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RCRA, Superfund & EPCRA Hotline Training Module

Introduction to:

Miscellaneous and Other Units
(40 CFR Part 264, Subpart X and
40 CFR Part 265, Subparts P, Q, and R)

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MISCELLANEOUS AND OTHER UNITS

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1. INTRODUCTION

Congress recognized that it would be impossible for EPA and authorized states to issue permits to all hazardous waste management facilities before the Resource Conservation and Recovery Act (RCRA) Subtitle C program became effective in November 1980. RCRA §3005(e) provides for certain facilities to be treated as though they had been issued a permit until final administrative action is taken on their permit applications. This statutory permit is referred to as "interim status." EPA promulgated interim status management standards in 40 CFR Part 265.

Part 265 contains both general facility standards applicable to all facilities and requirements for specific hazardous waste management units and treatment processes. EPA initially promulgated interim status standards for the most common hazardous waste management units in existence at the inception of the RCRA program: containers, tanks, surface impoundments, waste piles, land treatment units, landfills, and incinerators (Part 265, Subparts I through O, respectively). EPA realized, however, that certain hazardous waste treatment and disposal practices were conducted in other types of units. As a result, the Agency also promulgated interim status standards for broadly defined treatment processes that are not performed in any of the previously listed units. These treatment processes include thermal treatment (Subpart P); chemical, physical and biological treatment (Subpart Q); and underground injection (Subpart R).

EPA promulgated final permit standards in Part 264 for all the specific hazardous waste management units originally set forth in Part 265, Subparts I through O, as well as both interim status and permit standards for boilers and industrial furnaces (BIFs), drip pads, and containment buildings. The Agency, however, never established final permit standards for thermal treatment units in Subpart P; chemical, physical, and biological treatment units in Subpart Q; or underground injection control (UIC) wells in Subpart R. As a consequence, facilities operating in interim status pursuant to these subparts could never receive final permits. In addition, new thermal, chemical, physical, and biological treatment facilities could not be constructed, since new hazardous waste facilities need a permit before construction commences.

The promulgation of the Part 264, Subpart X, miscellaneous unit regulations in 1987 bridged the gap between Part 265 and Part 264. Subpart X allows for the construction and permitting of units that do not meet the Part 264, Subparts I through W and DD, and Part 266, Subpart H, unit descriptions. It also allows interim status facilities with units which are not specified in these subparts to become fully permitted, to construct new units, or to expand existing units.

When you have completed this module, you will be able to describe the requirements for and components of the miscellaneous unit permitting process. Specifically, you will be able to:

- Describe the basic requirements and types of units under Part 264, Subpart X, and Part 265, Subparts P, Q, and R
- Explain when corrective action applies to these subparts
- Understand the relationship between Part 264, Subpart X, and Part 265, Subparts P, Q, and R.

Use this list of objectives to check your knowledge of this topic after you complete the training session.

2. REGULATORY SUMMARY

The RCRA regulations governing the management of hazardous waste at treatment, storage, and disposal facilities (TSDFs) are divided into general standards that apply to all facilities and unit- or process-specific standards. All thermal treatment units; chemical, physical, and biological treatment units; underground injection control (UIC) wells; and miscellaneous units are subject to the general facility standards in Parts 264/265, Subparts A through H (with the partial exception of UIC wells). Accordingly, an owner/operator must comply with personnel training; general waste analysis; preparedness and prevention procedures; contingency plans; special requirements for the handling of ignitable, reactive, or incompatible wastes; corrective action; closure; and any other applicable requirements.

In addition, each type of unit or process must comply with the relevant unit/treatment process-specific subpart in Part 264/265. This module outlines the unit/treatment process-specific design and operating requirements for the following types of hazardous waste management units:

- Part 265, Subpart P - Thermal Treatment
- Part 265, Subpart Q - Chemical, Physical, and Biological Treatment
- Part 265, Subpart R - Underground Injection
- Part 264, Subpart X - Miscellaneous Units.

2.1 THERMAL TREATMENT UNITS (SUBPART P)

Since incineration was the most prevalent method used to thermally treat hazardous waste in 1980, EPA established a subpart devoted specifically to this thermal waste management technique (Subpart O). The Agency realized, however, that hazardous waste may be thermally treated in units other than incinerators. So as not to discourage the development and use of alternative thermal treatment processes, EPA also promulgated interim status regulations for thermal treatment units that do not meet the definition of an incinerator, boiler, or industrial furnace. Thermal treatment is defined as the treatment of hazardous waste in a device that uses elevated temperatures as the primary means to change the chemical, physical, or biological character or composition of the hazardous waste (§260.10). Thermal treatment units include carbon regeneration units and devices employing processes such as molten-salt pyrolysis, calcination, wet-air oxidation, and microwave destruction. Since incinerators are a subset of thermal treatment units, many of the Part 265, Subpart P, requirements are similar to the Part 265, Subpart O, standards.

OPERATING REQUIREMENTS

Before adding hazardous waste to a thermal treatment unit, the unit must be operating under steady-state (normal) conditions of operation (§265.373). Owners/operators may use auxiliary fuel or other means to bring the unit to operational readiness before burning hazardous waste. The owner/operator must also perform waste analysis to determine the heating value of the waste, the halogen and sulfur content of the waste, and the concentrations of lead and mercury in the waste (§265.375). In addition, owners/operators are required to conduct monitoring and inspections of the temperature and emission control instruments, the stack plume, and all process and ancillary equipment (§265.377). At closure, all hazardous waste and hazardous waste residues must be removed from the thermal treatment unit. Finally, unless the thermal treatment unit receives a special certification, the unit may not treat dioxin-bearing hazardous wastes (F020, F021, F022, F023, F026, or F027) (§265.383).

OPEN BURNING AND OPEN DETONATION

Open burning and open detonation (OB/OD) of hazardous waste is prohibited in interim status thermal treatment units, except for OB/OD of waste explosives. Waste explosives include waste that has the potential to detonate and bulk military propellants that cannot safely be disposed through other modes of treatment. OB/OD must be performed in a manner that does not threaten human health or the environment, such as following minimum distance requirements for treatment near adjacent properties (§265.382).

2.2 CHEMICAL, PHYSICAL, AND BIOLOGICAL TREATMENT UNITS (SUBPART Q)

Facilities may conduct chemical, physical, and biological treatment of hazardous waste in units other than those specifically addressed in Part 265, Subparts I through O, W and DD. Examples of treatment processes that are often not performed in RCRA-defined units include distillation, centrifugation, reverse osmosis, ion exchange, and filtration. To accommodate these unique units, the Agency promulgated interim status regulations for units that treat waste by chemical, physical, and biological treatment technologies in Part 265, Subpart Q. The Agency's primary concern was the safe containment of hazardous waste, hazardous waste constituents, and treatment by-products. As a result, Subpart Q standards resemble the container and tank standards in Part 265, Subparts I and J, respectively.

OPERATING REQUIREMENTS

The operating requirements for Subpart Q units specify that waste may not be placed in the equipment if the waste could cause the process or equipment to rupture, leak,

corrode, or otherwise fail. In addition, where wastes are continuously fed into a process, the units must be equipped with a feed cut-off system (§265.401).

Subpart Q units must also comply with special requirements for ignitable or reactive wastes in addition to the general requirements for these wastes that apply to all RCRA facilities (§265.405). These standards require the owner/operator to remove the hazardous waste characteristic immediately before or after placement in the treatment process or equipment. Likewise, Subpart Q units must comply with special requirements for waste analysis in addition to the general waste analysis requirements (§265.402). Whenever a waste is to be treated by a process that is substantially different from any previous processes, the owner/operator must conduct waste analyses and trial treatment tests or obtain written documentation showing that the treatment will meet the applicable requirements.

Facilities must also inspect discharge control, safety equipment, and data gathered from monitoring equipment at least once each operating day. In addition, facilities are required to inspect the construction materials of the treatment process and confinement structures at least weekly for corrosion, erosion, or leakage (§265.403). At closure, all hazardous waste and hazardous waste residues must be removed from treatment processes or equipment, discharge control equipment, and discharge confinement structures (§265.404).

2.3 UNDERGROUND INJECTION (SUBPART R)

EPA originally intended to regulate underground injection control (UIC) wells disposing of hazardous waste primarily under the Safe Drinking Water Act (SDWA). At the inception of the RCRA program, however, many states did not yet have a SDWA-approved UIC program. EPA promulgated the interim status regulations for existing UIC wells to address the period when UIC wells were used to dispose of hazardous waste but were not yet subject to the SDWA. EPA never intended to promulgate Part 264 final permit standards for UIC wells, since §270.60(b) allows a UIC permit to function as a RCRA permit-by-rule once corrective action has been performed for all solid waste management units (SWMUs) at the facility.

Class I and Class V wells used for injecting hazardous waste must have authorization under both SDWA and RCRA. A well has SDWA authorization once it obtains a permit issued under 40 CFR Part 144 or 145. A well is considered to have RCRA authorization when it meets one of the following conditions: qualifies for and maintains RCRA interim status; obtains a UIC permit and meets the requirements for a RCRA permit-by-rule; or obtains a RCRA Part B permit for all units, including the operating well.

The first option would allow the well to obtain RCRA interim status. The RCRA interim status regulations specify that UIC wells injecting hazardous waste are

subject to all the Part 265 general facility standards, except closure (Subpart G) and financial assurance (Subpart H). The second option allows a well to qualify for a RCRA permit-by-rule. To obtain a RCRA permit-by-rule, the well must obtain a SDWA underground injection permit pursuant to Parts 144 and 145 and comply with §144.14 for wells managing hazardous waste (§270.60(b)). Finally, the UIC well may obtain a final RCRA permit. UIC wells may receive RCRA permits as miscellaneous units.

Because all Class I and Class V wells used for injecting hazardous waste require permits or permits-by-rule under RCRA Subtitle C, certain RCRA standards apply to these wells even if they have a permit-by-rule. Most significantly, they must comply with corrective action requirements. Likewise, any associated hazardous waste storage units at the UIC well facility must be permitted and would also be subject to corrective action.

2.4 MISCELLANEOUS UNITS (SUBPART X)

On December 10, 1987, EPA promulgated standards regulating miscellaneous units in Part 264, Subpart X (52 FR 46946). The promulgation of Subpart X extended RCRA permit eligibility to interim status units performing thermal, chemical, biological, or physical treatment under Part 265, Subparts P, Q, and R. Additionally, new and innovative technologies managing hazardous waste in units not previously regulated under RCRA became eligible for RCRA permits as miscellaneous units.

In developing the Subpart X regulations, the Agency wanted to promulgate a new set of general standards that would cover the diverse technologies and units not yet covered in Part 264. To accomplish this goal, the Subpart X regulations are general, not technology-specific. In sum, miscellaneous units are required to be located, designed, constructed, operated, maintained, and closed in a manner that will prevent any unsafe releases into the groundwater, subsurface environment, surface water, wetlands, soil surface, or air. This media-based or pathway-based approach ensures that any potential problems arising from units are addressed.

The Agency regards the Subpart X regulations as environmentally more protective than the corresponding interim status regulations found in Part 265, Subparts P, Q, and R. Since the site-specific Part 264 permit provisions are tailored to specific facilities, these standards provide better environmental protection. Subpart X is also more flexible, as it allows new and innovative technologies to receive RCRA permits. In addition, these regulations give the implementing agency the flexibility to develop permit standards on a case-by-case basis when considering the technology-specific data required to be submitted by the applicant.

The following portion of the module describes and presents an overview of the types of units regulated by Part 264, Subpart X, and outlines the types of performance standards specified in the regulations. In addition, the section summarizes the

monitoring, analysis, inspection, response, reporting, corrective action, and closure requirements for miscellaneous units.

TYPES OF UNITS COVERED BY SUBPART X

Miscellaneous units are defined as hazardous waste management units where hazardous waste is managed in a unit other than a container, tank, surface impoundment, pile, land treatment unit, landfill, incinerator, boiler, industrial furnace, underground injection well, containment building, or unit eligible for a research, development, and demonstration (RD&D) permit (§260.10). Since Subpart X is intended to serve as a "catch all" category, the Agency did not develop an all-inclusive list of units designated as miscellaneous units. The Agency, however, felt it would be helpful to identify several types of units that may receive permits under Subpart X. The types of units subject to Subpart X include, but are not limited to:

- Placement of hazardous waste in geologic repositories other than injection wells
- Placement of hazardous waste in deactivated missile silos other than injection wells or tanks
- Thermal treatment units other than incinerators, boilers, or industrial furnaces
- OB/OD of waste explosives
- Chemical, physical, biological treatment units.

The Subpart X regulations do not regulate:

- Units regulated under other portions of Parts 264 or 266
- Units excluded from permitting under Parts 264 and 270
- Underground injection wells (Part 146)
- RD&D units covered under Part 270.

PERFORMANCE OBJECTIVES

The Agency concluded that it would be impossible to set technology-based design and operating standards for the enormous diversity of technologies eligible for a permit as a miscellaneous unit. Instead, EPA provided a set of objectives designed to protect groundwater, surface water (including wetlands), air, and soil from the migration of hazardous constituents. The performance objectives require permit applicants to evaluate the potential environmental impacts of the unit or facility

and to demonstrate that the unit will not adversely affect human health and the environment (§264.601).

This performance-based regulatory approach offers several advantages. First, it allows the Agency the flexibility to address a full range of environmental issues raised by any waste management situation without the need to develop specific design and operation conditions. Second, for those Subpart X units resembling conventional units, the permit may incorporate appropriate requirements from Subparts I through O, W and DD, and Part 266, Subpart H. For example, a miscellaneous unit that is similar to a surface impoundment may be required to have liners and a leachate collection system. Third, this approach allows the implementing Agency the flexibility to tailor each permit to meet the particular issues and circumstances based on the technology used, the types of waste, the site location, and the regional meteorological, climatic, and hydrogeologic characteristics.

PERMIT REQUIREMENTS

All owners/operators of miscellaneous units must obtain a permit to treat, store, and/or dispose of hazardous waste. The Subpart X permitting standards require permit applicants to describe the unit and evaluate the potential environmental impacts of the unit or facility (§270.23).

The permit application must include information that clarifies and defines the type of unit for which the owner/operator is seeking a permit. The applicant must describe the unit, its physical characteristics, construction materials, and dimensions. The bulk of the application is expected to contain detailed plans and engineering reports describing the unit location, design, construction, operation, maintenance, monitoring, inspection, and closure.

In addition, each of the environmental performance standards must be assessed. The permit application must contain information on the potential pathways of human or environmental exposure to hazardous waste or hazardous constituents. Where this assessment indicates that releases to air, surface water, or groundwater are possible, the applicant is expected to provide details on the potential magnitude and nature of such exposures, as well as detailed hydrologic, geologic, and meteorologic assessments and maps for the region surrounding the site (§270.23).

MONITORING, ANALYSIS, INSPECTION, RESPONSE, REPORTING, AND CORRECTIVE ACTION

Each miscellaneous unit must have monitoring, testing, analytical data, inspections, response, and reporting procedures. These procedures ensure that a unit is in compliance with the general performance standards. The required activities are included in the unit's permit. At a minimum, the monitoring program must be capable of determining the unit's impact on groundwater, air quality, surface and

subsurface contaminant migration; although in many cases, monitoring of a specific medium will not be necessary. It should also ensure compliance with the general inspection requirements, testing and maintenance of equipment schedules, reporting requirements, and corrective action (§264.602).

CLOSURE

Units that cannot clean-close require post-closure care. The unit must meet all of the environmental performance standards, as well as the appropriate post-closure standards of Part 264, Subpart G, during the post-closure care period (§264.603).

3. SPECIAL ISSUES

Keep in mind the following points about how miscellaneous units relate to other RCRA issues.

3.1 MOBILE HAZARDOUS WASTE TREATMENT UNITS

Mobile treatment units (MTUs) are designed to move from facility to facility treating waste on site. These units must comply with the applicable interim status or permitted unit standards. If the MTU does not meet the description of any of the units regulated under Subparts I through O, W and DD of Part 264 or Subpart H of Part 266, then permitting under Part 264, Subpart X, is required. Current regulations require MTUs to undergo RCRA permit procedures at each site of operation. See the module entitled Permits and Interim Status for more information on permitting MTUs.

3.2 LAND DISPOSAL RESTRICTIONS (LDR)

Many units permitted under Subpart X also meet the definition of a land disposal unit under RCRA (i.e., underground mines or caves). Therefore, any hazardous waste prohibited from land disposal must be treated to meet applicable Part 268 treatment standards prior to placement in the unit.

The Part 268 land disposal restrictions' applicability to open burning and OB/OD units requires further clarification. When waste explosives are detonated in RCRA OB/OD units, wastes are typically managed on the ground. The Agency has concluded that OB/OD of waste explosives does not constitute land disposal because it is treatment rather than disposal. This may not be true, however, in cases where the residues from the OB/OD operation remain a hazardous waste. In these cases, the practice of allowing the remaining wastes to remain on the ground or to seep into the ground may be considered land disposal.

3.3 AIR EMISSIONS

When appropriate, a miscellaneous unit's permit must include the air emission control requirements of Subparts AA, BB, and CC. Subpart X miscellaneous units are permitted on a case-by-case basis with terms and provisions as needed to protect human health and the environment. Appropriate portions of the existing technical standards for other waste management units, such as the air emission standards, will be incorporated into a permit as necessary.

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