies will remove all listed waste codes contaminating debris[1].

c. Cyanide Reactive Debris

2. Debris may be Ignitable, Corrosive or Reactive (ICR) under certain circumstances, however,

a. "Almost no debris could be ignitable, given that most ignitable wastes must be liquid [see §261.2(a)(1)&(2)], none is corrosive (only liquids can be corrosive wastes)". [57 FR 37236]

V. Debris Treatment

A. Hazardous debris must be treated for each of the following as applicable:

1. each "Contaminant Subject to Treatment" [§268.45(b)];

2. Debris exhibiting the characteristics of Ignitability, Corrosivity or Reactivity (ICR) must be deactivated.

3. Cyanide reactive debris must be treated to standards for D003 in §268.43.

4. Debris may also be treated to the waste-specific treatment standards.

a. Generators may therefore dispose of debris items and waste mixtures in the same container to

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1 Individuals anticipating use of this clarification should seek individual confirmation from the EPA until such time that a clarification is published by the agency.

simplify disposal. For example; a hazardous sludge waste and contaminated personal protective equipment generated during the waste generation could be combined in the same container for treatment of the specified sludge waste.

**VI. Treatment Technologies - EPA Promulgated 17 treatment technologies including;**

A. Extraction Technologies

1. Physical extraction - including high pressure steam or water washing, abrasive blasting, spalling, scarification, etc.
2. Chemical extraction - including acid/water washing and spraying, solvent extraction,
3. Thermal extraction - including high temperature metals recover, thermal desorption,

B. Destruction Technologies

1. Biodegradation,
2. Chemical Oxidation,
3. Chemical Reduction,
4. Thermal Destruction.

C. Immobilization Technologies - Note that debris treated through immobilization must be disposed at a RCRA Subtitle C Facility.

1. Macroencapsulation,
2. Microencapsulation,

3. Sealing.

D. Residues generated through treatment of debris contaminated with listed hazardous waste must be treated in accordance with the waste-specific standards set forth in §§268.41, 268.42 and 268.43. For example, liquids generated from the treatment of F002 contaminated debris will require treatment to the waste-specific standards for F002.

1. Considerations concerning the type and amount of residue generated during the treatment process is an important factor. This is especially important when debris is contaminated with specified technology wastes (268.24) since residues require that treatment.

E. Hazardous debris containing radioactive waste is not subject to the specified technologies in §268.42 Table 3 but is subject to the debris specified technologies in §268.45.

**VII. Treatment Technologies and Treatment Standards**

A. Specified technologies for debris treatment and treatment standards vary based on;

1. the type of debris material,

a. porous vs. non-porous, For Example; wood vs. metal,

b. debris thickness,

2. the type of contaminant (certain metals, dioxins etc.)

B. Treatment Standards are primarily based on performance, however certain treatments include Design and Operating Standards.

C. Debris treatment standards are neither interim status or permit standards. "The hazardous debris treatment standards are adopted pursuant to section 3004(m) of RCRA to ensure that debris is treated to minimize the hazardous constituents' toxicity or mobility during future management, while interim status and permit standards are designed to protect human health and the environment from operation of the storage, treatment, or disposal facility itself." [57 FR 37229]

D. Examples of Performance Standards

1. Physical Extraction

a. Metal Objects -

i. must be treated to remove foreign matter to produce a "Clean Debris Surface".

b. Brick, Cloth, Concrete, Paper -

i. must remove at least 0.6 cm of the surface layer and;

ii. result in a "Clean Debris Surface".

2. Chemical Extraction

a. Metal Objects -

i. must be treated to remove foreign matter to produce a "Clean Debris Surface".

b. Brick, Cloth, Concrete, and other porous debris -

i. must be treated to remove foreign matter to produce a "Clean Debris Surface".

ii. must be in contact with the water solution for at least 15 minutes.

E. Examples of Design and Operating Standards - Certain treatment categories have restrictions:

1. Chemical Extraction

a. Metal Objects -

i. contaminants must be soluble to at least 5% by weight in the solution.

b. Brick, Cloth, Concrete, and other porous debris -

i. thickness must not be more than 1.2 cm, and;

ii. contaminants must be soluble to at least 5% by weight in the solution.

F. Equivalent Technology Requirements [§261.42(b)]

1. Certain treatments and debris types require an "Equivalent Technology" approval under §261.42(b).

a. Thermal Desorption

b. Biological Destruction

c. Chemical Oxidation

d. Debris exceeding the thickness restrictions for porous debris.

2. Certain contaminant types require an "Equivalent Technology" approval under §261.42(b).

   a. Treatment of dioxin contaminated debris with High Temperature Metals Recovery,

   b. Chemical Extraction, water washing and spraying when debris is contaminated with a dioxin-listed waste.

**VIII. Debris Sampling Requirements**

A. "Analysis of debris is generally not necessary (except to determine where knowledge about the debris is not available whetner the debris exhibits a characteristic of hazardous waste." [57 FR 37238]

B. However, permitted or interim status hazardous debris treatment facilities receiving hazardous debris apparently must sample debris to meet the waste analysis requirements of §264 and 265.13, although this does not appear consistent with statements in the preamble. EPA has indicated that they did not intend that permitted or interim status facilities be required to sample debris and are evaluating the requirements[2].

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2 Individuals anticipating use of this clarification should seek individual confirmation from the EPA until such time that a clarification is published by the agency.

**IX. Inherently Hazardous Metallic Debris - What are Options?**

A. Certain metal debris may inherently exhibit the toxicity characteristics and require immobilization if disposed. It can be treated through macroencapsulation or sealing as debris. In addition, debris can be reduced in particle size so that it no longer meets the definition of debris and be treated to the waste-specific treatment standards. As previously indicated, disposal of immobilized debris must be at a RCRA Subtitle C Facility.

B. Inherently hazardous scrap metal debris subject to recycling is still subject to the exemption under §261.6(a)(3)(iv). However, scrap metal that is contaminated with listed waste must be treated to meet the debris treatment standard prior to recycling.

**X. "Structures and equipment contaminated with hazardous waste and intended for discard are regulated debris." [57 FR 37242]**

A. Treatment of such debris is subject to permit standards unless conducted in a tank, container or containment building.

B. "If the contaminated structure and/or equipment is being decontaminated for future use, it is not debris and is not subject to the debris rule.

**XI. Relationship to RCRA Closure**

A. EPA "believes that the treatment methods in today's rule (debris rule) would always satisfy the decontamination standard in the closure provisions". [57 FR 37242]

B. If the debris treatment standards appear inappropriate a treatability variance [§268.44(h)] may be available as part of the closure process. [57 FR 37243]

## XII. Relationship to the TSCA PCB Rules

A. Hazardous debris that is also a PCB waste (40 CFR 761) is subject to the requirements of §761 or §268.45, whichever are more stringent.

B. Hazardous/PCB debris treated with an extraction or destruction technology (268.45) that is not characteristically hazardous remains subject only to TSCA rules.

C. Hazardous/PCB debris treated with an immobilization technology (268.45) remains subject to requirements under both statutes.

## XIII. Debris Treatment Facilities

A. Who can treat debris?

1. Generators can treat debris within <90 days of waste generation. No Waste Analysis Plan for debris treatment is required in <90 day units to comply with §268.7(a)(4). [57 FR 37271]

2. Treatment, Storage and Disposal Facilities can Treat Debris.

B. Where can debris be treated be treated?

1. Tanks,

2. Containers,

3. Containment Buildings - [Promulgated concurrent with the debris rule, August 18, 1992] Units are not considered to be Land Disposal Units.

4. CERCLA Area of Contamination.

**XIV. LDR Notification and Other General Requirements**

A. Generators (or treaters) of debris that first claim that hazardous debris is excluded from the definition of a hazardous waste through either treatment by debris specified technologies or determination by the Regional Administrator, must provide notification and certification of that exclusion [§268.7(d)].

B. Generators (and treaters) of characteristically hazardous debris that render the debris nonhazardous are required to make a one time notification to the EPA or state in accordance with current procedures for characteristically hazardous wastes [§268.9(d)].

**XV. Summary**

A. The hazardous debris rule provides a clear definition concerning what may be considered debris.

B. The hazardous debris rule codifies the contained in principle for the first time.

C. The rule sets forth the mechanism to remove hazardous debris from RCRA Subtitle C regulation through either;

1. implementation of the debris treatment technologies, or

2. use of contained in determinations by the Regional Administrator under the regulatory exclusion in §261.3(f)(2).

# HAZARDOUS DEBRIS RULE & CONTAINMENT BUILDING SPECIFICATIONS

## Introduction

- What is hazardous debris and how has the regulated community dealt with it?

- Need for regulation to treat hazardous debris.

- Goal of Debris Treatment -

  "to destroy or remove the contamination (if possible) and if this is achieved, to dispose of the cleaned debris as a nonhazardous waste."

## The Hazardous Debris Rule provides:

- a definition of hazardous debris through codification of the "contained in principle";

- sets LDR treatment technologies for hazardous debris;

- that hazardous debris treated by the specified technologies [§268.45] that is not inherently characteristic exits RCRA Subtitle C Regulation.

## Definition of Debris

Debris is defined by EPA to be:

- a solid material exceeding 60 mm in size that is intended for disposal and that is:
  - a manufactured object;
  - plant or animal matter;
  - natural geologic material.

## Definition of Debris - continued

Debris includes:

- mixtures of debris and non-debris items if the mixture is predominantly debris,

- filters that are used in hazardous waste management,

- containers that are ruptured, or crushed containers that retain less than 75% of their capacity.

**The following items are NOT debris:**

- any material (such as batteries) with specified treatment technologies in §268.42,

- process residuals such as smelter slag, or treatment residues,

- Intact containers are not debris. Empty, non-rupture containers that retain 75% of their capacity are considered an "intact container" and must be managed under §261.7.

## Definition of Hazardous Debris

- EPA has codified the "contained in" principle in the definition of hazardous debris.

- EPA has also codified the corollary part of the "contained in" principle:

> "debris that no longer 'contains' listed hazardous waste would no longer be subject to subtitle C regulation, provided that it does not exhibit any hazardous waste characteristic."

## EPA Corollary to the of the Contained in Principle and Regulatory Exclusions [§261.3(f)(2)]

- EPA has provided a regulatory means for the Regulatory Agency to deem debris no longer hazardous,

§261.3(f) "....the following materials are not subject to regulation under 40 CFR 260, 261 to 266, 268 and 270."

§261.3(f)(2) "Debris .... that the Regional Administrator, considering the extent of contamination, has determined is no longer contaminated with hazardous waste."

## Contaminants Subject to Treatment [§268.45(b)]

Contaminants Subject to Treatment through Debris Treatment Technologies include:

- Toxicity Characteristic Debris
- Debris Contaminated with Listed Waste
- Cyanide Reactive Debris

## Listed Waste Contaminants Subject to Treatment

The regulatory definition for listed waste "Contaminants Subject to Treatment" [§268.45(b)(2)] does not list wastes with specified treatments in §268.42 Table 2.

However, EPA has indicated that treatment with the debris specified technologies will remove all listed waste codes contaminating debris[1].

1/ Individuals anticipating use of this clarification should seek individual confirmation from the EPA until such time that a clarification is published by the agency.

**Debris Treatment** - Hazardous debris must be treated for:

- each "Contaminant Subject to Treatment" [§268.45(b)]:

- Debris exhibiting the characteristics of Ignitability, Corrosivity or Reactivity (ICR) must be deactivated. (Cyanide reactive debris must be treated to standards for D003 in §268.43).

- Debris may also be treated by the waste-specific treatment standards.

## Debris Treatment - Continued

- Residues generated through treatment of debris contaminated with listed hazardous waste must be treated in accordance with the waste-specific standards set forth in §§268.41, 268.42 and 268.43.

- Hazardous debris containing radioactive waste is not subject to the specified technologies in §268.42 Table 3 but is subject to the debris specified technologies in §268.45.

## Treatment Technologies

EPA Promulgated 17 treatment technologies including;

- Extraction Technologies
- Destruction Technologies
- Immobilization Technologies

## Treatment Technologies and Standards

Specified Technologies and treatment standards vary based on;

- the type of material
  - porous vs. non-porous
  - thickness

and

- the type of contaminant.

- Standards are primarily based on performance,

- Certain treatments include Design and Operating Standards.

## Examples of Performance Standards

## Physical Extraction

Metal Objects;

- must be treated to remove foreign matter to produce a "Clean Debris Surface".

Brick, Cloth, Concrete, Paper;

- must remove at least 0.6 cm of the surface layer and;
- result in a "Clean Debris Surface".

## Examples of Performance Standards

## Chemical Extraction

Metal Objects;

- must be treated to remove foreign matter to produce a "Clean Debris Surface".

Brick, Cloth, Concrete, and other porous debris;

- must be treated to ... a "Clean Debris Surface".

## Examples of Design and Operating Standards

Certain treatment categories have restrictions:

**Chemical Extraction** - Metal Objects;

- contaminants must be soluble to at least 5% by weight in the solution.

Brick, Cloth, Concrete, and other porous debris;

- thickness must not be more than 1.2 cm, and;
- contaminants must soluble to at least 5% by weight in the solution.

## Equivalent Technology Requirements [§261.42(b)]

- Certain treatments require an "Equivalent Technology" approval under §261.42(b).
  - Thermal Desorption
  - Biological Destruction
  - Chemical Oxidation
  - Debris exceeding the thickness restrictions for porous debris.

## Equivalent Technology Requirements - continued

- Certain contaminant types require an "Equivalent Technology" approval under §261.42(b).

  - Treatment of dioxin contaminated debris with High Temperature Metals Recovery

  - Chemical Extraction, water washing and spraying when debris is contaminated with a dioxin-listed waste.

## Sampling Requirements

- "Analysis of debris is generally not necessary (except to determine where knowledge about the debris is not available whether the debris exhibits a characteristic of hazardous waste.

## Inherently Hazardous Debris

- Certain metal debris may exhibit the toxicity characteristics and require immobilization if disposed.

- Inherently hazardous scrap metal subject to recycling is still subject to exemption under §261.6(a)(3)(iv).

- Inherently hazardous scrap metal that is contaminated with listed waste must be treated to meet the debris treatment standard.

**"Structures and equipment contaminated with hazardous waste and intended for discard are regulated debris."**

- Treatment of such debris is subject to permit standards unless conducted in a tank, container or containment building.

- "If the contaminated structure and/or equipment is being decontaminated for future use, it is not debris and is not subject to the debris rule.

## Relationship to RCRA Closure

- EPA "believes that the treatment methods in today's rule (debris rule) would always satisfy the decontamination standard in the closure provisions".

- If the debris treatment standards appear inappropriate a treatability variance [§268.44(h)] may be available as part of the closure process.

## Relationship to the TSCA PCB Rules

- Hazardous debris that is also a PCB waste (40 CFR 761) is subject to the requirements of §761 or §268.45, whichever are more stringent.

- Hazardous/PCB debris treated with an extraction or destruction technology (268.45) that is not characteristically hazardous remains subject only to TSCA rules.

- Hazardous/PCB debris treated with an immobilization technology (268.45) remains subject to both statutes.

## LDR Notification and Other General Requirements

- Generators (or treaters) of debris that first claim that hazardous debris is excluded from the definition of a hazardous waste through either treatment by debris specified technologies or determination by the Regional Administrator, must provide notification and certification of that exclusion [§268.7(d)].

- Generators (and treaters) of characteristically hazardous debris that render the debris nonhazardous are required to make a one time notification to the EPA or state in accordance with current procedures for characteristically hazardous wastes [§268.9(d)].

## Summary

- The hazardous debris rule provides a definition of what may be considered debris.

- The rule codifies the contained in principle.

- The rule sets forth the mechanism to remove hazardous debris from RCRA Subtitle C regulation through either;

  - implementation of the debris treatment technologies, or

  - use of contained in determinations by the Regional Administrator.

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