

Introduction to
Closure/Post-Closure
(40 CFR Parts 264/265, Subpart G)

CLOSURE AND POST-CLOSURE

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1. INTRODUCTION

All hazardous waste management facilities must eventually cease their treatment, storage, or disposal activities. When such operations cease, the owner and operator must close the facility in a way that ensures it will not pose a future threat to human health and the environment. The Resource Conservation and Recovery Act (RCRA) closure and post-closure regulations in 40 CFR Parts 264 and 265, Subpart G, are designed to achieve this goal. Closure is the period following active management during which a facility no longer accepts hazardous wastes. When an owner or operator of a treatment, storage, and disposal facility (TSDF) completes treatment, storage, and disposal operations, he or she must apply final covers to landfills and dispose of or decontaminate equipment, structures, and soils. Post-closure, which applies only to land disposal facilities and facilities that cannot decontaminate (or "clean close") all equipment, structures, and soils, is normally a 30-year period after closure during which owners and operators conduct monitoring and maintenance activities to preserve the integrity of the disposal system and continue to prevent or control releases of contaminants from the disposal units.

When you have completed this training module you will know the difference between closure and post-closure and how to apply the appropriate regulations. Specifically, you will be able to:

- list the types of facilities that are subject to closure/post-closure
- define the difference between partial and final closure
- specify who submits a closure plan and when a closure plan must be submitted, list the steps in the process, and state the time frame for submittal
- identify when a closure plan must be amended and how closure plans are amended
- explain the time frame for notification of closure, and the deadlines for beginning and completing closure
- specify which facilities need contingent post-closure plans
- list the elements of post-closure and cite the requirements
- specify the conditions and timing for amending a post-closure plan
- state who must certify closure/post-closure
- explain the alternatives to post-closure permits for interim status facilities.

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

2. REGULATORY SUMMARY

The closure and post-closure regulations can be divided into two parts: (1) general standards in Part 264/265, Subpart G, and (2) technical standards for specific types of hazardous waste management units found in Part 264/265, Subparts I through X. These combined requirements ensure that a specific unit or facility will not pose a future threat to human health or the environment after a TSDF closes.

2.1 CLOSURE PERFORMANCE STANDARDS

Owners and operators must close each facility in a manner that minimizes the need for care after closure. To achieve this requirement, facilities must control, minimize, or eliminate the escape of hazardous waste, hazardous leachate, or hazardous waste decomposition by-products to the extent necessary to protect human health and the environment, (§264/265.114). Facilities must also meet the closure requirements for each unit type (§264/265.111). For example, permitted containers must be closed according to §264.178.

2.2 CLOSURE PHASES

RCRA facilities often have several different hazardous waste management units that close at different times. The regulations account for this possibility by differentiating between partial closure and final closure. Partial closure means closure of one or more hazardous waste management units at a facility where other hazardous waste management units remain active. The closed portion (also "inactive portion") of a facility is defined as that portion of a facility that has been closed in accordance with an approved closure plan and applicable regulatory requirements, while the active portion of the facility is that portion where treatment, storage, or disposal operations continue to occur. Final closure of a facility occurs when all hazardous waste management units at a facility are closed according to closure regulations.

2.3 CLOSURE PLAN

All TSDFs must submit closure plans for both partial and final closure in accordance with §264/265.112. These plans explain in detail how the owner and operator will achieve the closure performance standard under §264/265.111. Permitted facilities are required to submit a closure plan with the Part B permit application; the approved closure plan then becomes an enforceable component of the facility permit. Interim status facilities must have a written closure plan on the premises six months after the facility becomes subject to §265.112.

CONTENTS OF THE CLOSURE PLAN

The closure regulations do not mandate any specific format for the closure plan. Nor do the regulations mandate any particular level of detail, length, or supporting documentation. Rather, the regulations provide general guidelines on the type of information that the closure plan must

include. By requiring these specific elements, EPA hopes to force owners and operators to consider their future closure responsibilities and consequently realize the impact of their current operating practices on closure. According to §264/265.112(b), the closure plan must contain:

- a description of how each hazardous waste management unit will be closed
- a description of how final closure of the facility will be achieved
- an estimate of the maximum inventory of hazardous waste ever on site during the facility's active life
- a detailed description of closure methods, including actions necessary to remove waste and decontaminate the site
- a description of any other steps that may be necessary in order to comply with the closure standards, such as groundwater monitoring or leachate collection
- a schedule of closure dates for each unit and for final closure, including the amount of time that closure of each unit and related activities will take
- the expected year of final closure for facilities that use trust funds for financial assurance, and for facilities without approved closure plans.

AMENDING THE PLAN

The closure plan may be amended by either the facility owner/operator or the Regional Administrator (RA) by following the steps in §264/265.112(c) when there is a change in the design or operation of the facility, a change in the expected closure date, or an unexpected event. An example of an unexpected event is the discovery of more contamination than anticipated, resulting in the need to close a storage unit (e.g., a tank) as a disposal unit.

The owner and operator of a permitted facility or an interim status facility with an approved closure plan must submit a written request to the RA, along with a copy of the amended plan 60 days prior to a planned change. If the change is a result of an unexpected event, the amended closure plan must be submitted no more than 60 days after the unexpected event if it occurs before closure, and no more than 30 days after an unexpected event if it occurs during closure. Facilities can amend the closure plan at any time prior to notification of partial or final closure; however, permitted facilities must also submit a permit modification per §270.42, in addition to the written request to amend the plan. Owners and operators of interim status facilities without approved closure plans may amend the closure plan at any time prior to notification of partial or final closure.

2.4 CLOSURE TIMETABLE

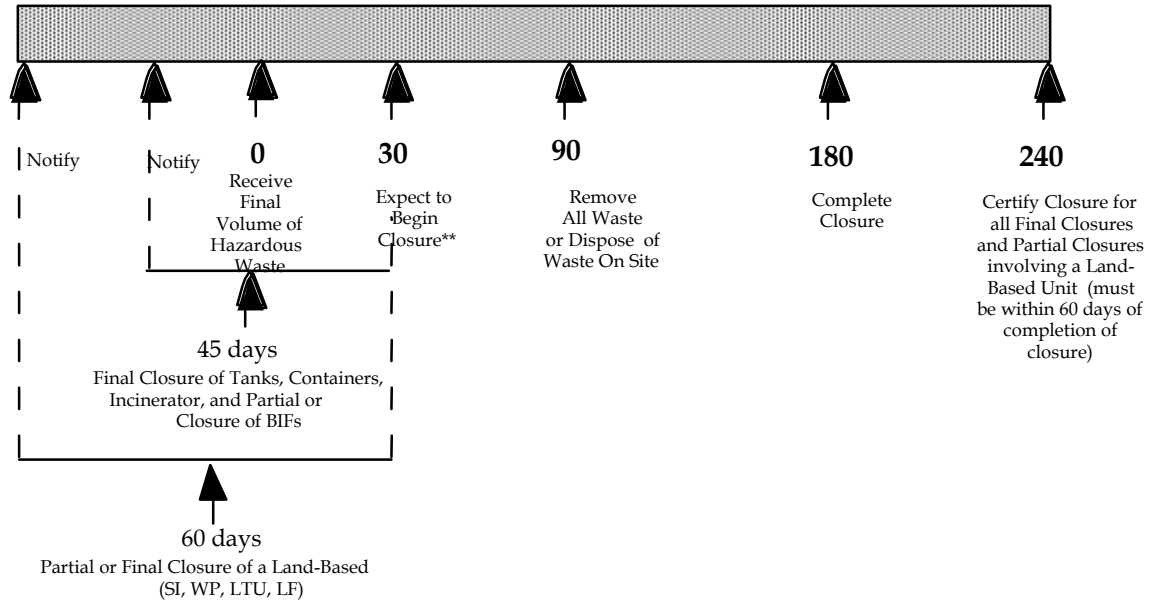
The closure regulations establish specific timetables for the initiation and completion of closure activities. One element of this timetable is prior notification to the RA of the commencement of

closure. For permitted units the owner and operator must notify the RA at least 60 days prior to the date on which they "expect to begin closure" of a surface impoundment, waste pile, land treatment or landfill unit, or final closure of a facility with such a unit (§264.112(d)). The date when the owner and operator "expect to begin closure" must be no later than 30 days after the date on which the unit accepts the known final volume of hazardous waste (§264.112(d)(2)(i)). For facilities with only tanks, containers, or incinerators, notification must occur at least 45 days prior to the date they expect to begin final closure. For hazardous waste boilers or industrial furnaces, notification must occur at least 45 days prior to partial or final closure. Interim status units have similar notification requirements to their permitted counterparts. The additional stipulation is that closure plans must be submitted according to the dates found in §265.112(d) of the regulations (closure plans for permitted units are submitted in the Part B application process).

Section 264/265.113 establishes deadlines for initiating and completing closure activities. Within 90 days of receipt of the final volume of hazardous waste at a permitted facility, the owner and operator must treat, remove from the site, or dispose of all hazardous waste on site. For interim status facilities, this deadline, as well as the deadlines for all subsequent closure activities, is based on the timing of the latter of two events: receipt of the final volume of hazardous waste at the unit, or approval of the closure plan (§265.113(a) and (b)). For example, the owner and operator of an interim status facility must treat, remove from the site, or dispose of all hazardous waste on site within 90 days of receipt of the final volume of hazardous waste, or within 90 days of the approval of the closure plan, whichever is later. Figures 1 and 2 illustrate the closure timelines for permitted and interim status facilities (with approved plans), respectively. You will see significant time differences in requirements for land-based units and facilities with only tanks, containers, and incinerators.

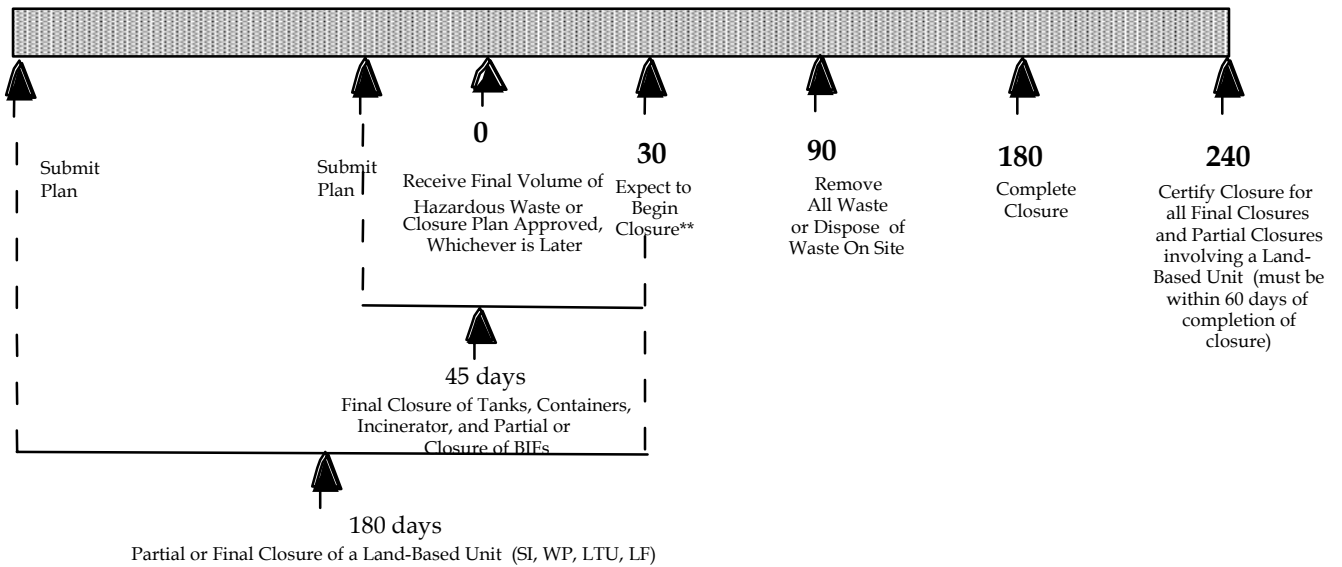
Once partial or final closure is initiated, closure activities must be completed within 180 days of receiving the final volume of hazardous waste (§264/265.113(b)). For interim status facilities, closure activities must be completed within 180 days of approval of the closure plan, or within 180 days of receiving the final volume of hazardous waste, whichever is later.

Figure 1
CLOSURE TIMETABLE FOR PERMITTED FACILITIES and INTERIM STATUS FACILITIES WITH APPROVED CLOSURE PLANS*



* This figure does not take into account Delay of Closure
 ** If the unit has the capacity to receive additional wastes, begin closure no later than one year after final volume of waste is received.

Figure 2
CLOSURE TIMETABLE FOR INTERIM STATUS FACILITIES WITHOUT APPROVED CLOSURE PLANS*



* This figure does not take into account Delay of Closure
 ** If the unit has the capacity to receive additional wastes, begin closure no later than one year after final volume of waste is received.

EXTENSIONS

When the closure activities will take longer than 90 (or 180) days to complete, the RA may grant extensions to the 90- and 180-day deadlines, provided the facility or unit has the capacity to accept hazardous or nonhazardous waste (§264/265.113(a) and (b)).

DELAY OF CLOSURE

A facility meeting specific eligibility criteria in §264/265.113(d) and (e) may delay closure and continue to receive nonhazardous waste following the final receipt of hazardous waste. This provision is only available to certain landfills, surface impoundments, and land treatment units. It is not available to units such as storage or treatment tanks, container storage areas, waste piles, incinerators, land treatment units, or units that have lost interim status.

In addition, all owners and operators of units that choose to delay closure will continue to be subject to all applicable Subtitle C requirements and must ensure that the co-disposal of nonhazardous waste with hazardous waste will in no way endanger human health and the environment.

2.5 DISPOSAL OR DECONTAMINATION OF EQUIPMENT, STRUCTURES, AND SOILS

During partial and final closure periods, all contaminated equipment, structures, and soils must be properly disposed of or decontaminated unless otherwise specified in the unit-specific closure requirements (§264/265.114). During this process the owner and operator may become a generator of hazardous waste and, therefore, become subject to the requirements in Part 262. Furthermore, hazardous waste management units built as part of the closure process must be permitted or comply with the generator accumulation unit provisions in §262.34.

2.6 CERTIFICATION OF CLOSURE

According to §264/265.115, the owner and operator must submit to the RA (by registered mail) a certification that the hazardous waste management unit or facility has closed in accordance with the specifications in the approved closure plan. This submittal must take place within 60 days of completion of closure of each regulated unit and within 60 days of the completion of final closure. The certification must be signed by the owner and operator and by an independent, registered, professional engineer. The RA may request supporting documentation to verify the validity of the engineer's certification.

2.7 SURVEY PLAT

The owner and operator must submit to the RA or local zoning authority a survey plat indicating the location and dimensions of the hazardous waste units (§264/265.116). The survey plat must be submitted no later than the submission of certification of closure of each hazardous waste

disposal unit. The survey plat provides important information on closed units in the event that the facility is sold or abandoned.

2.8 CLEAN CLOSURE

Generally, two types of closure are allowed: closure by removal or decontamination, referred to as "clean closure," and closure with the waste in place. If all hazardous waste and contaminants, including contaminated soils and equipment, can be removed from the site or unit at closure, the site or unit can be clean closed and post-closure care is not required. In order to demonstrate clean closure, the owner and operator must show that levels of hazardous contaminants do not exceed EPA-recommended exposure levels, or clean closure levels.

EPA has not specified contaminant levels for clean closure. "How clean is clean" is a site-specific decision made by the EPA Region or authorized state. Limited amounts of hazardous constituents may remain in media after clean closure provided they are present at concentrations below which they may pose a risk to human health and the environment. The implementing agency can identify clean closure based on established, protective, risk-based levels (e.g., maximum contaminant levels (MCLs) under the Safe Drinking Water Act), or site-specific risk-based levels. EPA clarified its policies on risk-based clean closure in a March 16, 1998, memorandum (Cotsworth to EPA Regional Advisors).

2.9 POST-CLOSURE

EPA developed the post-closure standards for land disposal units (LDUs) that leave hazardous waste in place at closure. These include landfills, land treatment units, surface impoundments, and other units where equipment, structures, and soils cannot be fully decontaminated (i.e., clean closed). Facilities where waste remains in place after the completion of closure must conduct monitoring and maintenance activities to ensure the integrity of the liners and leak detection systems and prevent or control releases to the environment. Owners and operators of facilities that require post-closure care must comply with both the general post-closure regulations in §264/265.116 through 264/265.120, and the unit-specific post-closure requirements in Part 264/265, Subparts K, L, M, N, and X. These facilities also must obtain permits for the post-closure period and comply with the groundwater monitoring requirements of Part 264/265, Subpart F.

POST-CLOSURE PERMITS

Owners and operators of certain land disposal units and units that cannot clean close must obtain a permit for the post-closure period, thus ensuring that appropriate monitoring and maintenance activities will be conducted. Post-closure permits apply to owners and operators of surface impoundments, landfills, land treatment units, and waste piles that received waste after July 26, 1982, or that certified closure after January 26, 1983, unless they demonstrate closure by removal pursuant to §270.1(c)(5) and (6). At the discretion of the implementing agency, an owner or

operator may obtain, in lieu of a post-closure permit, an enforceable document that imposes the requirements in §265.121 (§270.1(c)(7)).

The denial of a permit for the active life of a hazardous waste management facility (i.e., the period from first receipt of hazardous waste until certification of final closure) does not affect the requirement to obtain a post-closure permit. A storage unit (e.g., a tank) that cannot be clean closed and is closed as a landfill must obtain either a post-closure permit or an enforceable document that imposes post-closure permit requirements.

POST-CLOSURE CARE

Post-closure care consists of two primary responsibilities: groundwater monitoring and maintaining waste containment systems (§264/265.117). The post-closure period normally lasts for 30 years after the date closure is completed but may be amended (e.g., extended or shortened) by the RA. Groundwater monitoring and reporting must be conducted in accordance with Part 264/265, Subparts F, K, L, M, and N.

Waste containment systems must be monitored and maintained in accordance with the applicable regulatory requirements of Part 264/265, Subparts K, L, M, N, and X. Post-closure use of the property may not disturb the final cover, liners, or other containment or monitoring systems unless such disturbance is necessary for the proposed use or to protect human health and the environment (see unit-specific closure requirements in Part 264/265, Subparts I through O). Post-closure activities include maintaining the integrity of the cap or final cover and ensuring that monitoring equipment works properly during the post-closure period.

POST-CLOSURE PLAN

Owners and operators must prepare a post-closure plan for units that do not clean close. The post-closure plan requirements in §264/265.118 include:

- a description of planned groundwater monitoring activities
- a description of planned maintenance activities
- the name, address, and telephone numbers of the person or office to contact during the post-closure period.

Permitted facilities must submit the post-closure care plan as part of the post-closure permit application. Thus, any amendments to the plan require a permit modification. Owners and operators of interim status facilities must submit a post-closure plan to the RA at least 180 days before the date they expect to begin partial or final closure of the first hazardous waste disposal unit. If a facility's interim status is terminated, or the RA issues a judicial decree or order under RCRA §3008 to cease receiving wastes or close, the owner and operator must submit the post-closure plan to the RA within 15 days (§265.118(e)(1) and (2)).

POST-CLOSURE NOTICES

Within 60 days after closure certification by a registered engineer or qualified soil scientist, the local zoning or land use authority and the RA must receive a record of the type, location, and quantity of hazardous wastes in each disposal unit (§264/265.119). For wastes disposed of prior to January 12, 1981, the owner and operator must provide a "best estimate" for the quantity of waste in each unit.

Also within 60 days of closure certification of each hazardous waste disposal unit, a notice must be placed in the property deed and recorded. This notice must state that the land was used for hazardous waste management; that the use of the land is restricted per Part 264/265, Subpart G; and that the survey plat and record of closure were submitted to the local zoning authority and the RA.

CERTIFICATION OF COMPLETION OF POST-CLOSURE CARE

No later than 60 days after completion of the established post-closure care period for each hazardous waste disposal unit, the owner and operator must submit to the RA by registered mail a certification that the post-closure care period was performed in accordance with the specifications established in the approved closure plan (§264/265.120).

ALTERNATIVES TO POST-CLOSURE PERMITS

The RCRA closure standards mandate post-closure care and a post-closure permit when the owner and operator closes a disposal unit or leaves hazardous waste in place after the facility closes. Obtaining a post-closure permit and implementing corrective action through that permit is difficult and in some cases impossible because the facility cannot meet the requirements to obtain a post-closure permit in RCRA §3005(c) (see the module entitled RCRA Corrective Action). On October 22, 1998, EPA addressed this issue by revising the closure and post-closure requirements to allow the use of various authorities to impose requirements on non-permitted LDUs requiring post-closure care (63 FR 56710).

The new guidelines remove the requirement to address post-closure care requirements through a post-closure permit in all instances, thereby giving the Agency the ability to use the most appropriate and efficient remedial authorities, such as enforcement orders, available at a closing facility. However, any alternative authority used in lieu of a post-closure permit must provide the same substantive requirements that apply to units receiving post-closure permits. Additionally, facilities that close with waste in place and use a non-permit mechanism in lieu of a permit to address post-closure responsibilities will have to meet three important requirements that apply to permitted facilities: (1) the more extensive groundwater monitoring required in Part 264, as it applies to regulated units; (2) the requirement to submit information about the facility in §270.28; and (3) facility-wide corrective action for solid waste management units as required in §264.101 (§265.121).

The October 22, 1998, final rule also provided flexibility for situations in which a regulated unit (e.g., landfill) is situated among solid waste management units (SWMUs), a release has occurred, and both the regulated unit and SWMU are suspected of contributing to the release. In

these scenarios, the implementing agency may replace a regulated unit's Subparts F, G, and H requirements (i.e., groundwater monitoring, closure, and financial assurance) with site-specific cleanup standards. By allowing this substitution, EPA hopes to eliminate problems encountered when both regulated unit standards and SWMU corrective action provisions apply at a site.

3. SPECIAL ISSUES

Interim status terminates for facilities that fail to comply with the applicable provisions of §270.73(a) through (g), which establish deadlines for the submission of permit applications. For example, an incinerator that received interim status prior to November 8, 1984, had its interim status terminated on November 8, 1989, unless the owner or operator of the facility submitted a Part B application for a RCRA permit by November 8, 1986. An interim status facility that fails to meet any applicable portion of §270.73 falls into the loss of interim status category. The owner or operator of the facility must then submit a closure plan in accordance with §265.112(d) and initiate final closure activities.