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**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Parts 260, 261, 262, 264, 265, 270, 271, and 302**

**[EPA/OSW-FR-91-008/FRL-3856-7]**

**RIN 2050-AC43**

## Identification and Listing of Hazardous Waste; Wood Preserving

**AGENCY:** Environmental Protection Agency.

**ACTION:** Final rule.

**SUMMARY:** The Environmental Protection Agency is today amending its regulations under the Resource Conservation and Recovery Act (RCRA) by listing as hazardous three categories of wastes from wood preserving operations that use chlorophenolic, creosote, and/or inorganic (arsenical and chromium) preservatives. Today's rule finalizes portions of a proposed rule published by EPA on December 30, 1988 (53 FR 53282).

The listings finalized today include wastewaters, process residuals, preservative drippage, and spent preservatives from wood preserving processes at facilities that use or have previously used chlorophenolic formulations, facilities that use creosote formulations, and facilities that use inorganic preservatives containing arsenic or chromium. With respect to wastes from surface protection processes that use chlorophenolic formulations (proposed waste F033), EPA is deferring a final listing until more information can be collected on which to support a decision. These wastes may, however, exhibit the Toxicity Characteristic and consequently, may already be regulated as hazardous waste under subtitle C.

Today's rule includes permitting and interim status standards for drip pads used to assist in the collection of treated wood drippage. These standards include requirements for drip pad design and operation, inspections, and closure. Under today's rule, generators may be eligible for a 90-day generator exemption from permitting if their pads meet all of the technical standards for drip pads.

The effect of listing F032, F034, and F035 will be to subject them to the hazardous waste regulations of 40 CFR parts 124, 262 through 266, 268, 270, and 271; the notification requirements of section 3010 of RCRA; and the notification requirements under CERCLA section 103.

**DATES:** Today's final rule will become effective on June 6, 1991. For compliance deadlines, see section VIII of this preamble. The information collection requirements contained in the following paragraphs have not been approved by the Office of Management and Budget (OMB) and are not effective until OMB has approved them: § 261.35(b)(1), (b)(3), (c); § 262.34(a)(2)(i), (a)(2)(ii); § 264.571(a), (b); § 264.572(i), (k), (m)(1)(i), (m)(1)(iv), (m)(3), (o); § 264.573(a); § 264.574(c)(1)(i), (c)(1)(ii); § 265.441(a); (b); § 265.443(g), (i), (k), (m)(1)(i), (m)(1)(iv), (m)(3), (n); § 265.444(a); § 265.445(c)(1)(i), (c)(1)(ii); § 270.22(a), (b), (c). A **Federal Register** Notice will be published in which the effective dates for these regulations will be established.

**ADDRESSES:** The official record for this rulemaking is identified as Docket Number F-90-WPWF-FFFFF and is located in the EPA RCRA Docket, room M2427, 401 M Street SW., Washington, DC 20460. The public must make an appointment in order to review docket materials by calling (202) 475-9327, for the RCRA portion of the docket, or (202) 382-3046 for the CERCLA portion of the docket. Both dockets are available for inspection from 9 a.m. to 4 p.m., Monday through Friday, excluding holidays. The public may copy up to 100 pages from the docket at no charge. Additional copies cost $0.15 per page.

**FOR FURTHER INFORMATION CONTACT:** The RCRA/CERCLA Hotline at (800) 424-9346 or, in the Washington, DC area, at (202) 382-3000. For technical information on the RCRA portion of the rule contact Mr. Ed Freedman or Mr. Edwin F. Abrams of the Office of Solid Waste (OS-333) at (202) 382-4770. For technical information on the CERCLA portion of the rule, contact Mr. Daniel Chellaraj, Response Standards and Criteria Branch, Emergency Response Division, Office of Emergency and Remedial Response (OS-210) at (202) 382-2344. Both offices are located at the U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460.

**SUPPLEMENTARY INFORMATION:** The contents of today's preamble are listed in the following outline:

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### I. Legal Authority

These regulations are being promulgated under the authority of sections 2002(a) and 3001(b) and (e)(1) of the Solid Waste Disposal Act, as amended, 42 U.S.C. 6912(a) and 6921(b) and (e)(1) (commonly referred to as RCRA), and section 102(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) 42 U.S.C. 9602(a).

### II. Background

Pursuant to section 3001 of subtitle C of the Resource Conservation and Recovery Act (RCRA), this notice lists as hazardous certain wastes generated from wood preserving processes that use either chlorophenolic, creosote, and/or inorganic (arsenical and chromium) preservatives. EPA proposed to list these and other wastes generated at wood preserving and surface protection facilities as hazardous in a notice published in the **Federal Register** on December 30, 1988 (see 53 FR 53282). Certain other wastes from wood preserving are already regulated as hazardous waste under RCRA. An overview of past RCRA regulatory

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actions taken by the Agency that affect the wood preserving industry was provided in the preamble to the proposed listing (see 53 FR 53283).

Today's listing for wastes from wood preserving processes that use or have previously used pentachlorophenol formulations (F032) partially fulfills the requirements of section 3001(e)(1) of RCRA, added by the Hazardous and Solid Waste Amendments (HSWA) of 1984. This section requires EPA to list, as appropriate, wastes containing chlorinated dioxins or chlorinated dibenzofurans, within certain specified deadlines.

EPA proposed four listings pertaining to wastes from wood preserving and surface protection, including two listings for pentachlorophenol wastes, on December 30, 1988. Today's notice promulgates three of the four listings, including one of the listings for chlorophenolic wastes, with some modifications.

EPA notes that today's listings do not in any way affect the present listing for hazardous waste number K001, bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol. K001 wastes are not included in the listings being promulgated today. Today's listings supplement the existing K001 listing and increase the quantity and numbers of types of wastes from wood preserving processes regulated under subtitle C of RCRA.

Today, EPA is amending § 261.31 by adding three broad categories of wastes from wood preserving processes that use organic and/or inorganic preservatives to the list of wastes from non-specific sources. These wastes (which were described fully in the preamble to the proposed rule, see 53 FR 53288–53291) include wastewaters, process residuals, treated wood drippage (i.e. drippage from treated wood), and spent preservative. Table 1 lists the constituents of concern that constitute the basis for listing the three categories of wastes. These constituents typically occur in the wastes at concentrations that pose a threat to human health and the environment if the wastes are mismanaged. EPA has described the data documenting the hazards posed by these wastes in the preamble to the proposed rule (see 53 FR 53284 and 53291–53308). Because these wastes are capable of posing a threat to human health and the environment when improperly treated, stored, transported, disposed, or otherwise handled, EPA is listing them as hazardous. Consequently, as a result of today's final rule, these wastes are subject to the applicable requirements of 40 CFR parts 124, 260 through 266, 268, 270, and 271.

TABLE 1.—CONSTITUENTS OF CONCERN

| | F032 | F034 | F035 |
|---|---|---|---|
| **Chlorophenols** | | | |
| Pentachlorophenol | X | | |
| **PAHs** | | | |
| Benz (a) anthracene | X | X | |
| Benzo (a) pyrene | X | X | |
| Benzo (k) fluoranthene | | X | |
| Dibenz (a,h)anthracene | X | X | |
| Indeno (1,2,3-c,d) pyrene | X | X | |
| Naphthalene | | X | |
| **Dioxins and Furans** | | | |
| Tetrachlorodibenzo-p-dioxins | X | | |
| Pentachlorodibenzo-p-dioxins | X | | |
| Hexachlorodibenzo-p-dioxins | X | | |
| Heptachlorodibenzo-p-dioxins | X | | |
| Tetrachlorodibenzofurans | X | | |
| Pentachlorodibenzofurans | X | | |
| Hexachlorodibenzofurans | X | | |
| Heptachlorodibenzofurans | X | | |
| **Inorganics** | | | |
| Arsenic | X | X | X |
| Chromium | X | X | X |
| Lead | | | X |

**Note:** X indicates that constituents have been found to be present at levels of regulatory concern in individual listings.

## III. Summary of the Regulation

### *A. Overview of the Proposed Rule*

The notice published on December 30, 1988 proposed to add the following four listings pertaining to wastes from wood preserving and surface protection processes to the list of wastes from non-specific sources:

F032—Wastewaters, process residuals, preservative drippage, and discarded spent formulations from wood preserving processes at facilities that currently use or have previously used chlorophenolic formulations (except wastes from processes that have complied with the cleaning or replacement procedures set forth in § 261.35 and do not resume or initiate use of chlorophenolic formulations). This listing does not include K001, bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.

F033—Wastewaters, process residuals, protectant drippage, and discarded spent formulations from wood surface protection processes at facilities that currently use or have previously used chlorophenolic formulations (except wastes from processes that have complied with the cleaning or replacement procedures set forth in § 261.35 and do not resume or initiate use of chlorophenolic formulations).

F034—Wastewaters, process residuals, preservative drippage, and discarded spent formulations from wood preserving processes at facilities that currently use creosote formulations. This listing does not include K001, bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.

F035—Wastewaters, process residuals, preservative drippage, and discarded spent formulations from wood preserving processes at facilities that currently use inorganic preservatives containing arsenic or chromium. This listing does not include K001, bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.

All four of the listings were proposed to be designated as toxic (T) hazardous waste.

The scope of the proposed F032 listing included wastes from creosote and inorganic processes that currently use or previously used chlorophenolic formulations because these wastes may be cross-contaminated with chlorinated dioxins and/or dibenzofurans. Similarly, the F033 listing covered wastes from surface protection processes that currently use or previously used chlorophenolic formulations.

EPA included the cross-contaminated wastes in the F032 and F033 listings because we concluded that such cross-contamination is likely to occur under two circumstances:

(1) When creosote or inorganic processes are located at a plant where chlorophenolic preservatives are or have been used; and

(2) When equipment used for a non-chlorophenolic process has been previously employed in a chlorophenolic process.

EPA anticipated that some generators might benefit from provisions for demonstrating that the potential for cross-contamination had been eliminated through proper cleaning and/or replacement of contaminated equipment. For example, surface protectors can change to protectants or formulations that are not addressed by the listings. With standards for proper equipment cleaning and replacement, EPA anticipated that the wastes generated after changing protectants could be removed from subtitle C coverage, if they also did not exhibit any of the characteristics of hazardous waste. The proposal, therefore, included standards for proper cleaning and replacement of equipment, documentation of the cleaning and replacement procedures, and certification that the procedure used followed a plan previously approved by the Regional Administrator of State Director.

Another important component of the December 1988 proposed rule was the technical standards for drip pads, which assist in collection and containment of

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treated wood drippage. Typically, drippage is generated at two points in the wood preserving process: (1) Immediately after the treated wood is removed from the treating vessel (i.e., retort or tank) while it is held in an area often called the "kick-back" area and (2) during the time that the wood is held in storage after treatment is complete. At those plants that collect drippage, a concrete drip pad, sometimes equipped with sumps, is typically used. In developing the proposed rule, EPA, therefore, included interim status and permitting standards for drip pads.

The proposed rule defined a drip pad as "* * * a curbed, impermeable base installed to assist collection of drippage and accumulated precipitation in drip or kick-back areas at wood preserving facilities or in treated wood storage yards" (see 53 FR 53325). Under the proposed rule, all drip pads were to have associated collection systems or sumps that conform to the 40 CFR parts 264 and 265 standards for tanks. The standards for drip pads included technical requirements for containment, a general operating requirement designed to prevent tracking of hazardous waste and hazardous waste constituents off the drip pad, inspection requirements, and closure requirements. While EPA regulations generally require that RCRA permits be obtained for all hazardous waste management units, the proposed rule provided an extension of the existing § 262.34 exemption for generators who store hazardous waste in tanks or containers for no more than 90 days. Under this proposed exemption, owners and operators of drip pads used in handling treated wood drippage would not have been required to obtain RCRA permits for their drip pads provided that they remove the waste from the pad at least every 90 days and comply with the 40 CFR part 265 interim status standards for drip pads.

EPA proposed the F032 and F033 listings in response to the Hazardous and Solid Waste Amendments (HSWA) of 1984. HSWA required EPA to consider listing dioxin and furan-containing wastes as hazardous and the listings for F032 and F033 that were proposed described dioxin and furan-containing wastes. Thus, appropriate modifications to the part 271 list of regulations implementing the Hazardous and Solid Waste Amendments of 1984 were also included in the proposed rule. Finally, the proposed rule included provisions for designating the four categories of waste streams as CERCLA hazardous substances and established proposed reportable quantities for the wastes.

*B. Overview of the Final Rule*

Today's rule adds to the list of wastes from non-specific sources three of the four listings proposed on December 30, 1988, with some modification. These are:

F032—Wastewaters, process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that currently use or have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with § 261.35 of this chapter and where the generator does not resume or initiate use of chlorophenolic formulations). This listing does not include K001, bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.

F034—Wastewaters, process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use creosote formulations. This listing does not include K001, bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.

F035—Wastewater, process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use inorganic preservatives containing arsenic or chromium. This listing does not include K001, bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.

These listings are the same as those proposed for F032, F034, and F035 (for a complete description of the wood preserving processes affected by today's listing, see 53 FR 53287 et seq. EPA has deleted the term "discarded" from the listings, as it was used in reference to spent formulations. The reason for this change is that a spent material need not actually be discarded to be a solid waste. This change does not change the scope of the listing in any way. Spent formulations normally include drippage. The listing language refers to drippage separately, however, in order to be clear. Throughout this preamble and rule, the term "drippage" refers to excess preservative that is kicked back from the wood following treatment. It does not apply to precipitation that drips from a stack of wood in the storage yard when it falls from wood that had ceased to drip on the process area drip pad before being moved to the storage yard. As explained later in this preamble and rule, drippage must cease on the drip pad before the treated wood can be moved to the storage yard. In addition, the word "generated" has been added immediately before "at plants" in each listing to further clarify that only wastes generated at wood preserving plants are included in today's final listings. Finally, the term "plant" has been substituted for "facility" because the term "facility" has a specific meaning under 40 CFR 260.10, which is not applicable here.

Today's rule does not include a final listing for F033, wastewaters, process residuals, protectant drippage, and spent formulation from wood surface protection processes at facilities that use chlorophenolic formulations (for a complete description of the surface protection processes proposed to be affected by the F033 listing, see 53 FR 53288). After considering the comments received and evaluating the data which provided the basis for the proposed F033 listing, EPA has concluded that it has insufficient information at this time on which to base a final listing decision for F033. The Agency has, therefore, decided to defer the F033 listing until such time as further information concerning waste quantities and waste characterization can be collected and evaluated. EPA will conduct a program of site visits in order to collect additional information and better characterize the surface protection industry and the waste generated by surface protection processes. The Agency will take action on the proposal to list F033 when this additional data collection is complete. EPA encourages commenters to submit data to the Agency that may aid in analysis of the F033 listing.

Today's rule makes several modifications to the technical standards proposed for drip pads, under new subpart W of parts 264 and 265, to account for issues raised by commenters and to ensure that all drip pads at wood preserving plants provide the same level of protection, whether permitted under part 264 or exempt from permitting under the 90-day accumulator provisions of § 262.34 (the technical standards for drip pads were included as subpart T in the proposed rule). The specific provisions of today's rule are discussed in detail later in this preamble.

Finally, EPA has removed the prescriptive technical standards for equipment cleaning and replacement from the rule and replaced them with a general provision that allows the F032 waste code to be deleted from F034 or F035 wastes generated at plants that previously used chlorophenolic formulations. Thus, rather than carrying two waste codes (e.g., F032 and F034 or F035), these wastes will carry only one code (F034 or F035). This provision is available to generators who comply with certain performance standards for

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equipment cleaning and replacement, recordkeeping requirements, and certification requirements, and provided that the generator does not resume or initiate use of chlorophenolic preservatives.

EPA recognizes that today's rule affects a large number of small businesses, many of which may not have previously been subject to regulation under RCRA and are therefore unfamiliar with Federal and state programs for hazardous waste management. To assist the regulated community with RCRA compliance, EPA provides informational assistance through its RCFA/CERCLA Hotline. The regulated community can contact the Hotline, toll free, at (800) 424–4396 (or, in the Washington, DC area at (202) 382–3000) daily, exclusive of holidays and weekends, between the hours of 8 a.m. and 4 p.m., Eastern Standard or Daylight Time. Hotline personnel are able to answer questions regarding the regulations and provide any written materials requested. Additionally, EPA staff (as listed at the opening of this Notice) are available to answer technical questions regarding the rule, also between the hours of 8 a.m. and 4 p.m. daily.

The following sections discuss all of the technical and administrative aspects of today's final rule and describe changes that have been made to the proposed rule in response to comments received. EPA's response to certain comments are also presented in this section because they constitute the basis for changes made to the proposal. Elsewhere in today's preamble (see section IV), we provide EPA's response to comments on six major topics addressed by commenters. A comprehensive summary of all comments received and the Agency's response to the significant comments is provided as part of the public docket to this rule and is available for inspection.

1. Requirements for Drip Pads

As in the proposed rule, today's rule includes technical standards under 40 CFR parts 264 and 265 for drip pads used to assist in the collection, storage, or management (treatment prior to reuse or recycling of preservatives) of treated wood drippage. Because today's rule explicitly prohibits moving treated wood off of the drip pad until drippage has ceased, EPA anticipates that owners and operators will elect to construct drip pads only in process or kick-back areas (i.e., immediately adjacent to treatment tanks or cylinders). Drip pads may also be constructed in long term storage yards, in accordance with the applicable technical standards, if it is anticipated that drippage from treated wood will be generated in the storage yard.

EPA is aware that past releases of drippage and other residuals associated with routine practices in the wood preserving industry have resulted in considerable environmental contamination at some sites. Before building new drip pads, generators should assess the extent of any existing contamination and conduct appropriate clean-up activities. Where such contamination is significant, EPA Regional or state authorities may require clean up in the future under Federal or state CERCLA authority. Additionally, EPA Regional authorities may require clean-up under RCRA section 7003, or, if the facility is required to obtain a RCRA permit in the future, under section 3004(u) and/or section 3004(v) of RCRA. EPA will be continuing to assess whether other authorities might be available to address this problem.

Should generators fail to clean up the process area where past drippage has accumulated prior to constructing a new drip pad, drip pads will likely have to be destroyed and excavated in the event that clean-up is required. Generators should also note that certain states have enacted legislation requiring certification that all environmental contamination has been eliminated from a property before real estate transactions can be completed. For these reasons, EPA urges generators to take steps to assess the extent of potential contamination at their plant sites and to work with the appropriate EPA Regional and/or state authorities to ensure proper cleanup before building new drip pads.

In response to comments on the proposed rule, EPA has made changes to the technical standards for drip pads. These changes are intended to address issues concerning drip pad design and requirements for impermeability, identified by commenters. They provide for equivalent levels of protection under parts 264 and 265. The following paragraphs discuss each of the sections of subpart W (parts 264 and 265).

*Section 264.570 (265.440)—Applicability.* The subpart W standards are applicable to all drip pads that are used to handle hazardous waste from wood preserving operations. This section provides for exemptions from the requirements for run-on and run-off controls, as appropriate, for drip pads that are enclosed in structures or covered (and hence, protected from precipitation in a manner that prevents run-on and run-off). A drip pad, according to the definition added to 40 CFR 260.10, is: "an engineered structure consisting of a curbed, free-draining base, constructed of non-earthen materials and designed to convey preservative kick-back or drippage from treated wood, precipitation and surface water run-on to associated collection systems at wood preserving plants."

Today's rule distinguishes between new and existing drip pads by defining new drip pads as those constructed after December 6, 1990, and those for which owners and operators have not yet entered into binding financial or other agreements for construction. Existing drip pads are defined as those in use as of today and those for which owners or operators have entered into binding financial or other agreements for construction.

*Section 264.571 (265.441)—Assessment of Existing Drip Pad Integrity.* EPA is aware that there are some drip pads in use that meet most of the standards for design and operation but may not have liners and leak detection systems. In order to avoid unnecessary destruction and excavation of these pads, today's rule provides that such pads, if they are capable of meeting all of the requirements for new pads except those for liners and leak detection systems, may continue to operate without upgrading for a period of up to 15 years (depending on the age of the drip pad), when also retrofitted with an impermeable coating, sealant, or other material.

The purpose of the requirements for liners and leak detection systems beneath drip pads is to provide secondary containment beneath the pad (which provides primary containment). This secondary containment serves as protection against leakage reaching the soil beneath the pad, in the event of an undetected leak. Commenters pointed out that concrete, a common material used in drip pad construction, is not impermeable. Further, concrete is subject to cracking and degradation associated with heavy vehicular traffic such as forklifts. Such cracking may occur underneath the top layer and would not be detected during inspections. However, EPA believes that a properly installed and maintained impermeable coating or cover on the surface of the drip pad is a viable temporary substitute for bottom liners and leak detection systems.

To ensure that existing pads are structurally sound and capable of containing hazardous waste, subpart W requires that owners and operators of existing drip pads complete an assessment of the integrity of their drip pads with regard to the subpart W standards. The assessment must be

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complete on the effective date of today's rule. The purpose of the assessment is to have the owner/operator document that (1) the pad is capable of containing drippage by preventing run-on and run-off as well as penetration through the pad and (2) the pad meets all of the subpart W requirements except those for liners and leak detection systems. Owners and operators must maintain a copy of the results of the assessment on file at the facility. Additionally, the rule requires that the written assessment be reviewed and approved by an independent qualified, registered professional engineer. This assessment must be reviewed and re-certified annually until the drip pad is brought into compliance with all of the requirements of subpart W. Owners and operators should be aware, however, that such certification (and the other certifications required in this rulemaking) will in no way be deemed to be compliance with the regulations.

Section 264.571(c) (265.441(c)) allows owners and operators to establish a schedule for upgrading drip pads to meet the requirements for bottom liners and leak detection systems based on the age of the drip pad. Today's rule states that all upgrades, repairs, or modifications necessary to bring drip pads of known and documented age into compliance with all subpart W requirements, including those for bottom liners and leak detection systems, must be completed no later than two years after the effective date of this rule or by the time the drip pad is 15 years of age, whichever is later. For drip pads of unknown or undocumented age, the date for completing all upgrades, repairs or modifications will be set based on the age of the wood preserving plant. For drip pads for which the age of the pad or the age of the plant cannot be documented, upgrades, repairs and modifications must be completed within eight years of the effective date of this rule. However, facilities that are more than seven years old must comply with all design and operating standards by the time the facility reaches 15 years of age or no later than two years after the effective date of this rule, whichever is later.

EPA has selected 15 years of age as the limit for making repairs and upgrades because information from the wood preserving industry indicates that 15 years is a somewhat conservative estimate of a reasonable life-expectancy for a well-built drip pad. After 15 years, drip pads may begin to deteriorate significantly and often must be replaced or undergo extensive repairs in order to maintain containment integrity.

In developing today's rule, EPA considered several options for establishing a compliance period. For example, EPA considered establishing a fixed period of 15 years for all existing drip pads. The provisions of today's rule were selected because they account for wide variability in the ages of existing drip pads.[1] EPA intends that this provision allow for reasonable schedules to be established for drip pad modification and anticipates that most will need to be completed in time periods considerably shorter than 15 years.

Today's rule anticipates three different compliance circumstances for existing drip pads:

1. Pads that are cracked and leaking, or otherwise unfit for use must be removed from service on the effective date of today's rule. Those that can be repaired may be put back into service after repairs are complete and upgraded in accordance with the appropriate schedule constraints, based on the age of the pad. Those that operate after the effective date and cannot or will not be repaired must be closed in accordance with § 264.574 (§ 265.445) and all applicable requirements of part 264/265 subpart G (Closure and Post-Closure).

2. Pads that are not unfit for use and for which the age can be documented may remain in use after the integrity assessment is complete. All upgrades must be complete either by the time the pad is 15 years old or by two years after the effective date of this rule, whichever is later.

3. Pads that are not unfit for use for which the age cannot be documented may remain in use after the integrity assessment is complete. All upgrades must be complete within eight years after the effective date of this rule. However, if the wood preserving plant (rather than the pad) is known to be more than seven years old, all upgrades must be completed by the time the facility is 15 years old or by two years after the effective date of this rule.

During the period between the effective date of today's rule and the date when repairs and modifications must be complete, owners and operators must re-evaluate the initial drip pad assessment, make any necessary changes, and have the updated assessment reviewed and certified by an independent, qualified registered professional engineer annually. The certified assessment must be maintained at the facility and must include documentation of the age of the drip pad or, where drip pad age cannot be definitively established, the information that constitutes the basis for establishing the compliance schedule. Also during this period, owners and operators are subject to all provisions of subpart W pertaining to operating practices, recordkeeping, inspections, and closure, including the provisions for repairing any conditions that have led or could lead to leakage from the pad. No later than two years before the date that all upgrades will be completed, owners and operators must prepare a plan for upgrading the drip pad to meet all design standards. This plan must be certified by an independent, qualified registered professional engineer and must be submitted to the Regional Administrator or State Director. The plan should provide sufficient detail to allow the Regional Administrator or State Director to make a determination that the pad will meet all of the requirements of subpart W upon completion. The plan must also include information documenting the age of the drip pad or, where the age cannot be established, information constituting the basis for establishing the compliance schedule.

EPA recognizes that, at some wood preserving plants, new drip pads have recently been built that may continue to be protective of human health and the environment, although they may not have synthetic liners and leak detection systems, beyond the date established for compliance with these requirements. Consequently, today's rule allows for owners and operators of such facilities to petition the Regional Administrator for a reasonable extension of the deadline for compliance with liner and leak detection requirements. In deciding whether to grant such extensions, the Regional Administrator will be concerned with whether the drip pad is in compliance with all of the requirements of § 264.571, except those for liners and leak detection systems, and that the pad design and operation are protective of human health and the environment.

As stated previously, EPA has developed the requirements of § 264.571 (265.441) in order to ensure that all existing drip pads in use after the effective date of the rule are capable of containing any drippage, contaminated precipitation, or other waste that may fall on them and minimizing releases to the soil, ground water or surface water. The rule also allows owners and operators ample time to upgrade their

[1] See RCRA section 3004(a), stating that EPA "* * * should, where appropriate, distinguish in [performance] standards between requirements appropriate for new facilities and for facilities in existence on the day of promulgation of such regulations."

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drip pads as needed to comply with the design and operating requirements of Subpart W without closing drip pads, except where necessary to prevent releases to the environment. These requirements ensure that all drip pads will be brought into compliance with the same protective standards before any failure of the drip pad is likely to occur. Numerous commenters responding to the proposed rule stated that owners and operators of drip pads would require more than six months to bring existing drip pads into compliance. Today's rule addresses their concerns while preventing operation of any pad that is likely to fail, causing a release of hazardous waste to the soil, ground water, or surface water.

*Section 264.575 (§ 265.442)—Design and Installation of New Drip Pads.*

Under § 265.442, owners and operators must ensure that any new drip pads that will be operated in accordance with the § 265.34 exemption from permitting for 90-day accumulation, are built and operated in compliance with all of the requirements of subpart W. For facilities that do not have drip pads, generators should note that, as of the effective date of today's rule, treated wood drippage will be subject to all of the requirements of subtitle C of RCRA and cannot be disposed of on the land except in a properly permitted land disposal facility.

*Section 264.572 (265.443)—Design and Operating Requirements.* The subpart W standards for drip pads included in today's rule require that drip pads consist of a base that is constructed of non-earthen materials, excluding wood and non-structurally supported asphalt. Drip pads must have a collection area or device (system) designed to collect drippage, leakage, and the water volume resulting from a 24-hour, 25-year storm. Drip pads must be sloped to free-drain treated wood drippage and any other waste that falls on the pad to the associated collection system and must have a curb or berm around the perimeter. They must be of sufficient strength and thickness to prevent failure due to physical contact, climate conditions, the stress of installation, and the stress of daily operations (e.g., stresses caused by vehicles, wood movement, or other activities).

The surface of drip pads must be sealed, coated, or covered with an impermeable material such that it is capable of containing drippage and accumulated precipitation and preventing any leakage to the underlying soil as the waste is conveyed to the collection system. Commercially available epoxy or polyurethane sealants or synthetic coatings similar to liners may be used for this purpose. Additionally, EPA anticipates that, where possible, drip pad joints will be fitted with chemically-resistant water stops to ensure an impermeable surface.

To ensure that drippage and related wastes are contained on the pad and that migration of hazardous wastes from the pad to the underlying soil or ground water is prevented, the subpart W standards require that all drip pads (except certain, temporarily exempt existing pads) be underlaid with leak detection systems, as defined in 40 CFR 260.10. The standards further require that the pad and leak detection system be underlaid with a chemically-resistant synthetic liner. As stated previously, this synthetic liner will provide secondary containment to ensure that any leakage resulting from undetected cracks in the drip pad is not released to the environment.

EPA developed the revised standards in response to commenters' concerns regarding use of the term "impermeable" in the proposed rule. Commenters generally believed that EPA should define impermeable so that the regulated community would be more certain of the meaning of the standard. Rather than define a numeric standard for impermeability (or a standard for acceptable permeability), we have added technical requirements that better define acceptable design characteristics. These requirements are intended to ensure that drip pads are capable of containing all drippage and related wastes and of minimizing the likelihood of releases of hazardous waste to the soil or ground water under the pad.

Today's rule therefore requires a containment system with three components: (1) The drip pad itself, coated or covered with an impermeable material, (2) a leak detection system, and (3) a chemically resistant, synthetic bottom liner. The coated or covered drip pad provides primary containment for drippage and other hazardous waste. The drip pad must be structurally sound so that it can withstand the stresses of daily activities. Because EPA expects that drip pads will crack with time in service, subpart W includes a requirement for inspecting drip pads once every 7 days and procedures for making repairs in the event that a condition (i.e., a crack or detection of leakage) is recognized that could lead to a release of hazardous waste.

As stated previously, EPA also recognizes, however, that all cracks are not necessarily visible from the surface of the pad, or may not be recognized as significant at the time of inspection. Consequently, we have included the requirement for leak detection systems. These systems will allow owners and operators to know when drip pads are leaking, although no significant cracks have been identified. Furthermore, the synthetic liner under the leak detection system will ensure that such leakage is not released to the environment. EPA believes that this three-component containment system will ensure "impermeability" and make clear to owners and operators what EPA expects in terms of drip pad design.

In order to ensure that drip pads are designed to meet all of the design requirements of subpart W, today's rule requires that drip pads be examined and evaluated for compliance with the standards and that owners and operators obtain a certification attesting to compliance from an independent qualified, registered professional engineer. This certification must be maintained at the facility as part of the operating log and/or submitted with a RCRA permit application if such an application is filed for the drip pad.

Section 264.572 (265.443) also requires the following operating practices:

—Drip pads must be maintained free of cracks, corrosion, or deterioration that could lead to leakage.

—Drip pads and their associated collection systems must be designed and operated to collect drippage or precipitation that falls onto the pad.

—Drip pads must have run-on and run-off control to prevent contamination or surface water, unless enclosed in a structure.

—Drippage and precipitation must be removed from the collection system as necessary to prevent overflow onto the drip pad. Collection systems must be emptied as soon as possible following storms to ensure that the design capacity of the system is maintained.

—Drip pads must be operated and maintained so as to minimize tracking of hazardous waste from the pad as a result of the activities of personnel or equipment. EPA believes that in most cases, owners and operators will choose to have equipment (i.e., fork lifts, trams, etc.) dedicated to a particular drip pad in order to comply with this requirement. Procedures for cleaning equipment before leaving the pad to minimize tracking of waste or waste constituents from the pad are also acceptable.

—To ensure that inspections are as effective as possible, drip pad surfaces must be thoroughly cleaned at least once every seven days to remove accumulated residues (these residues are hazardous waste and must be managed accordingly). The

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cleaning procedure must employ detergents or techniques such as steam cleaning as necessary to remove accumulated residues; permanent stains, however, need not be removed. Owners and operators are required to document the date and time of each cleaning and record the procedure used in the facility operating log.

—Owners and operators are also required to document past operating and waste management practices in the facility operating log. This information will assist in determining the potential extent and severity of contamination at the facility site.

—Treated wood must be held on drip pads until drippage has ceased. The owner or operator must maintain records documenting compliance with this requirement.

This final requirement has been added to the rule in order to ensure that only minimal drippage occurs after the wood is moved to the storage yard. EPA believes that, in most cases, this requirement will result in deminimis levels of drippage in storage yards, making drip pads unnecessary in these areas. If in the future, EPA receives evidence that significant drippage is generated in storage yards despite this requirement, the Agency may amend today's rule to require drip pads in storage yards.

Today's rule includes requirements that drip pads (or portions of drip pads) discovered to be leaking or in danger of leaking be removed from service and repaired or closed immediately. Upon discovery of cracks or other conditions that are causing or may cause leaks, owners and operators are required to close the affected area of the pad and notify the Regional Administrator or State Director within 24 hours of the extent and nature of the damage. Within 10 working days of discovering damage, the owner or operator must provide a written notice to the Regional Administrator or State Director, together with a description of steps that will be taken to repair the damage, and the schedule for making repairs.

The Regional Administrator or State Director will review the information provided and make a determination regarding whether the pad must be taken out of service completely or partially until repairs are complete. This determination may or may not involve an inspection of the drip pad by a regional or state inspector. The pad or affected portion of the pad must remain out of service throughout this period. Once all repairs are complete, the owner or operator must notify the Regional Administrator or State Director and provide a statement, signed by an independent qualified, registered professional engineer, confirming that repairs have been completed in accordance with the plan provided. The drip pad, or affected portion of the pad, may be put back in service upon completion of the repairs. These procedures apply to all drip pads, regardless of their permitting status, throughout their active life. EPA believes that they are necessary to protect against contamination that could pose a threat to human health or the environment.

Owners and operators of drip pads are also required to comply with all of the general facility requirements of subparts C and D of part 264 (if obtaining a RCRA permit) and subparts C and D of part 265, if operating under the 90-day accumulator exemption.

*Section 264.573 (265.444)—Inspections.* Subpart W requires owners and operators to inspect drip pads weekly during operation and after storms to detect evidence of any conditions that could lead to failure. Owners and operators are required to maintain records of all inspections and to conduct inspections in accordance with a written inspection plan, as required by §§ 264.15 and 265.15.

*Section 264.574 (265.445)—Closure.* Today's rule requires that, upon closure, owners and operators remove or decontaminate all drip pad materials, liners, equipment, wastes, and contaminated soils. In the event that the owner or operator finds that all contaminated materials cannot be decontaminated or removed, the facility must be closed as a hazardous waste landfill and the owner or operator must comply with the requirements for post-closure care specified at 40 CFR 264.310 and 265.310. The closure requirements provide for post-closure care where owners or operators are unable to remove all contaminated soil. For permitted units, the requirement to have a permit continues throughout the post-closure period.

2. 90-Day Accumulator Exemption

Today's rule retains the proposed exemption for drip pads under § 262.34. Under this provision, generators of wood preserving wastes are not required to operate under interim status or to obtain RCRA permits for their drip pads provided that:

(1) All wastes are removed from the pad and the associated collection system at least once every 90 days,

(2) The drop pad meets all of the technical design and operating standards for drip pads included in subpart W of part 265, and

(3) The generator complies with certain recordkeeping requirements related to documenting proper waste removal from the drop pad.

EPA intends for all drip pads in use to meet the same technical standards and, consequently, provide the same level of protection to human health and the environment, regardless of whether they have a RCRA permit. To ensure that this will be the case, today's rule requires that drip pads operating under the part 265 interim status standards be designed, operated, and maintained to meet the same technical standards as permitted drip pads (except during the period allowed for existing drip pads to come into compliance with the requirements for liners and leak detection systems, as discussed later in this preamble).

In addition to meeting the same standards as permitted facilities, owners and operators of drip pads operating under the 90-day accumulator exemption will be required to maintain records documenting that their drip pads and associated collection systems are emptied of all wastes at least once every 90 days. The recordkeeping requirements specify that owners and operators maintain, as part of the facility operating record, a description of all procedures that will be followed to ensure that all wastes are removed from the drip pad and associated collection system at least every 90 days. Owners and operators must also document each waste removal in the operating record by recording, at a minimum, the quantity of waste removed, and the date and time of removal.

If an owner or operator fails to comply with the provisions of the 90-day generator exemption, EPA may require that they apply for and obtain a RCRA permit, and/or bring an enforcement action under RCRA section 3008. Additionally, section 7003 of RCRA provides the Agency with authority to bring suit where past or present handling, treatment, storage, disposal, or transportation of a solid or hazardous waste presents an imminent and substantial endangerment to human health or the environment.

3. Equipment Cleaning and Replacement

As stated previously, the proposed rule published on December 30, 1988, included standards for proper cleaning and replacement of wood preserving equipment that has been used in the past for the application of chlorophenolic preservatives. These standards were intended to minimize

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cross-contamination of wastes generated using other types of preservatives (i.e., creosote and inorganic formulations) with constituents typical of chlorophenolic processes. In the preamble to the proposed rule, EPA requested public comment on the need for such standards and the appropriateness of the standards proposed. In response, commenters pointed out many technical issues with the standards (see section IV.F. of this preamble). Because the extent of cross-contamination will vary considerably among facilities as a result of many site-specific variables, EPA has developed a process by which generators who previously used chlorophenolic formulations but believe their wastes are not significantly cross-contaminated may have the F032 waste code deleted from their wastes so that the wastes only carry a code of F034 or F035, as appropriate.

Today's rule includes an amendment to 40 CFR part 261 which adds § 261.35. This new section provides a process by which generators of cross-contaminated waste may have the F032 waste code deleted from their wastes, if warranted. The process involves documenting that equipment once used for pentachlorophenol processes has been cleaned or replaced in such a manner as to ensure that cross-contamination or the potential for cross-contamination has been eliminated. The provision requires that contaminated equipment be replaced, or that waste residues be removed from equipment, using an appropriate solvent, such that the final rinse shows no detection levels of contaminants at or below the lower method calibration limit in Table 1 of Method 8290 in SW-846. Water or steam constitute an appropriate solvent only for water-soluble contaminants. Alternatively, generators who have previously cleaned or replaced their equipment after switching from pentachlorophenol to another preservative and who have not resumed use of pentachlorophenol may compile documentation of the cleaning process conducted and maintain this documentation as part of the facility operating log in order to take advantage of this provision and have the F032 waste code deleted from their waste (i.e., generators who have previously cleaned or replaced equipment need not necessarily repeat the process, provided that the procedures conducted meet the requirements of today's rule and can be documented). This provision is substantially similar to that included in the proposed rule. Today's rule varies from the proposed rule, however, in that it provides for deletion of the F032 waste code by a self-implementing process. That is, once generators conduct the equipment cleaning and replacement procedure, in accordance with the rule, and establish all required documentation, their wastes no longer meet the listing description of F032 and should be classified only as F034 or F035.

*C. Industry Overview*

In the preamble to the proposed rule, EPA presented a description of the wood preserving and surface protection industry, information on the wood preserving and surface protection chemicals addressed by the listing, and a description of wood preserving and surface protection processes. With only a few exceptions, as discussed below, the information provided in the premable to the proposed rule continues to be the most recent and accurate information available to EPA. Readers should note that EPA has continued to rely on the industry description presented in the December 30, 1988 proposal for this final rule, although all of the information is not repeated here.

Preserved wood production and treatment chemical consumption for the industry are summarized in Table 2. In the proposal, 1985 data were presented (Micklewright, 1987) to describe the industry. One commenter who responded to the proposal provided the most recent Micklewright report (see F-88-WPWP-00128.B), which summarizes an industry survey for 1987. This recent data has been incorporated into Table 2 (Micklewright, 1989).[2]

[2] Micklewright, J.T., 1989, Wood Preservation Statistics, 1987. A Report to the Wood-Preserving Industry in the United States, December, 1989.

TABLE 2.—PRESERVED WOOD PRODUCTION AND TREATMENT CHEMICAL CONSUMPTION, 1987

| | Preservative type | | |
|---|---|---|---|
| | Creosote solutions | Pentachlorophenol | Inorganics |
| Number of plants * | 114 | 78 | 490 |
| Products Treated: | | | |
| Crossties, switch and bridge ties (million cubic meter) | 2.0 | 0.001 | 0 |
| Lumber and timbers (million cubic meters) | 0.16 | 0.07 | 10.2 |
| Poles (million cubic meters) | 0.5 | 1.2 | 0.44 |
| Other (million cubic meters) | 0.2 | 0.08 | 1.3 |
| Total volume of wood preserved (million cubic meters) | 2.8 | 1.4 | 11.9 |
| Treating Chemical Consumed: | | | |
| Creosote and creosote/coal tar (million liters) | 308 | | |
| Petroleum solvent (million liters) | 35 | 112 | |
| Pentachlorophenol (million kg) | | 9 | |
| Inorganic salts (million kg) | | | 65 |

* Plants that use more than one preservative type are counted in multiple categories. The total number of plants is 583.
Source: Micklewright (1989).

One commenter who responded to the proposed rule stated that the Micklewright data are unrepresentative of the industry because non-certified plants (i.e., plants not certified by the Society of American Wood Preservers) are not accounted for in the Micklewright survey. The commenter estimated that an additional 100 soak-treatment (i.e., non-pressure) plants are operating in the United States. EPA acknowledges that additional facilities

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may exist that are not accounted for in the Micklewright surveys. These plants, which are all non-pressure soak-treatment plants (and are covered by today's rule), constituted only approximately three percent of the industry in 1987. The Micklewright surveys constitute the most recent and most comprehensive body of descriptive data available. Moreover, the differences pointed out by commenters have no bearing on EPA's decision to list wood preserving wastes.

In 1987, three major product groups accounted for 90 percent of the total production of preserved wood in the United States: (1) Lumber and timbers, mostly preserved with inorganic preservatives; (2) railroad crossties, switch ties, and bridge ties, almost all preserved with creosote; and (3) poles, 58 percent preserved with pentachlorophenol, 22 percent with creosote, and 20 percent with inorganic preservatives. The remainder of 1987 production consisted of fence posts, piling, plywood, and other products (Micklewright, 1989).[3]

The distribution of preservative use by the wood preserving industry is summarized in Table 3. This table also has been revised to reflect the 1987 Micklewright data. Twelve percent of the plants treated wood with more than one preservative in 1987. Wastes generated at these plants can be contaminated with the constituents of concern identified for all of the preservatives used at the plant.

The American Wood Preservers Institute (AWPI) reported that 588 plants produced treated wood in 1987. Approximately 60 percent of these plants are in the southeast and south central portions of the United States and account for 64 percent of 1987 production. Most plants that treat with creosote and/or pentachlorophenol are more than 25 years old; several operating plants are more than 75 years old.

TABLE 3.—DISTRIBUTION OF PRESERVATIVE USE, 1987

| Plants Treating With | No. of Plants |
|---|---|
| Creosote | 55 |
| Creosote/pentachlorophenol | 17 |
| Creosote/inorganics | 21 |
| Pentachlorophenol/inorganics | 19 |
| Pentachlorophenol | 21 |
| Inorganics | 429 |

[3] Report submitted by AWPI as part of the AWPI comment. F-88-WPWP-00128B.

TABLE 3.—DISTRIBUTION OF PRESERVATIVE USE, 1987—Continued

| Plants Treating With | No. of Plants |
|---|---|
| Creosote/pentachlorophenol/Inorganics | 21 |
| Total | [1] 583 |

[1] An additional 19 plants treated wood using nonpressure processes.

Source: Regulatory Impact Analysis for the Final Listing of Certain Wood Preserving Wastes.

*D. Wastes Included in Today's Listing*

In the preamble to the December 1988 proposed rule, EPA presented detailed information describing the residuals included in today's listings. This information included descriptions of the wastes, estimated annual waste generation quantities, and information concerning waste management practices currently used by industry.[4] EPA also provided data describing the composition of the wastes proposed for listing (see 53 FR 53284–53291). This information remains the most current and reliable available to EPA and, although not repeated in entirety here, EPA continues to rely on the waste characterization, waste generation, and waste management information (pertaining to F032, F034, and F035) provided in the preamble to the proposed rule. Commenter data pertaining to drippage rates have been evaluated and are presented in the Background Document for this rule. As stated previously, EPA is reviewing the information presented in the preamble to the proposed rule pertaining to F033 wastes and will publish any revisions necessary with the Agency's final decision concerning the F033 listing.

*E. Basis for Listing*

In the preamble to the December 1988 proposed rule, EPA provided a detailed discussion of the basis for listing F032, F033, F034, and F035, and why F032 and F033 wastes should be designated as toxic (rather than as acute hazardous) (see 53 FR 53291–53308). The discussion presented included quantitative data on the concentrations of constituents of concern found in the wastes, summaries of the known health effects of the constituents of concern, data describing the relative persistence and mobility of the constituents of concern, and an analysis of the relative hazards posed by the wastes. In general, the information presented in the preamble to the proposed rule remains the most current available to EPA and serves as the basis for today's listings for F032, F034, and F035.

While the proposed rule was in development, EPA had received the results of a recent 1988 bioassay, conducted by the National Toxicology Program (NTP), which demonstrates the carcinogenicity of commercial grade pentachlorophenol in mice. At the time of publication of the proposal, EPA had not completed its formal review of the study. While the results of the study served as our basis for designating the proposed F032 and F033 as toxic hazardous waste, in our analysis of the relative hazards posed by the constituents of concern in proposed F032 and F033, we continued to rely on previous data and treated pentachlorophenol as a systemic toxicant rather than as a potential carcinogen (Class $B_2$ carcinogen). EPA has now completed its review of the NTP bioassay, has designated pentachlorophenol as a Class $B_2$ carcinogen, and calculated an oral dose slope factor of 1.2 X 10E–1 mg/kg/day and a Risk Specific Dose (RSD) of 8.3 X 10E–6 mg/kg/day in drinking water at a 10–6 risk level, assuming a 70 kg man ingesting 2 liters of water per day. The RSD translates to a concentration of 2.7 X 10E–4 parts per million in drinking water. Table 4 is a revised version of Table 11 from the preamble to the proposed rule, reflecting the new RSD for pentachlorophenol. Table 4 is part of a set of tables, which appeared in the preamble to the proposed rule, that EPA used to demonstrate the relative hazards posed by the four waste streams proposed for listing (see 53 FR 53295–53300). The tables for F034 and F035 wastes (Tables 13 and 14 in the preamble to the proposed rule) are not repeated here. Table 12 in the proposal pertained to wastes from surface protection process that use pentachlorophenol preservatives (proposed RCRA waste F033) and is not pertinent to today's listing. EPA continues to rely on Tables 13 and 14 from the preamble to the proposed rule for purposes of the final listing for F034 and F035 wastes.

[4] EPA would like to clarify one point made in the proposal. There, EPA indicated that drippage and drippage residuals include preservative that is washed off treated wood by precipitation (53 FR 53289). The Agency also suggested that storage area rainwater might become subject to regulation when it is disposed together with drippage covered by the listing (53 FR 53288). Those statements were premised upon a proposal that did not include the final rule requirement that treated wood be held on a drip pad until drippage has ceased. We clarify that today's listings do not apply to precipitation run-off from treated wood in storage yards without drip pads, where the owner or operator has complied with the no drippage requirement. This is consistent with (and factually supported by) the general position not to apply the derived from rule to precipitation run-off (see 40 CFR 261.3(c)(2) and 45 FR 33096 (May 19, 1980)).

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TABLE 4.—BASIS FOR LISTING: HEALTH EFFECTS OF THE CONSTITUENTS OF CONCERN IN F032

| Hazardous constituent | Average waste concentration detected [1] (ppm) | Health-based water concentration limits (ppm) | Basis [2] | Estimated DA 100 | Drinking conc.[3] DA 1000 | Well (ppm) DA 10,000 | Calculated based limit DA 100 | Conc. to ratios [4] DA 1000 | Health-DA 10,000 |
|---|---|---|---|---|---|---|---|---|---|
| Benz(a)anthracene | 900 | $1.0\times10^{-5}$ | RSD($B_2$) | 9 | 0.9 | 0.09 | 900,000 | 90,000 | 9,000 |
| Benzo(a)pyrene | 500 | $2.0\times10^{-4}$ | RSD($B_2$) | 5 | 0.5 | 0.05 | 25,000 | 2,500 | 250 |
| Dibenz(a,h)anthracene | 200 | $7.0\times10^{-7}$ | RSD($B_2$) | 2 | 0.2 | 0.02 | 2,800,000 | 280,000 | 28,000 |
| Indeno(1,2,3-cd)pyrene | 70 | $2.0\times10^{-3}$ | RSD(C) | 0.7 | 0.07 | 0.007 | 350 | 35 | 3.5 |
| Pentachlorophenol | 20,000 | $2.7\times10^{-4}$ | RSD($B_2$) | 200 | 20 | 2 | 740,000 | 74,000 | 7,400 |
| Arsenic | 2,000 | 0.05 | MCL | 20 | 2 | 0.2 | 400 | 40 | 4 |
| Chromium | 3,000 | 0.05 | MCL | 30 | 3 | 0.03 | 600 | 60 | 6 |
| Dibenzo-p-Dioxins [5]: | | | | | | | | | |
| TCDDs | $3\times10^{-3}$ | $2.2\times10^{-10}$ | RSD($B_2$) | $3\times10^{-5}$ | $3\times10^{-6}$ | $3\times10^{-7}$ | 136,000 | 13,600 | 1,360 |
| PeCDDs | $1\times10^{-3}$ | $4.4\times10^{-10}$ | RSD($B_2$) | $1\times10^{-5}$ | $1\times10^{-6}$ | $1\times10^{-7}$ | 23,000 | 2,300 | 227 |
| HxCDDs | 2 | $2.2\times10^{-9}$ | RSD($B_2$) | 0.02 | 0.002 | $2\times10^{-4}$ | 9,091,000 | 910,000 | 91,000 |
| HpCDDs | 30 | $2.2\times10^{-8}$ | RSD($B_2$) | 0.3 | 0.03 | 0.003 | 13,640,000 | 1,364,000 | 136,400 |
| Dibenzofurans [5]: | | | | | | | | | |
| TCDFs | $2\times10^{-2}$ | $2.2\times10^{-10}$ | RSD($B_2$) | $2\times10^{-4}$ | $2\times10^{-5}$ | $2\times10^{-6}$ | 909,000 | 90,900 | 9,090 |
| PeCDFs | 0.5 | $6.1\times10^{-9}$ | RSD($B_2$) | $5\times10^{-3}$ | $5\times10^{-4}$ | $5\times10^{-5}$ | 819,700 | 81,970 | 8,200 |
| HxCDfs | 3 | $2.2\times10^{-9}$ | RSD($B_2$) | 0.03 | $3\times10^{-3}$ | $3\times10^{-4}$ | 13,640,000 | 1,364,000 | 136,400 |
| HpCDFs | 44 | $2.3\times10^{-8}$ | RSD($B_2$) | 0.44 | 0.044 | $4\times10^{-3}$ | 1,818,000 | 181,000 | 18,180 |

[1] Average concentrations calculated from process residuals or process sludge data.
[2] Reference Dose (RfD), risk Specific dose (RSD), and Maximum Contaminant Level (MCL) are explained later in the preamble, as are the classes of RSDs. Class A, B, and C carcinogens are based on exposure limits at a $10^{-6}$ risk level.
[3] Calculated for three dilution/attention (DA) levels.
[4] Ratio obtained by dividing assumed drinking well concentration column by health-based water concentration limit column, for all three dilution/attenuation (DA) levels.
[5] Health-based water concentration limits presented for dioxins and furans are based on the International Toxicity Equivalency Factors (I-TEF) for the 2,3,7,8-isomers of each homolog group (see Risk Assessment Forum, 1989). Within the PeCDF homologue group, the 1,2,3,7,8- congener has an I-TEF of 0.05 and the 2,2,4,7,8- congeners has the I-TEF of 0.5. In this table a simple arithmetic average of the I-TEF was used to calculate health-based concentration limits.
Source: Table 11 Wood Preserving Wastes Preamble and Proposed Rule, December 30, 1988.

Table 4 of today's preamble and Tables 13 and 14 in the preamble to the proposed rule (see 53 FR 53299–53300) summarize the Agency's analysis of the hazards posed by the constituents of concern present in F032, F034, and F035 wastes. In this analysis, EPA examined hypothetical ground water concentrations for the constituents of concern assuming three dilution and attenuation factors: 100, 1,000, and 10,000. These three levels encompass a broad range of dilution/attenuation factors (DA). The drinking water well concentrations calculated for dilution/attenuation levels of 100, 1,000, and 10,000 assume that the concentration of each constituent of concern in the well water are 1 percent, 0.1 percent, and 0.01 percent, respectively, of their concentrations in the waste. The tables show that, in the vast majority of cases, the constituents of concern, including pentachlorophenol, are likely to appear in ground water at concentrations that exceed the health-based levels of concern by one to four orders of magnitude using the extremely liberal dilution and attenuation factor of 10,000. Thus, even if the Agency did not evaluate the hazard conservatively, these wastes clearly would contain concentrations of constituents of concern far in excess of safe human exposure levels. EPA also believes that the constituents of concern pose a serious threat to the environment via potential releases to surface water, as discussed in section VIII of this preamble. EPA notes that the change from the RfD used in the proposed rule for pentachlorophenol to the RSD used in Today's Table 4 (and based on the NTP 1988 study, does not affect this conclusion.

After considering all of the factors of 40 CFR 261.11(a)(3), based on the information presented in the preamble to the proposed rule, and the information presented here, because these wastes contain high concentrations of highly toxic constituents that are mobile and persistent and are unlikely to degrade in the environment before reaching receptors, and because past mismanagement of these wastes has already resulted in serious environmental damage and risk to human health, EPA is adding F032, F034, and F035 to the list of hazardous wastes from non-specific sources.

*F. Applicability of RCRA Rules for Recycled or Reclaimed Hazardous Waste*

In the preamble to the proposed rule, EPA recognized that certain wastes from wood preserving and surface protection, most notable drippage, are reclaimed and then returned to the wood preserving process for reuse (see 53 FR 53311). EPA noted that information regarding the manner in which process residuals are reclaimed in wood preserving and surface protection processes indicates that the materials are not typically reused directly and that recycling does not take place in a closed-loop system, as defined in EPA's existing regulations. Hence, EPA concluded that most on-site recycling at wood preserving and surface protection plants would not be excluded from regulation under the existing rules (see 40 CFR 261.2(e)(1)(i) and 261.4(a)(8)(i)) or under the exclusion proposed on January 8, 1988 (see 53 FR 519).

Numerous commenters who responded to the proposed rule stated that waste recycling and reuse practices at wood preserving and surface protection plants should be excluded from the Definition of Solid Waste. We respond to those comments below. Our response indicates why drippage and wastewaters captured on pads, reclaimed and returned to the wood preserving process is a solid waste under the current rules and why those rules are legally valid. This discussion also deals with how the recent DC Circuit opinions in *API* v. *EPA*, 906 F. 2d 729 (DC Cir. 1990) and *American Mining Congress* v. *EPA*, 907 F. 2d 1179 (DC Cir. 1990) [AMC II] bear on this determination.

Under the Agency's current rules, spent materials that must be reclaimed are defined as solid wastes (see 40 CFR 261.2(c)(3)). Drippage and wastewaters

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that escape from the process and are unfit for use until they can be decontaminated by filtering or other means are types of spent material, and the purification step is a type of reclamation (see § 261.1(c) (1) and (4)). The rules recognize that some types of on-site reclamation are so integrally related to a facility's production activity as to be properly viewed as an aspect of that process, and so do not involve any aspect of discarding. Such closed-loop processes are characterized by tank storage through point of reclamation and hard pipe (or comparable) connection between tanks (see § 261.4(a)(8)). Drip pads used in the wood preserving industry do not meet the terms of this exclusion, given that they are not closed devices like tanks, and given that pads at existing facilities have been characterized by leakage and other releases to the environment.

Commenters did not contend that, as a factual matter, their operations met the terms of this exclusion. (Of course, EPA would evaluate such a factual argument in a specific context rather than in this rulemaking. The point addressed above is whether the normal drip pad/reclamation operation, as the Agency understands it, fits within the terms of the existing closed-loop exclusion).

Rather, they maintained that the Agency lacks jurisdiction over such activities as a matter of law based on the DC Circuit's opinion in *American Mining Congress* v. *EPA*, 824 F.2d 1177 (DC Cir. 1987) [AMC I]. They read this opinion to state that if a material is recycled rather than being literally thrown away, it is not "discarded" (see RCRA § 1004) and hence cannot be a solid waste. EPA has never accepted this argument, and the argument was rejected by the DC Circuit in *API* and *AMC II*, cited above. In those opinions, the court made clear that simply because a material may be destined for some type of recycling does not prevent EPA from classifying it as "discarded" and hence a solid waste (see 907 F.2d 1186 and 906 F.2d 740–741). Only those materials that are " 'destined for *immediate reuse* in another phase of the industry's ongoing production process' and that 'have not yet become part of the waste disposal problem' " are outside the Agency's jurisdiction (907 F.2d 1186, quoting *AMC I*, emphasis original). The Agency also retains flexibility in interpreting when materials are "discarded" under this standard.

The Agency sees no jurisdictional defect in its present rules as applied to drippage and wastewaters in the wood preserving industry that are destined for recovery and returned to the wood preserving process. Drippage and wastewaters escaping from the process and falling on the ground or into some capture device can be viewed as a discarding both because the process need no longer be viewed as continuous, and more importantly, because such escape from the process can be "part of the waste disposal problem." Certainly this operation has caused past environmental harm because of releases of drippage into the environment from improperly designed and maintained pads (see *AMC II*, 907 F.2d 1187)—threat of release from management use sufficient to accord EPA flexibility to determine that a material is "discarded"). The Agency concludes, therefore, that the current regulations do not impermissibly classify drippage and wastewaters destined for reclamation as a solid waste when the capture and conveyance mechanisms do not meet the terms of the current closed-loop exclusion in the regulations.

Two further points should be made, however. First, there is a case-by-case variance in the current regulations that could apply to particular wood preserving facilities. This provision (§ 260.31b)) allows a Regional Administrator (or authorized State Director) to determine that a particular reclamation operation is an essential part of the production process based on a weighing of a number of criteria, including how carefully the material is handled before it is reclaimed. Wood preserving plants with well-designed and well-maintained drip pads that are collecting drippage for reclamation and return to the wood preserving process may qualify for a case-by-case exclusion under this provision (pending a factual determination by the decisionmaker).

In addition, while the current rules remain in place, the Agency retains some flexibility in evaluation whether materials destined for reprocessing/recycling are discarded, and how environmental considerations (such as whether the operation is potentially "part of the waste disposal problem") plays a part in this determination. Today's discussion is not intended to foreclose any such exercise of flexibility. The Agency is addressing a number of broad issues concerning the definition of solid waste in a series of forums outside the scope of this rulemaking. For example, the Agency is sponsoring a series of meetings with a range of interested groups to consider whether it may be appropriate to revise the solid waste definition. The Agency may consider publishing an advanced notice of proposed rulemaking as an outgrowth of this process.

The wastes from use of reclaimed drippage are once again drippage (or spent preservative) and subject to the listing, unless and until they are reclaimed again. Additionally, spent preservative or drippage that is not contained in the system (i.e., that which is spilled or otherwise removed from the drip pad) is not reclaimed and is therefore hazardous waste.

EPA has previously promulgated regulations for recyclable materials that are used in a manner constituting disposal (see 40 CFR 266.20 through 266.23) and standards for hazardous waste burned for energy recovery (see 40 CFR 266.30 through 266.35). Generators should note that, to the extent that the wastes listed today are recycled in ways that constitute disposal or are burned for energy recovery in boilers or industrial furnaces that are exempt from regulation under subpart O part 264, the appropriate standards of part 266 apply.

In addition to comments asserting that spent preservative should be exempt from the Definition of Solid Waste, commenters also noted that products (i.e., treated wood) made from reclaimed spent preservative should be excluded from the Definition of Solid Waste. EPA agrees with these commenters. Pursuant to 40 CFR 261.4(c)(2)(i), reclaimed spent preservative will cease to be a solid waste when it is reclaimed (i.e., upon reinsertion in the process—to a work or storage tank that delivers formulation to the treatment cylinder or tank). The Agency acknowledges, however, that the applicable regulatory provisions could be interpreted such that the reclaimed preservative and the wood products treated with reclaimed spent preservative would be subject to regulation under subtitle C because wood products are often used in a manner constituting disposal (i.e, used in a manner that involves placement on the land). Under such an interpretation, wood products that are treated with reclaimed spent preservative and are subsequently placed on the land would be waste-derived products subject to regulation under 40 CFR part 266.

Regulating reclaimed spent preservative and products made with reclaimed spent preservative was not and is not EPA's intent. To avoid such erroneous interpretation of the rules, today's rule adds an exclusion from the Definition of Solid Waste under § 261.4 for reclaimed spent wood preserving solutions. This action prevents any interpretation that products made from reclaimed spent preservative are subject

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to regulation under subtitle C as a result of today's new listing.

Regulatory Integration Under RCRA

The largest number of comments received by the Agency concerning the proposed rule pertained to the statutory framework for regulation. These commenters expressed the belief that RCRA is an inappropriate statute for regulating all or most of the wood preserving wastes included in today's listing. The majority of comments received on this subject stated that the industry should be regulated using a multi-statute approach pursuant to section 1006(b)(1) of RCRA, which states that the Administrator shall integrate the provisions of RCRA and avoid duplication with certain other environmental statutes to the maximum extent practicable, provided that such integration can be done in a manner consistent with the goals and policies of RCRA and those other statutes.

The multi-statute approach proposed by a large number of commenters would utilize the Clean Water Act (CWA) to regulate process wastewaters and stormwaters. Specifically, the control of process wastewaters under National Pollutant Discharge Elimination System (NPDES) Effluent Guidelines (issued under section 402(a) of the Clean Water Act) and the control of run-off under stormwater discharge permits, under section 402(p) of the Clean Water Act, were urged. These commenters also proposed regulation of drippage under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Commenters suggested that this be accomplished by voluntary FIFRA pesticide label changes to require the use of drip pads and process changes to reduce the amount of drippage. Process residuals were generally accepted by commenters as appropriate for listing under RCRA. Commenters favoring the multi-statute approach cited section 1006(b)(1) of RCRA which requires the Agency to "avoid duplication, to the maximum extent practicable," by integrating RCRA regulation with regulation under certain other environmental statutes administered by EPA.

While there may be aspects of regulatory programs under statutes other than RCRA that are available to regulate wood preservative pesticides and associated wastes, the Agency disagrees with commenters who assert that section 1006 of RCRA requires EPA to use other statutes preferentially to RCRA. Furthermore, section 1006(b)(1) states that "such integration shall be effected only to the extent that it can be done in a manner consistent with the goals and policies expressed in [RCRA] and the other acts referred to in this subsection."

## IV. Summary of Public Comments and Responses

*A Statutory Framework for Regulation*

Thus, as EPA has previously stated, section 1006(b) does not mandate that where EPA's statutory authorities provide overlapping jurisdiction over certain activities, the Agency must promulgate regulations under a statute other than RCRA. Nor is EPA required to give preference to another statue. Rather, it is within the Administrator's discretion to decide which regulatory program or programs are best suited to regulate the activities, considering the goals and policies of the various statutes. See 45 FR 33154, 33172–73, 33218–19 (1980); 55 FR 22520, 22653 (1990). In short, section 1006(b) requires EPA to consider whether and what type of regulatory integration is appropriate, but does not in any way dictate a particular result. EPA favors integrating cross-media regulations to promote efficiency and streamlined regulation when consistent with protecting health and the environment.

If, as a number of commenters suggested, Congress intended either FIFRA or the CWA to be the exclusive statutory basis for regulating several aspects of the wood preserving industry, the relevant statutes would have so stated. Where Congress has meant to impose limits on RCRA jurisdiction, it has done so clearly. For example, the definition of "solid waste" under RCRA section 1004(27) excludes "solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Federal Water Pollution Control Act."

No provision of RCRA, the CWA or FIFRA so limits EPA's authority to regulate wood preserving wastes under RCRA. The only relevant provision of any of these statutes points in the opposite direction of the commenters' arguments. Section 19(h) of FIFRA states that "[n]othing in this section shall diminish the authorities or requirements of the Solid Waste Disposal Act." Congress added this subsection when it amended FIFRA in 1988, one year after the wood preserving industry began advocating its multi-statute approach.

Clean Water Act

EPA has considered whether, as suggested by many commenters, drippage in the facility storage yards and wastewaters should be regulated under the CWA, rather than RCRA. EPA notes first that to the extent process water or storm water is discharged to waters of the United States, an individual NPDES permit is required (the timing of the stormwater permit requirement is discussed below). However, not all drippage is discharged to surface waters, and EPA believes it is important to implement a comprehensive regulatory resolution, rather than address drippage in a piecemeal fashion. For example, drippage that seeps to groundwater that has no hydrological connection to surface water is not currently regulated under the Clean Water Act. Thus, neither stormwater permits nor a revision to the Effluent Guideline could address ground water protection. As is discussed in the preamble to the proposed listing (see 53 FR 53323) and the Background Document to the proposed listing, groundwater contamination has been a serious problem at many wood preserving facilities.

The Agency rejects the suggestion that regulation of storage yard drippage and wastewaters be deferred into some future planned Effluent Guideline rulemaking. It is not the Agency's current plan to revise the Effluent Guideline and standard for the Timber Products Processing industry category (the guidelines category that includes wood preserving). The Clean Water agenda for effluent guideline rulemakings is set under section 304(m) of that Act, which requires a biannual plan for review and revision of existing effluent guidelines and promulgation of new effluent guidelines. The Agency reads that provision as directing it to set priorities for the promulgation of new guidelines, and has established criteria which assess the presence and quantity of toxic and nonconventional pollutants in discharges to waters of the United States, the utility of national guidelines covering categories of dischargers under consideration, and the presence of specific legislative or judicial mandates to issue guidelines for particular categories (see generally 55 FR 80, 82).

The first such 304(m) plan was announced on January 2, 1990 and announced an Agency intention to engage in six rulemakings for "new" industry categories and three "revisions." The projected promulgation dates for these rulemakings range from 1992 to 1995, reflecting the reality that effluent guideline rulemakings are, of necessity, complex regulatory projects which require extensive data gathering and analysis. The next scheduled 304(m) plan will be announced in January 1992, using the criteria outlined above. While Timber Products are among the industry categories under consideration, even a decision to undertake rulemaking in 1992 would not result in a regulation in less than 3 to 5 years after that date. In contrast, the listing under RCRA

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addresses the entire problem and is accomplished today without further delay. In any case, the industry concedes that the process of establishing a guideline is similar to establishment of land disposal restriction standards (LDRs). Yet, the industry fails to note that LDRs apply to land disposal, not surface water discharge.

Similarly, the Agency's rulemaking activities addressed to regulation of stormwater under the CWA would not adequately resolve at this time the issues raised by this listing. As set out above, the requirements of the Clean Water Act would reach only a portion of drippage. Furthermore, the current rule addressing stormwater, signed by the Administrator on October 31, 1990 (and expected to be published in the **Federal Register** by November 15, 1990), is designed only to establish permit application requirements. The rule establishes that applications for industrial permits must be received between 12 to 18 months after promulgation of the final rule. Thus, it could be years before stormwater permits are issued.

Finally, the commenters contend that listing wood preserving wastewaters as hazardous under RCRA is unprecedented and will seriously limit or eliminate the wood preserving industry's ability to discharge wastewaters to municipal sewage treatment systems. This argument is unfounded. EPA has listed under RCRA wastewaters from many industries; these wastewaters are routinely discharged to municipal systems following pretreatment. Moreover, any possible difficulty in discharging to municipal systems would not serve as an adequate basis to support a decision not to list the wastewaters. See *Hazardous Waste Treatment Council* v. *EPA*, 861 F.2d 270 (DC Cir. 1988). (EPA was not permitted to consider stigmatic consequences of listing recycled oil in deciding whether to list it as a hazardous waste under RCRA).

Federal Insecticide, Fungicide, and Rodenticide Act

In reviewing the multi-statute proposal of AWPI and other industry commenters, EPA considered a wide variety of individual issues; however, the Agency focused on three major categories: applicability, enforceability, and timeliness. EPA believes that any regulatory system for addressing the drippage/spill problems at wood treatment facilities must be generally applicable to all facilities, readily enforceable, and, in light of the history of significant pollution problems at these facilities, capable of being implemented in the near future. In each of these areas, the Agency has determined that, in this situation, a more comprehensive, efficient, and effective system could be developed under RCRA than under FIFRA.

In its comments in support of a multi-statute approach, AWPI also proposes that drippage and spills from wood treatment processes be regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. 136 et seq., through labeling provisions for pressure treatment wood preservative pesticides. Specifically, AWPI proposes that

> all production process area drippage * * * be regulated under FIFRA along with any other production process areas which might result in spills, leaks, and drips of preservative and/or kick-back material. The areas to be regulated under FIFRA include the process area drip pad, pesticide unloading area, pesticide storage and handling areas, and the pesticide application area * * * along with associated process units and equipment (AWPI Comments at 38).

While EPA agrees that labeling under FIFRA is one mechanism that could be used to regulate certain wood treatment drippage and spills, the Agency does not agree that it is the best or only approach.

The label provisions proposed by AWPI would not (and do not appear to be intended to) cover all wood treatment products and/or facilities. For example, the most obvious groups not addressed are nonpressure treatment products and facilities. Also, because labeling is a part of the registration process, the label provisions proposed by AWPI would not directly affect use of unregistered wood treatment pesticides (often prepared on site by combining several chemicals acquired as unregistered chemicals and therefore not labeled pursuant to FIFRA). It is the Agency's understanding that both nonpressure treatment and unregistered pesticides are currently being used at some wood treatment facilities. Even assuming that the bulk of the registrants could come to some voluntary agreement with EPA on label provisions, anything less than 100% participation and/or continued use of unregistered or non-pressure treatment products would necessitate EPA taking affirmative action under FIFRA or RCRA (e.g., rulemaking or cancellation actions) to impose comparable protective measures.

Use of RCRA would also provide the Agency with more comprehensive and readily available enforcement powers than use of FIFRA. This is because of the greater number and type of enforcement actions available under RCRA, the generally larger penalties, and the greater number of RCRA enforcement officials in the field. For example, under RCRA section 7002, any citizen may bring a civil action against any person who is alleged to be in violation of a RCRA regulation or permit. There is no comparable citizen suit provision under FIFRA. Moreover, the penalty provisions for Federal enforcement actions are substantially higher under RCRA. In RCRA civil enforcement actions, a penalty of up to $25,000 per day of noncompliance for each violation may be assessed. For a knowing violation, a person is subject to a criminal fine of up to $50,000 for each day of violation, as well as a prison term of as long as two to five years, depending on the circumstances (see RCRA section 3008). Under FIFRA, in contrast, the maximum civil penalty for a commercial applicator is $5,000 per violation. For a knowing violation, the maximum criminal fine is $5,000 and the maximum prison term is one year (FIFRA section 14).

In addition, because the problems to be addressed relate to use of wood treatment pesticides, rather than the sale or distribution of pesticides, RCRA currently provides the more direct mechanism for inspection of user facilities, the cornerstone of an effective enforcement program. Under FIFRA, enforcement against wood treaters for label violations would generally be available only after inspections uncover misuse; however, because FIFRA does not contain an explicit provision authorizing neutral inspections of user facilities, inspection of such a facility must be by consent, or to the extent allowed under FIFRA section 9(b), pursuant to a warrant. By the time either could be obtained, considerable environmental damage could have occurred. Under RCRA section 3007(a), consent or a warrant is not needed to inspect a facility. All of these factors indicate that the enforcement mechanisms available under RCRA are more appropriately applicable to the situation being addressed than those currently available under FIFRA. These same factors also increase the likelihood that violators would be caught and punished.

Finally, under the AWPI approach, it could be several years before all wood treatment products/facilities would be regulated. As indicated above, any products/facilities not regulated through voluntary adoption of label provisions agreed upon by EPA and the registrants would have to be addressed by other actions under FIFRA and/or RCRA. Any of these nonvoluntary actions could take

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months (if not years) and considerable resources to implement, with no guarantee that the outcomes would be comparable to those voluntarily adopted for registered, pressure treatment products/facilities.[5] Moreover, given the expense and technical complexity of installing the recycling systems included in the AWPI label proposal, the hardship "variance procedures" also proposed by AWPI (AWPI Comments at 39) could mean that a significant number of wood treatment facilities would not be in compliance for an extended period of time. If label provisions under FIFRA were the only mechanism used by the Agency to control the drippage and spills of wood preservatives at these noncomplying facilities, these situations would essentially be unregulated.

In summary, EPA has carefully considered the proposal included in the comments of AWPI and other industry commenters, and has concluded that, while label provisions under FIFRA may be able to address some of the pollution problems identified at wood treatment facilities, they are not the most appropriate means of reaching all wood treatment products and facilities in one action, at one time. Conversely, the mechanisms available under RCRA provide a more comprehensive, efficient, and effective approach to addressing the whole range of problems in a single regulatory action.

Conclusion

In general, the commenters' proposed multi-statute approach would rely on future regulation which EPA believes would not provide the same protective standards available under RCRA. Given the extent of contamination at many wood preserving facilities and the serious risks to health and the environment posed by the wastes listed today, EPA believes that setting any less protective standards would be unjustified. Moreover, the Agency cannot justify deferring to regulation under other statutes on the basis of requirements that do not yet exist. This is especially true because EPA cannot guarantee that it will adopt a particular regulatory approach in the future, even if it intended to today. Consistent with its obligations under the Administrative Procedure Act, the Agency must analyze public comments on a proposed rule and change the rule as appropriate.

[5] For example, the most straightforward approach to the regulation of unregistered pesticides under FIFRA appears to be promulgation of a rule under FIFRA section 3(a), which gives the Agency authority to limit the use of an unregistered pesticide, by regulation, "* * * to the extent necessary to prevent unreasonable adverse effects on [human health and] the environment."

Section 1004(5) of RCRA states that all solid wastes capable of causing a substantial present or potential hazard to human health and the environment if mismanaged are subject to regulation as hazardous wastes. The damage incidents presented in the record to the proposed rule, supplemented by case studies and other analyses developed as part of the evaluation of benefits resulting from today's regulation (see section IX of this preamble), document the fact that wood preserving wastes pose a substantial present or potential threat to human health and the environment when mismanaged. Consequently, after careful consideration of comments received, EPA has concluded that listing only process residuals under RCRA and relying on other statutes to regulate other wastes, as suggested by commenters, has serious shortcomings and would not provide the level of protection equivalent to that afforded by listing all of the wastes covered by the F032, F034, and F035 under RCRA, particularly with respect to hazardous waste releases to ground water. EPA notes, however, that this final RCRA rule does not preclude promulgation of requirements applicable to wood preserving plants in the future under CWA or FIFRA. In fact, the Agency believes that today's action will help, not hinder, any future efforts to further integrate environmental regulation of the wood preserving industry.

*B. Listing for Storage Yard Drippage*

Many of the commenters who responded to the proposed rule addressed the listing for treated wood drippage. These commenters made three important points: (1) That most drippage from treated wood occurs in the kick-back area immediately following removal of the treated wood from the treatment vessel, (2) that drippage in the storage yard is minimal, and (3) that EPA had failed to demonstrate that treated wood drippage generated in storage yards poses a significant hazard to human health and the environment. Commenters also noted that changes in wood pressure treating processes can be made, such as the application of a final vacuum step, to reduce the amount of drippage generated.

EPA agrees with commenters that current operating practices in the industry are such that most drippage from treated wood is generated in kick-back areas immediately following removal of wood from the treatment tank or cylinder. Site visits conducted by EPA indicate that treated wood is often held on a kick-back area drip pad for a period of 24 to 48 hours to ensure that most of the drippage generated is collected. Site visits and information from commenters also confirm that process modifications designed to minimize drippage, such as the application of a final vacuum step, are also being used increasingly. EPA encourages generators to continue to develop and implement such changes in order to minimize the amount of drippage generated.

EPA disagrees with commenters, however, with respect to the evidence that uncontrolled drippage in treated wood storage yards does not pose a hazard to human health and the environment. Case studies evaluated by the Agency in support of today's listing indicate that storage yards are one of several potential sources of soil and surface water contamination at wood preserving sites. Many RCRA Facility Assessment reports that have been developed by EPA's Regional Offices for purposes of implementing corrective action at wood preserving sites identify treated wood storage yards as a significant source of contamination and designate them solid waste management units targeted for corrective action. Although at many sites, contamination is ubiquitous and cannot be directly attributed to a single source, such as the storage yard, information reviewed by EPA indicates clearly that uncontrolled disposal of drippage in treated wood storage yards has been a significant contributor to environmental contamination at wood preserving sites.

For this reason, today's rule requires that treated wood drippage be contained on a drip pad that meets the Subpart W standards. EPA believes that holding treated wood on a process or kick-back area drip pad until drippage has ceased, as required by Subpart W, will minimize or eliminate the need to construct large drip pads in treated wood storage yards.

EPA believes that generators of F032, F034, and F035 will take steps to minimize drippage (for example, by implementing wood treatment process modifications and/or by holding wood under cover until completely dry after treatment) to avoid possible enforcement consequences such as criminal or civil penalties, facility-wide corrective action, and/or liability claims related to damages that may occur from disposal of drippage on the land. EPA notes also that today's rule of course, does not in any way preclude owners and operators from installing drip pads in treated wood storage yards to protect against possible inadvertent disposal of drippage on the land.

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*C. Technical Standards for Drip Pads*

EPA received many comments regarding aspects of the subpart W standards for drip pads. Commenters addressed issues related to drip pad construction, operating practices, inspection requirements, and closure requirements. Commenters concerns and EPA's responses to these issues are summarized in the following discussions.

1. Drip Pad Construction

Ten commenters expressed concerns related to the requirement that drip pads be impermeable. Five of these stated that concrete has a tendency to crack and therefore makes a poor material for drip pads. One suggested that drip pads be constructed of stainless steel with welded seams. Two suggested that roofs be used instead of pads to prevent runoff. Commenters also suggested that the subpart W standards for drip pad design are too lenient, should be more like those for other hazardous waste management units, and should include requirements for double liners and leak detection and collection.

EPA agrees with the commenters' suggestions regarding the need to be more specific in defining impermeability and using roofs or enclosures to control surface water run-on and runoff. The purpose of the subpart W standards is to ensure that drip pads are designed to contain all hazardous waste that may come into contact with them. EPA used the term "impermeable" in the proposed rule as a performance standard for the ability of a drip pad to provide complete containment, recognizing that there are many ways in which containment may be achieved. We agree with commenters that the standards can be made more specific with respect to those aspects of drip pad design that contribute to "impermeability" and believe that making such changes to the rule will enhance its enforceability and give the regulated community a clear understanding of what EPA considers an effective drip pad design. Consequently, today's final rule includes requirements that drip pad surfaces be sealed, coated, or covered with an impermeable material to ensure impermeability and that drip pads be equipped with a leak detection system underlaid with a chemically-resistant liner. Commercially available epoxy or polyurethane sealants or coatings, or synthetic covers may be used to meet the standard for sealing or coating drip pad surfaces. Additionally, where appropriate and possible, special steps should be taken to seal drip pad joints, for example, by installing chemically-resistant water stops.

Provisions have been added to address drip pad strength and thickness that require drip pads to be capable of preventing failure due to physical contact, climatic conditions, the stress of installation, and the stress of daily operations to further ensure the ability of drip pads to contain hazardous waste. Finally, in deference to commenters' suggestion, today's rule adds provisions for exempting drip pads from requirements for run-on and runoff controls, as appropriate, where the pads are enclosed in a structure and covered such that neither runoff nor run-on are generated.

As stated previously, today's rule requires a containment system with three components: (1) The drip pad itself, coated or covered with an impermeable material, (2) a leak detection system, and (3) a chemically resistant, synthetic bottom liner. The coated or covered drip pad provides primary containment for drippage and other hazardous waste. The drip pad must be structurally sound so that it can withstand the stresses of daily activities. Because EPA expects that drip pads will crack with time in service, subpart W includes a requirement for inspecting drip pads once every 7 days and procedures for making repairs in the event that a condition (i.e., a crack or detection of leakage) is recognized that could lead to a release of hazardous waste.

EPA also recognizes, however, that all cracks are not necessarily visible from the surface of the pad, or may not be recognized as significant at the time of inspection. Consequently, we have included the requirement for leak detection systems. These systems will allow owners and operators to know when drip pads are leaking, although no significant cracks have been identified. Furthermore, the synthetic liner under the leak detection system will ensure that such leakage is not released to the environment. EPA believes that this three-component containment system will ensure "impermeability" and make clear to owners and operators what EPA expects in terms of drip pad design.

The rule does not dictate that drip pads be constructed of concrete, contrary to commenters' assertions. Rather, subpart W states that drip pads must be constructed of non-earthen materials and that they be maintained free of cracks, gaps, corrosion, or other deterioration that could cause waste to leak from the pad. Today's rule specifically states that wood and non-structurally supported asphalt cannot be used to construct drip pads because these materials do not provide the structural support necessary to prevent cracking and maintain impermeability.

2. Operating Practices

Commenters addressed two aspects of the subpart W requirements for operating practices: The requirement to minimize tracking of hazardous waste from drip pads and the need for establishing a holding time for wood after treatment and before moving to the storage yard.

Six commenters were concerned with the requirements for preventing tracking of hazardous waste from drip pads. These commenters contended that the requirement constitutes a requirement for dedicated equipment. Four stated that no tracking requirement should be included in the rule. Two contended that use of dedicated equipment is not standard practice and is not achievable in some segments of the industry.

For the reasons stated in the proposal, EPA remains concerned about potential contamination of the soil and surface water in the vicinity of drip pads that could result from tracking of waste and waste constitutents off drip pads by equipment and/or personnel. Consequently, today's rule retains a requirement that tracking of hazardous waste or waste constituents from the drip pad be minimized. EPA agrees that methods for effectively preventing such migration of contaminants will vary depending on plant configuration and other factors. The requirement is therefore stated in terms of a performance standard. EPA believes that many owners and operators will choose to dedicate equipment to the pad in order to comply with this standard. Other techniques, such as procedures for washing all equipment before leaving the pad are also acceptable.

With regard to treated wood holding times, two commenters suggested that EPA establish a standard that treated wood be held under cover for a minimum of 24 hours at a temperature of at least 45 degrees. Commenters noted that the effectiveness of air-drying treated wood would vary depending on climate and other conditions, but stated that such a requirement would serve to minimize or eliminate storage yard drippage.

EPA agrees that holding wood on the process area drip pad after treatment will help to minimize drippage in storage yards. A specific numeric standard for holding time could not be established, however, because the time required to dry wood after treatment varies based on many site-specific conditions.

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Consequently, today's rule requires that owners and operators account for climate and other conditions that affect drying by holding wood on the drip pad until drippage has stopped.

3. Inspection Requirements

Seven commenters were concerned about inspection requirements. One stated that a weekly inspection requirement is overly-burdensome because of the need to move lumber and the associated equipment and personnel requirements. Four commenters stated that inspections should only be required monthly, upon removal of wood, or should apply only to drip pad surfaces that are visible (i.e., there should be no requirement to move wood in order to inspect the entire surface of the pad). Other commenters stated that the inspection requirement should be supplemented with requirements to record the time that each stack of wood is held on the drip pad in order to document compliance.

EPA agrees that recordkeeping specific to treated wood holding times is warranted and today's rule includes such provisions. Owners and operators of drip pads should note that they are subject to the general requirements for inspections (subpart B of parts 264 and 265), which require, among other things, that owners and operators develop and follow an inspection plan that ensures compliance with all specific inspection requirements.

EPA disagrees with commenters who contended that inspections should be conducted less frequently than weekly or that the entire surface of the drip pad need not be inspected each time. The inspection requirement provides routine monitoring of the integrity of the pad and must be conducted carefully, thoroughly, and systematically throughout the life of the pad in order to be effective. Owners and operators may establish a plan and schedule for weekly inspections that facilitates or is compatible with schedules for storing and/or moving wood on and off the drip pad that involve, for example, inspecting portions of the pad on different days, provided that the entire surface is inspected weekly, (i.e., once every seven days).

4. Closure Requirements

Two commenters were concerned about closure requirements. One stated that a provision should be added to close drip pads as landfills. The second commenter stated that, without specification of a decontamination method, owners and operators would be unable to estimate closure costs as required.

EPA agrees that provisions should be made to close drip pads as land disposal units where all contamination cannot be removed. Consequently, today's rule requires that owners and operators who are unable to achieve clean closure (i.e., remove all contamination from the drip pad site) must close the drip pad in accordance with the requirements for closure of land disposal units, including provisions for post-closure care and ground-water monitoring.

EPA disagrees that a specific method for decontamination must be specified in the regulation in order to make closure cost estimates possible. Today's rule therefore does not specify a particular decontamination method. Effective methods will vary, depending on the size of the pad, its construction materials, and other factors. Owners and operators should select an effective method for decontamination and calculate costs accordingly.

*D. Basis for Listing and Toxic Designations*

In response to the proposed rule, many commenters raised issues regarding EPA's basis for proposing to list F032, F033, F034, and F035. Their principal concerns were the evaluation of hazards presented in the preamble and the designation of proposed wastes F032 and F033 as toxic rather than acute hazardous. The main points made by commenters and EPA's response to those comments are summarized below.

Numerous commenters who responded to the proposed rule questioned the hypothetical ground water concentrations used in Tables 11 through 14 of the preamble to the proposed rule and their relevance to EPA's basis for listing wastes from wood preserving and surface protection processes as hazardous. Some commenters contended that the hypothetical ground water concentrations should not be used to indicate the hazards posed by the wastes because the calculated concentrations were based on oversimplified speculative assumptions, are not supported by analytical data, and do not represent the range of possible variations in environmental conditions.

EPA agrees with commenters that the analyses presented in the tables may not represent the range of variation that occurs in the environment. We do not agree, however, that the analysis is irrelevant to a determination of potential hazard. Rather, EPA believes that commenters have misinterpreted the intent of Tables 11 through 14 of the preamble to the proposed rule. As stated previously in the preamble to the proposed rule, the three dilution and attenuation factors used in the analyses were intended to encompass a broad range of possibilities. They were not specifically selected to represent any particular environmental conditions or range of environmental conditions. The tables demonstrate that, to the extent that the three dilution and attenuation factors represent a range of possible assumptions varying from 1 percent of the waste disposed reaching the point of exposure, or very little dilution and attenuation (this is the dilution and attenuation factor used in the Agency's recently-promulgated Toxicity Characteristic rule, see 55 FR 11827, May 29, 1990), to 0.01 percent of the waste disposed reaching the point of exposure (i.e., a high degree of dilution and attenuation), the wastes examined pose a potential threat to human health and the environment across a wide range of circumstances. In fact, the tables show that the actual assumptions used to project ground water concentrations have little bearing on the conclusion that the wastes are hazardous since the wastes are clearly hazardous under all of the scenarios examined. EPA therefore disagrees with commenters that the analyses shown in the tables were inappropriately used to support the proposed listing.

Other commenters referred to the dilution and attenuation factors as a model and criticized assumptions which, they contend, are built into the model. The commenters contend that the tables inappropriately represent only oily waste transport, which is inapplicable to proposed wastes F033 and F035, that the tables incorrectly assume that ground water concentrations in drinking water wells will be equivalent to ground water concentrations beneath the facility, and that the tables incorrectly assume that the constituents of concern will migrate to ground water in the same relative concentrations that appear in the wastes.

EPA believes that these commenters have also misinterpreted the intent of Tables 11 through 14 in the preamble to the proposed rule. The analyses presented in these tables in no way represent an attempt by EPA to model or mathematically simulate actual transport of hazardous constituents from the wastes into the ground water or in the environment. While EPA has, in other RCRA rulemakings, discussed a variety of ground water transport models and their applicability to rulemaking decisions, none of these models serve as the basis for the tables presented in the preamble to the proposed rule. Hence, commenters'

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assertions that the underlying assumptions are inappropriate or incorrect are not relevant. The tables represent neither oily waste transport nor any other specific form of transport in the environment. Nor do they attempt to relate ground water quality beneath a facility to ground water quality in a drinking water well. They also do not account for the many chemical and physical processes (degradation and mobility) that might affect the relative concentrations actually occurring in the environment. Instead, the analyses shown in the tables were conducted simply to show that in a wide range of circumstances, representing a wide range of assumptions that might be used, the constituents of concern may migrate to ground water and reach drinking water wells in concentrations that exceed established acceptable human exposure levels. Moreover, some degree of uncertainty as to the levels of constituents that reach ground water or environmental receptors is not grounds for deciding not to list these hazardous wastes (see RCRA sections 1002, 1003 and 1004 (d), (e) and (g)).

The tables did not stand alone as EPA's basis for proposing to list F032, F033, F034, and F035. The hypothetical ground water concentrations shown are supported by numerical data in the rulemaking record showing that the constituents of concern are capable of migrating in the environment, persisting in ground water, and reaching drinking water wells. Improper management of these wastes by wood preservers has repeatedly resulted in substantial present or potential harm to human health and the environment (see RCRA section 1004(5)). As stated previously, the dilution and attenuation factors and the resulting hypothetical ground water concentrations were not selected to represent any particular environmental conditions or range of environmental conditions. Any comparison to actual ground water concentrations measured in the environment at wood preserving or surface protection facilities is therefore inappropriate. Actual ground water measurements do, however, support EPA's conclusion that the constituents of concern are capable of posing a threat to human health and the environment.

Damage cases described in the preamble to the proposed rule (see 53 FR 53323) demonstrate that the constituents of concern in the wastes proposed for listing are sufficiently mobile and persistent for past mismanagement to have resulted in contamination of ground water, surface water, and soils. Commenters contended that the damage cases are irrelevant to the listing because they reflect practices that are no longer in use. EPA agrees that waste management practices in the industry have changed. The damage cases remain relevant, however, not because they demonstrate that the wastes are mismanaged, but because they show that, upon release to the environment, the constituents of concern in F032, F034, and F035 are sufficiently mobile and persistent to reach human receptors (see RCRA section 1004(5)).

As discussed in the proposal, wastes associated with pentachlorophenol have been listed by EPA as acutely hazardous in the past. Pentachlorophenol wastes were designated as acutely hazardous wastes in 1985 based on toxicity data for hexachlorodibenzodioxin (HxCDD) provided by a bioassay conducted by the National Cancer Institute (NCI) in 1983. Existing 'F' listings (F020–F023, F025–F028) considered acutely hazardous as a basis for the existing listing, however, such characteristic is not the basis, nor should it be, for determining the status of F032 and F033 in today's rulemaking.

Since 1983, additional data have been generated in a study performed by the National Toxicology Program (NTP), which was published in 1988. This new information regarding the toxicity of commercial pentachlorophenol products contaminated with HxCDD may affect the Agency's basis for designating F021 and F027 as acutely hazardous wastes. Any changes in previous listings would be the subject of a separate rulemaking. More important to today's rulemaking is the significance the NTP data has for the status of F032. Today's final rule, therefore, designates F032 as toxic rather than acutely hazardous based on the Agency's most current data (NTP, 1988) rather than precedence set by previous listings.

The most significant aspects of the NTP study results were discussed in the proposal. Several commenters expressed concern regarding the NTP study data which indicated that HxCDD is not a good predictor of the risk associated with pentachlorophenol wastes.

Although HxCDD is far more carcinogenic than pentachlorophenol, the tumor activity in the B6C3F1 mice used in the NTP study indicate that the HxCDD is not of the same magnitude when HxCDD and pentachlorophenol are together in the relative concentrations existing in the 1988 NTP study scenario. It should be noted that the NCI 1983 HxCDD study was previously used to serve as surrogate data to indicate the relative toxicity of pentachlorophenol wastes. Now that the pentachlorophenol data are available, it is more appropriate to use the NTP 1988 data as the primary source, thereby referring to the HxCDD study as supporting evidence of toxicity for that constituent of concern.

Nine commenters expressed their opposition to the Agency's proposal to list pentachlorophenol wood preserving wastes as toxic rather than acutely hazardous. A number of commenters stated that since pentachlorophenol wastes contain dioxins and other carcinogens, they should be listed as acutely hazardous waste in all cases. The Agency disagrees with this logic. Previous listing activity on EPA's part does not itself constitute a basis for new listings. Because EPA has new data that show the threat of dioxins is variable and not absolute, the Agency believes that F032 waste warrants the designation of toxic. EPA notes that several commenters agreed with the toxic designation.

One commenter was concerned that the mixture of various carcinogens results in an even more potent waste that would be a "super" acutely hazardous waste; that the sum of the parts is greater than the parts themselves. Another commenter believes that not enough is known about the synergistic effects of the various contaminants in the waste to conclude that the toxic listing is appropriate. EPA is in agreement with this, in part. There are very little data available for use in determining the interactive effect of the contaminants. In assessing the various sets of data, it is clear that HxCDD contributes to liver tumor formation. However, the studies with pentachlorophenol (NTP, 1988) reveal the formation of not only liver tumors but also adrenal medulla pheochromocytomas and malignant pheochromocytomas and/or hemangiosarcomas and hemangiomas in one or both sexes of mice using two different preparation of pentachlorophenol. The presence of HxCDD in the pentachlorophenol preparations may play a role in the tumor response, but obviously, other ingredients in the preparations (including pentachlorophenol) are significantly influencing the tumor response. In any case, the fact that data accurately and completely describing any synergistic or antagonistic effects are not available does not constitute a basis for designating F032 as acutely hazardous.

The basis for listing pentachlorophenol wastes as acutely hazardous in the past was because of

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the presence of HxCDD in significant concentrations and the selection of HxCDD as an indicator of hazard due to its extreme carcinogenic potency value. In light of the NTP study results, EPA can no longer use HxCDD as a reasonable surrogate to indicate the toxicity of pentachlorophenol, as stated in the proposal. The NTP study provides carcinogenic potency values for pentachlorophenol products such as "purified" pentachlorophenol, 0.245 (mg/kg/day)-1, and technical grade pentachlorophenol, 0.788 (mg/kg/day)-1, which are within the range of values associated with other wastes listed as toxic. The pentachlorophenol tested in the NTP study was contaminated with other dioxin compounds which were specifically identified in the proposal. The potency value determined from the NTP study accounted for the other contaminants simply because the substances tested in the assay were pentachlorophenol products that were contaminated with ppm concentrations of these constituents.

One commenter asked EPA to clarify the statement that the pentachlorophenol products tested in the NTP study "* * * exhibit significantly lower carcinogenic potency than EPA had anticipated when listing F021 and F027." The commenter felt that this statement implied that the carcinogenic potency value for HxCDD was being confused with the potency assigned to F021 and F027 where HxCDD is present in the ppm range. In all cases, F021 and F027 as well as F032, HxCDD is present in the ppm range. The distinction being made is not between previous waste listings and the proposed F032 and F033 listings, but between data from the NCI 1983 report and more current data generated by the NTP 1988 report.

Several commenters cited the language provided in 40 CFR part 261.11 Criteria for Listing Hazardous Waste, that defines the criteria for designation as Acute Hazardous Waste. It states that wastes which are "* * * capable of causing or significantly contributing to an increase in serious irreversible * * * illness." should be listed as acute hazardous. The commenters believe it applies to the proposed listings. As stated previously in this section and discussed at length in the proposal, the carcinogenic potency value for the constituents of concern designated in the F032 listing is well within the range of potency values of other toxic wastes regulated under RCRA.

The Agency would like to expand on this point in response to another comment received pertaining to the designation of proposed wastes F032 and F033 as toxic rather than acutely hazardous. Commenters were concerned that the toxic status would be inappropriate because of the more lenient standards applied to these wastes. The comments seem to convey the belief that only through the designation as an acute hazardous waste is a waste adequately regulated. The Agency strongly disagrees with this implication, and believes that its existing regulations are adequate to regulate wastes designated as toxic, that F032, F034, and F035 do not qualify as acutely hazardous, and that the additional regulation is therefore unnecessary.

EPA also notes that the significance of designating a waste as acute hazardous is now greatly diminished, if necessary at all. EPA adopted such a designation in the original dioxin listings. The designation carried with it special management standards for the wastes, in particular, more stringent standards for tanks and containers, no land disposal without a special waste management plan, and a more stringent standard for incineration. The rules, however, were proposed before the 1984 amendments to RCRA and adopted only months after the 1984 amendments became law and before EPA fully understood the implications of those amendments, particularly the pretreatment requirements imposed pursuant to the land disposal restrictions program, the minimum technological requirements for many types of units, and the omnibus permitting authority, all of which provide the same types of controls the Agency envisioned in the initial dioxin listing rule.

EPA is now fully exercising the authority provided by the 1984 amendments and finds that these authorities provide the types of controls that would be provided if any of these wastes were listed as acute hazardous (even assuming that the facts warranted such a listing). Thus, such a listing does not result in superior environmental protection.

The Agency also received comments expressing concern over the use of a summary report presented to EPA by Vulcan Materials Company. As is stated clearly in the proposed rule, EPA has reviewed the NTP report, found the study valid, and concluded that the data from the study are appropriate for use in calculating carcinogenic potency values for the products studied. Although Vulcan Materials Co. has submitted a summary report of the NTP report to EPA, this summary report was provided to support a petition for rulemaking made by Vulcan, is not relevant to the F032 listing, and is not included in the record supporting today's rule. EPA has not relied on the Vulcan summary report in making its evaluation of the relative hazards posed by F032 waste. Rather, the Agency has conducted its own review of the NTP 1988 report.

One commenter disagreed with the Agency's statement that other (non-HxCDD) dioxin homologues were found to be present in F032 and F033 wastestreams at concentrations one to two orders of magnitude lower than those observed in the two pentachlorophenol products studied in the NTP report. EPA disagrees with this comment. The waste characterization data can be found in the docket and is available for public viewing. Using the waste characterization data, one can verify the similarity between the mixtures studied in the NTP report and the F032 wastes.

*E. Listing Wastes from Surface Protection Processes*

EPA received several comments from industry which stated that the information presented in the docket for the proposed rule did not sufficiently demonstrate that wastes from wood surface protection processes that use or previously used chlorophenolic formulations warrant listing under RCRA. These commenters noted that EPA had information from only a few surface protection plants, all located in one region of the country and that EPA was able to collect only very limited waste characterization data. Consequently, they concluded that the Agency had not adequately characterized the industry or the wastes generated by the industry and, therefore, had failed to establish sufficient basis for listing F033.

As stated earlier, after considering the comments received and evaluating the data which provided the basis for the proposed F033 listing, EPA has concluded that it has insufficient information at this time on which to base a final listing decision for F033. The Agency has, therefore, decided to defer the F033 listing until such time as further information concerning waste quantities and waste characterization can be collected and evaluated. EPA will conduct a program of site visits in order to collect additional information and better characterize the surface protection industry and the wastes generated by surface protection processes The Agency will take action on the proposal to list F033 after

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completing this additional data collection.

*F. Equipment Cleaning and Replacement Standards*

EPA received many comments concerning the equipment cleaning and replacement standards that were included in the proposed rule. Representatives from industry contended that the standards were impractical, technically infeasible, and cumbersome. Others noted potential interpretational problems and anticipated implementation difficulties. Commenters disagreed on the appropriate level of specificity for the equipment cleaning standards with respect to the type of solvent to be used for cleaning and the appropriate test to determine the effectiveness of cleaning. They also disagreed on the potential benefits to be derived from the standards and many challenged the need for such provisions in the listing.

Today's listing for F032 includes similar provisions for cross-contaminated waste (i.e., wastes generated from equipment previously used with chlorophenolic formulations) as were included in the proposed rule. EPA has retained this aspect of the rule because it results in isolating all wood preserving wastes that are potentially contaminated with the constituents of concern in F032 in one listing. Hence, wastes that are generated from processes that use creosote and/or inorganic preservatives at wood preserving plants that previously used chlorophenolic formulations and wastes generated by creosote or inorganic processes located at plants where chlorophenolic preservatives are also used will be F032 waste, as well as F034 or F035.

The most important benefit provided by the equipment cleaning and replacement standards was that they allowed a mechanism by which operators of wood surface protection processes that previously used chlorophenolic formulations but have switched to other formulations not addressed by the listing could have their wastes removed from subtitle C control (provided that they also did not exhibit one of the characteristics of hazardous waste and that use of a chlorophenolic formulation was not resumed). Because today's listings do not include F033 wastes (i.e., those generated by surface protection processes), this benefit is no longer of any consequence.

EPA believes, however, that provisions for equipment cleaning and replacement to allow the deletion of the F032 waste code from cross-contaminated creosote or inorganic wastes are still of potential benefit to many generators. Consequently, today's rule retains substantially similar equipment cleaning and replacement standards and the provision for deleting the F032 waste code (see § 261.35). Under the rule, generators who have cleaned or replaced or who plan to clean or replace equipment previously used for pentachlorophenol processes may comply with a self-implementing process for reclassifying their cross-contaminated F032 waste as F034 or F035. Generators choosing to reclassify are required to clean or replace equipment in accordance with a written plan, as specified in the proposed rule, and to maintain records and certifications to document that the cleaning and replacement activities are conducted in accordance with the plan and that use of chlorophenolic preservatives is not resumed. Today's rule is different from the proposed rule in that the cleaning and replacement plan and documentation of cleaning and replacement activities need not be submitted to the Regional Administrator for review and approval as a condition for deleting the F032 code. Today's rule allows generators to conduct cleaning and replacement, collect appropriate records, certify that cleaning and replacement has been conducted in accordance with a written plan, and delete the F032 code.

Although some commenters asserted that EPA should develop specific technical standards for cleaning equipment, we have maintained the general performance standards that were included in the proposed rule. EPA believes that appropriate and effective cleaning procedures should be selected on the basis of many site-specific factors, including the type and size of the equipment to be cleaned, the construction materials of the equipment, the extent of the contamination, the type of solvent used in the wood preserving process, and other factors. Consequently, the standards must provide sufficient flexibility to accommodate the wide range of appropriate cleaning techniques. While EPA acknowledges that very specific standards facilitate enforcement and relieve the owner/operator of the burden of making engineering judgments or seeking professional advice, we believe that to rely on very specific standards in this case may hamper the effectiveness of equipment cleaning and/or impose unnecessary or impractical burdens on generators.

## V. Interaction With Other Regulations

*A. Toxicity Characteristic*

As stated previously, in developing today's listing rule, EPA evaluated the potential for other environmental regulations to provide protection to human health and the environment from the hazards posed by wastes from wood preserving as an alternative to listing under RCRA. As part of this analysis, EPA considered relying on the Toxicity Characteristic (see 55 FR 11798 and 40 CFR 261.24) to capture wood preserving wastes. Commenters responding to the December 1988 proposed rule suggested that the rules for hazardous waste characteristics would provide adequate coverage and that, consequently, new listings are unnecessary.

EPA has decided, however, that the Toxicity Characteristic (TC) will not provide the same level of protection for wood preserving wastes as is provided by listing for several reasons. Most importantly, the Toxicity Characteristic does not address several of the hazardous constituents of concern in wood preserving wastes, including chlorinated dibenzodioxins and dibenzofurans and benzo(a)pyrene. Moreover, because most F032 and F034 wastes are oily waste and the current Toxicity Characteristic Leaching Procedure is limited in its ability to accurately characterize wastes having oily matrices, reliance on the Toxicity Characteristic as an alternative to listing is not appropriate in this case. That is, a given waste could have high levels of toxic constitutents but, due to the oily nature of the waste, the Toxicity Characteristic constituents, as measured by the Toxicity Characteristic Leaching Procedure, might not exceed the regulated levels.

Listings provide several other advantages also. For example, listed wastes can only be removed from subtitle C control through the delisting process which involves a thorough review of waste analysis data and waste management practices and a formal public notice and comment procedure. Characteristic wastes are no longer hazardous when they cease to exhibit the characteristic (in this case the Toxicity Characteristic). This difference is especially important in this case because several of the constituents of concern in wood preserving wastes are not considered by the Toxicity Characteristic and will be found in residues derived from treatment, storage, or disposal of the listed wastes. Thus, listing continues to account for the fate of toxic constituents in residues not specifically listed and helps ensure

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proper handling of such residues as well. This is consistent with RCRA's cradle to grave mandate (see *API* v. *EPA*, 906 F.2d 729, 741–42, DC Cir. 1990). Furthermore, enforcement of the listings has proven to be more straightforward than enforcement of the rules for hazardous waste characteristics.

Some of the Extraction Procedure (EP) toxic metals and several of the new constituents added to the TC rule are likely to be found in the wastes listed today. Some of the wastes listed today may fail the EP or the TC and, therefore, may already be regulated as characteristic hazardous wastes. Until today's rule becomes effective in a generator's State, as discussed below, these wastes must be designated as characteristic wastes. After the rule becomes effective, the wastes must be designated as listed wastes rather than as characteristic wastes for purposes of complying with the land disposal restrictions rules. Wastes that were already hazardous by virtue of exhibiting any of the characteristics of hazardous waste, including the TC, may still have to be treated to meet standards promulgated for characteristic wastes after the effective date of this listing. Generators of drippage that exhibits the Toxicity Characteristic should note that the subpart W standards for drip pads may be applied to units used in management of such drippage prior to the effective date of today's rule in their State.

*B. Land Disposal Restrictions*

HSWA mandated that the Agency promulgate land disposal prohibition determinations under a specific schedule for wastes identified and listed prior to the enactment of HSWA (RCRA section 3004(d), 3004(e), and 3004(g)(4), 42 U.S.C. 6924 (d), (e) and (g)(4)). If the Agency failed to promulgate land disposal restrictions by the dates specified in section 3004(g)(4), the wastes are absolutely prohibited from land disposal after May 8, 1990 (or in some cases November 8, 1986, or July 8, 1987). HSWA also requires the Agency to make a land disposal prohibition determination for any hazardous waste that is newly identified or listed in 40 CFR 261 after November 8, 1984, within six months of the date the new listing is promulgated (RCRA section 3004(g)(4), 42 U.S.C. 6924(g)(4)). However, the statute does not provide for automatic restriction or prohibition of the land disposal of such wastes if EPA fails to meet this deadline.

Although some of the wastes covered by today's notice are being listed in part because of the presence of hazardous constituents at levels similar to those found in K001, they are newly listed wastes, and therefore, the treatment standards for K001 do not apply to today's newly listed wastes. The Agency has not yet completed treatability and capacity analyses for these newly listed wastes. For this reason, the Agency will address land disposal restrictions for the wastes listed today at a later date. It should be noted that because the statute does not provide for automatic restriction or prohibition of land disposal for newly identified wastes until such restrictions are promulgated, land disposal of these wastes will not be restricted or prohibited until the Agency promulgates land disposal restrictions (unless the wastes exhibit one of the restricted hazardous characteristics or are subject to other land disposal restrictions such as the prohibition on disposing of liquids in landfills). Wastes that exhibit the newly promulgated Toxicity Characteristic are considered newly identified as hazardous and are not covered by the LDR, unless also EP Toxic (see the Third Third Land Disposal Restrictions Rule, June 1, 1990, 55 FR 22520).

Wastes that exhibit the Extraction Procedure (EP) Toxicity Characteristic were evaluated as part of the Third Third land disposal prohibition determination, and treatment standards were promulgated for these wastes on May 8, 1990 (see 55 FR 22520). Most wastes generated from the use of inorganic wood preservatives (identified as F035 in today's rule) are expected to exhibit the EP characteristic for arsenic and chromium and thus are already subject to the land disposal restrictions standards which include reporting, recordkeeping, and tracking requirements, dilution and storage prohibitions, and treatment standards, for arsenic and chromium (see 55 FR 22659). These wastes also may be subject to certain California List treatment standards (see 55 FR 22674).

## VI. State Authority

*A. Applicability of Final Rule in Authorized States*

Under section 3006 of RCRA, EPA may authorize qualified states to administer and enforce the RCRA program within the state (see 40 CFR part 271 for the standards and requirements for authorization). Following authorization, EPA retains enforcement authority under sections 3008, 7003, and 3013 of RCRA, although authorized states have primary enforcement responsibility.

Prior to enactment of the Hazardous and Solid Waste Amendments (HSWA) of 1984, a State with final authorization administered its hazardous waste program entirely in lieu of the federal program. The federal requirements no longer applied in the authorized State, and EPA could not issue permits for any facilities in a State that was authorized to issue permits. When new, more stringent federal requirements were promulgated or enacted, the state was obligated to enact equivalent authority within specified time frames. New Federal requirements did not take effect in an authorized State until the State adopted the requirements as State law.

In contrast, HSWA amended RCRA to add section 3006(g) (42 U.S.C. 6926(g)). Under section 3006(g), new requirements and prohibitions imposed by HSWA take effect in authorized States at the same time that they take effect in nonauthorized States. EPA is directed to implement those requirements and prohibitions in an authorized State, including the issuance of permits, until the State is granted authorization to do so. While States must still adopt HSWA-related provisions as State law to retain final authorization, the HSWA requirements are implemented by EPA in authorized States in the interim.

Certain portions of today's rule are being promulgated pursuant to RCRA section 3001(e)(1), a provision added by HSWA. These portions include the listing of F032. Therefore, the Agency is adding the requirements to Table 1 in § 271.1(j), which identifies the Federal program requirements that are promulgated pursuant to HSWA and that take effect in all States, regardless of their authorization status. States may apply for either interim or final authorization for the HSWA provisions identified in Table 1, as discussed in the following section of this preamble. The remaining portions of today's rule, in particular the listing of F034 and F035 and the addition of a test method to appendix III of part 261, are being promulgated pursuant to pre-HSWA authority. These provisions, therefore, will become effective only in those States without final authorization, and will become effective in States with final authorization once the State has amended its regulations and the amended regulations are authorized by EPA.

*B. Effect on State Authorization*

As noted above, EPA will implement certain portions of today's rule in authorized States until they modify their programs to adopt these rules and the modifications are approved by EPA.

Pursuant to section 3001(e) of RCRA, a provision added by HSWA, EPA is

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adding F032 to the list of hazardous wastes from non-specific sources. Thus, these standards will take effect in all States (authorized and non-authorized) on the effective date. Certain other portions of today's rule are necessary to effectively implement the previously mentioned HSWA provisions. In particular, the permitting and interim status drip pad standards (subpart W) are necessary to provide regulatory standards applicable to F032 drippage listed today pursuant to HSWA authority. Under the Federal rules, the regulatory status of the pads (but not the collection system) is somewhat unclear (the collection system would be subject to hazardous waste tank requirements). Because these units do not appear to have any applicable standards under the base RCRA program, but have regulatory standards in connection with, and as necessary to implement, a HSWA listing, EPA considers these standards to be HSWA requirements under section 3006(g) when used in connection with the F032 listing. Thus, these provisions will also be effective on the effective date and administered by EPA pursuant to RCRA section 3006(g) and 40 CFR 264.1(f)(2) (see discussion of proposed § 265.1(c)(4)(iii) in paragraph 3 below). The addition of F034 and F035 to the list of hazardous wastes from non-specific sources and the addition of the test method to appendix III of part 261 are not immediately effective in authorized States since the requirements are not imposed pursuant to the HSWA. The permitting and interim status standards for drip pads associated with F034 and F035 wastes will therefore only become effective in authorized States when F034 and F035 become hazardous waste in each authorized State and when the State is authorized for the drip pad standards. However, should such wastes be designated as exhibiting the Toxicity Characteristic, which was promulgated under HSWA authority and is effective in authorized States, then such wastes may be managed on drip pads meeting the subpart W standards.

1. HSWA Provisions

As noted above, EPA will implement the addition of F032 to the list of hazardous wastes from non-specific sources in authorized States until the States modify their programs to adopt these rules and the modification is approved by EPA. Because portions of this rule are promulgated pursuant to HSWA, a State submitting a program modification may apply to receive either interim or final authorization under section 3006(g)(2) or 3006(b), respectively, on the basis of requirements that are substantially equivalent or equivalent to EPA's. The procedures and schedule for State program modifications for either interim or final authorization are described in 40 CFR 271.21. It should be noted that all HSWA interim authorizations will expire January 1, 1993 (see 40 CFR 271.24(c)).

40 CFR 271.21(e)(2) requires that States with final authorization must modify their programs to reflect Federal program changes, and they must subsequently submit the modifications to EPA for approval. The deadline for State program modifications for this rule is July 1, 1992 (or July 1, 1993, if a State statutory change is needed). These deadlines can be extended in certain cases (40 CFR 271.21(e)(3)). Once EPA approves the modification, the State requirements become RCRA subtitle C requirements. States with authorized RCRA programs may already have requirements similar to those in today's rule. These State regulations have not been assessed against the Federal regulations being promulgated today to determine whether they meet the tests for authorization. Thus, a State is not authorized to implement these requirements in lieu of EPA until the State program modification is approved. Of course, States with existing standards may continue to administer and enforce their standards as a matter of State law. In addition, because some of the wastes delisted today are likely already to be hazardous under authorized state law (i.e., through implementation of the EP), States may, of course, continue to regulate such wastes as part of the authorized program. In many cases, EPA will be able to defer to the States in their program implementaiton efforts, rather than take separate actions under Federal authority.

States that submit their official applications for final authorization less than 12 months after the effective date of these standards are not required to include standards equivalent to these standards in their application. However, the State must modify its program by the deadline set forth in § 271.21(e). States that submit official applications for final authorization 12 months after the effective date of these standards must include standards equivalent to these standards in their application. The process and schedule for final State authorization applications is described in 40 CFR 271.3.

2. Non-HSWA Provisions

Other portions of todays's rule are not effective in authorized States since the requirements will not be imposed pursuant to the Hazardous and Solid Waste Amendments of 1984. These portions include the addition of F034 and F035 to the list of wastes from non-specific sources, the permitting and interim standards for drip pads that handle F034 and F035 wastes, and the addition of test methods to 40 CFR part 261 appendix III. These requirements will be applicable only in those States that do not have final authorization. In authorized States, these requirements will not be applicable until the States revise their programs to adopt equivalent requirements under State law, unless the wastes are designated as hazardous due to the Toxicity Characteristic, which would allow an owner or operator to comply with the drip pad standards administered under Federal law.

40 CFR 271.21(e)(2) requires that States that have final authorization must modify their programs to reflect Federal program changes and must subsequently submit the modifications to EPA for approval. The deadline by which the States must modify their programs to adopt this regulation will be July 1, 1992 (or July 1, 1993 if a State statutory change is needed), in accordance with 40 CFR 271.21(e). These deadlines can be extended in certain cases (40 CFR 271.21(e)(3)). Once EPA approves the modification, the State requirements become subtitle C RCRA requirements.

States with authorized RCRA programs may already have requirements similar to those finalized in today's rule. These State regulations have not been assessed against the Federal regulations being finalized today to determine whether they meet the tests for authorization. Thus, States are not authorized to carry out their regulations as RCRA requirements until State program modifications are submitted to EPA and approved. Of course, States with existing standards may continue to administer and enforce their standards as a matter of State law. In addition, because some of the wastes listed today are likely already to be hazardous under authorized state law (i.e., through implementation of the EP), States may, of course, continue to regulate such wastes as part of the authorized program.

States that submit their official application for final authorization less than 12 months after the effective date of these standards are not required to include standards equivalent to these standards in their application. However, States must modify their programs by the deadlines set forth in 40 CFR 271.21(e). States that submit official applications for final authorization 12 months after the effective date of these

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standards must include standards equivalent to these standards in their applications. 40 CFR 271.3 sets forth the requirements that States must meet when submitting final authorization applications.

It should be noted that authorized States are only required to modify their programs when EPA promulgates Federal standards that are more stringent or broader in scope than existing Federal standards. Section 3009 of RCRA allows States to impose standards more stringent than those in the Federal program. For those Federal program changes that are less stringent or reduce the scope of the Federal program, States are not required to modify their programs. See 40 CFR 271.1(i). Some of the standards promulgated today are less stringent than or reduce the scope of the existing Federal requirements. Those provisions appear in 40 CFR 262.34(a)(2). (As noted above, EPA does not believe that drip pads were regulated units prior to today's rule and thus, such standards are more stringent requirements for drip pads.) Therefore, authorized States are not required to modify their programs to adopt requirements equivalent or substantially equivalent to the provisions listed above.

3. Special Provisions for Drip Pad Standards

Under 40 CFR 264.1(f)(3), EPA may issue permits in authorized States if the treatment, storage, or disposal unit is subject to requirements of HSWA and the State has not yet received authorization for the particular HSWA requirements. EPA will therefore issue permits for drip pads that are subject to permitting (i.e., do not qualify for the § 262.34 accumulation provision or other permit exemption) and are managing F032 (or Toxicity Characteristic) wastes in authorized States. The standards for drip pads in 40 CFR part 264 subpart W will be used for these permits.

For F034 and F035 wastes, EPA will implement the standards for permitting drip pads in unauthorized States pursuant to 40 CFR 264.1(b). For F034 and F035 wastes in authorized States, the standards will generally apply when the State modifies its program in accordance with 40 CFR 271.21(e). However, should wastes that meet the listing descriptions of F034 and F035 exhibit the toxicity characteristic, a HSWA requirement, then these TC wastes can be managed in subpart W drip pads which would be implemented by EPA (under 40 CFR 264.1(f)(3), as described above) until the States modify their programs.

Furthermore, for wastes that meet the listing descriptions of F034 and F035 that also exhibit the EP characteristic under authorized state law, EPA has authority to issue a permit under 40 CFR 264.1(f)(2). This authority is available in authorized States if the subject regulated unit was not regulated under RCRA at the time of the State's authorization and if the standards for permitting the unit were promulgated after the State received final authorization. EPA may therefore, under 40 CFR 264.1(f)(2), issue permits for drip pads that are subject to permitting (i.e., do not qualify for the § 262.34 accumulation provision or other permit exemption) and are managing these EP wastes in authorized States. However, wherever possible the Agency expects to defer such permitting actions until authorized states are able to adopt the new listings and process these permitting actions. Of course, facilities that have handled or are handling EP toxic wastes in units that are not subpart W drip pads have pre-existing permit and interim status requirements which continue to apply under State law.

## VII. CERCLA Designation and Reportable Quantities

All hazardous wastes listed pursuant to 40 CFR 261.31 through 261.33, as well as any solid waste that meets one or more of the characteristics of a RCRA hazardous waste (as defined at 40 CFR 261.21 through 261.24), are hazardous substances as defined at section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended. Therefore, the wastes listed as hazardous in today's notice will, on the effective date of today's rule, automatically become hazardous substances under section 101(14) of CERCLA by virtue of their listing under RCRA. The CERCLA hazardous substances are listed in Table 302.4 at 40 CFR 302.4 along with their reportable quantities (RQs). CERCLA section 103(a) requires that persons in charge of vessels or facilities from which a hazardous substance has been released in a quantity that is equal to or greater than its RQ immediately notify the National Response Center (NRC) of the release at (800) 424-8802 or at (202) 426-2675. In addition, section 304 of the Superfund Amendments and Reauthorization Act of 1986 (SARA) requires the owner of operator of a facility to report the release of a CERCLA hazardous substance or an extremely hazardous substance to the appropriate state emergency response commission (SERC) and to the local emergency planning committee (LEPC) when the amount released equals or exceeds the RQ for the substance or one pound where no RQ has been set.

The release of a hazardous waste to the environment must be reported when the amount released equals or exceeds the RQ for the waste, unless the concentrations of the constituents of the waste are known (48 FR 23566, May 25, 1983). If the concentrations of the constituents of the waste are known, then the mixture rule may be applied. According to the "mixture rule" developed in connection with the Clean Water Act section 311 regulations and also used for notification under CERCLA and SARA (50 FR 13463, April 4, 1985), the release of mixtures and solutions containing hazardous waste would need to be reported to the NRC, and to the appropriate LEPC and SERC, when the RQ of any of its component hazardous substances is equalled or exceeded. The mixture rule provides that "[d]ischarges of mixtures and solutions are subject to these regulations only where a component hazardous substance of the mixture or solution is discharged in a quantity equal to or greater than its RQ" (44 FR 50767, August 29, 1979). RQs of different hazardous substances are not additive under the mixture rule, so that spilling a mixture containing half an RQ of one hazardous substance and half an RQ of another hazardous substance does not require a report.

On December 30, 1988, the Agency proposed RQs of one pound for each of today's wastes; later, EPA issued a supplemental correction notice (54 FR 7214, February 17, 1989) providing updated RQs for the constituents of the wastes. (EPA did not alter the proposed RQs for any of today's wastes.) Under section 102(b) of CERCLA, all hazardous wastes newly designated under RCRA will have a statutorily imposed RQ of one pound unless and until adjusted by regulation under CERCLA. In order to coordinate the RCRA and CERCLA rulemakings with respect to new waste listings, the Agency today is adding wastes F032, F034, and F035 to 40 CFR 302.4, the codified list of CERCLA hazardous substances, and adjusting their final RQs to one pound.

## VIII. Regulatory Impact Analysis

### *A. Executive Order Requirements*

Executive Order 12291 requires EPA to conduct a Regulatory Impact Analysis (RIA) for all rules that meet the definition of a "major rule." A major rule is one likely to result in (1) an annual impact on the economy of $100

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million or more, (2) a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions, or (3) significant impacts on competition, unemployment, investment, productivity, innovation, or the ability of United States-based enterprises to compete in domestic or export markets. Although EPA has determined that the final rule will not be a major rule, the Agency was concerned about the potential for significant impacts on the wood preserving industry. Accordingly, the Agency prepared an RIA to measure the costs and benefits of regulatory options considered during development of the final rule and to assess tradeoffs among these options. The RIA is in the public docket for this rulemaking.

*B. Description of Baseline and Final Rule*

EPA considered a wide range of regulatory alternatives during the development of the final rule. Alternatives were considered for resolving three key policy issues: Waste management in the process area, waste management in the storage yard, and permitting requirements. From these alternatives, EPA selected four regulatory options for detailed analysis and determined an appropriate pre-regulatory baseline from which to analyze the incremental costs and benefits of each regulatory option. The costs and benefits of the regulatory options are discussed in detail in the RIA. This preamble presents results only for the pre-regulatory baseline and the final rule.

*Baseline:* The baseline defines the current condition of wood preserving facilities, their waste management practices, and their compliance with other requirements under RCRA or other statutes relevant to the wood preserving listing rule. Evidence from comparison of the Micklewright list of wood preserving facilities, discussed in section III.C, with data from EPA's Hazardous Waste Data Mangement System (HWDMS) suggested that, despite the fact that many wood preserving wastes are characteristically hazardous (under the Extraction Procedure or EP [6]), many wood preserving facilities have not notified EPA that they generate a hazardous waste. This indicates that many facilities are not in full compliance with existing regulations. For this analysis, current waste management practices and actual compliance with existing regulations were used as baseline conditions; full compliance with existing RCRA requirements was not assumed in the baseline.

*Final rule:* Under the final rule, drippage in the process area, wastewaters, process residuals, and discarded spent formulation are listed as hazardous waste and must be managed according to subtitle C regulations. All facilities must build a pad in the process area conforming to subpart W standards. Facilities are also required to take any measures necessary to prevent drippage in areas not covered by the drip pad. Facilities that already have a drip pad and that obtain annual certification from a professional engineer as to the integrity of the pad may delay replacement of the pad for up to 15 years according to a specified replacement schedule. Facilities accumulating waste for less than 90 days are not required to obtain a RCRA permit.

*C. Costs and Economic Impacts*

1. Methodology

a. *Overview.* The cost and economic impact analysis involved estimating the costs of the final rule to wood preserving facilities and then determining the number of facilities likely to close because they would be unable to pay those costs out of current profits.

Costs of compliance were determined using a two-step process. First, 18 model facilities were developed to represent the 583 actual facilities. Second, average incremental compliance costs were estimated for each model for all activities required under the final rule.

Facility closures were projected in the baseline and due to the rule using a three step process. First, the profitability of facilities in the short-run was determined based on average revenues and short-run operating costs. Next, baseline closures were estimated by determining the number of facilities in each model that would be unable to pay long-run operating costs out of short-run profits. Finally, the number of closures due to the rule was estimated by determining the number of facilities unable to pay compliance costs out of profits remaining after payment of short-run and long-run operating costs.

The costs and economic impacts of the rule were estimated under two scenarios: (1) Assuming facilities would be unable to pass any costs on to consumers in the form of higher prices and (2) assuming facilities could pass through all costs. Under the first scenario, costs and economic impacts were estimated as both costs paid by facilities remaining open and the number of facilities that close. Under the second scenario, costs and economic impacts were estimated as the total cost assuming all facilities remain open.

b. *Model facility development.* Eighteen model facilities were developed to represent the 583 active facilities in the industry (see section III.C for industry characterization). Facilities represented by each model had similar production characteristics and operating costs and revenues. Each of the 583 facilities was assigned to one of the 18 models according to three parameters: Preservative type used, geographic location, and annual production.

(1) *Preservative.* Although 14 percent of facilities use more than one type of preservative, most of these facilities treat primarily with one type of preservative. For this reason, multiple preservative facilities were classified into single preservative groups. Because each preservative type is closely associated with a particular treated wood product, each preservative type group was also assigned a single treated wood product; model inorganic facilities were assumed to treat lumber and timber, model creosote facilities were assumed to treat railroad ties, and model PCP facilities were assumed to treat utility poles.

(2) *Location.* Facilities were assigned to regions that correspond to the regional markets for preserved wood products and the regional availability of different species of trees. The definition of the regions varied by preservative type.

(3) *Production.* Data on actual per-facility annual production were not available; therefore, EPA estimated production based on the number and size of cylinders at each facility. The facilities were then divided into size categories based on production volume. The number of size categories varied by preservative type and region.

c. *Incremental compliance costs.* Incremental compliance costs were estimated for each model facility for all activities required under the final rule, including building a drip pad in the process area, managing process residuals as hazardous waste, and complying with the requirements of 40 CFR part 262 for hazardous waste generators. All facilities that currently have a drip pad were assumed to remove it immediately and install a new drip pad meeting subpart W standards. For some compliance activities, EPA

[6] At the time that data were retrieved from HWDMS, the EP was the test for determining if a waste was characteristically hazardous. The EP has since been replaced by the Toxicity Characteristic (TC) Leaching Procedure which changed the testing protocol and expanded the list of constituents used to define a waste as hazardous.

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was uncertain of the exact response of facilities to the regulation. For example, although a drip pad in the process area is required, EPA did not know exactly how large a pad facilities would build. To account for this uncertainty, EPA estimated lower and upper bound costs to cover the range of possible compliance responses.

All costs were estimated as the present value of the initial and recurring pre-tax costs incurred by facilities over an assumed 20-year operating life. The present value cost was then annualized over 20 years to arrive at equal annual payments. The annualized cost represents the annual compliance cost to facilities that smooth out anticipated compliance costs with some form of financing over a 20-year period. An eight percent real rate of interest was used as both the discount and annualization rates.

d. *Baseline operating costs.* Among the critical inputs for the cost and economic impact analysis were the average operating costs for each model. These costs were estimated for each model by identifying all of the production inputs and process activities used at wood preserving facilities and estimating the costs associated with these inputs and activities. All costs were estimated on a pre-tax basis.

Costs were divided into direct and indirect operating costs. Direct operating costs were defined as those costs that facilities must pay to remain in business in the short run, such as expenditures for raw materials, labor, utilities, maintenance and repair, property taxes, insurance, and current environmental compliance practices. Indirect operating costs were defined as the sustaining capital needed to replace capital equipment, such as treatment cylinders, buildings, and equipment. Facilities must pay both direct and indirect costs to remain in business in the long run.

Many wood preserving facilities already undertake some environmental compliance activities, such as complying with 40 CFR part 262 hazardous waste generator requirements; operating as an interim status hazardous waste management facility under 40 CFR part 265; obtaining a RCRA treatment, storage, or disposal (TSD) permit under 40 CFR part 264; and/or installing a drip pad in the process and/or storage areas. The cost of these activities was included in the baseline as a direct operating cost of the model facilities.

Facilities that currently have interim status or a permit to operate as a hazardous waste TSDF may also be undergoing corrective action. Corrective action was assumed to be necessary at 31 percent of current TSDFs, based on estimates from the RIA for the proposed subpart S corrective action rule.[7] The cost of soil and ground-water remediation at wood preserving facilities requiring corrective action was estimated based on cleanup costs at seven wood preserving facilities undergoing cleanup under CERCLA. The cost of corrective action was treated in the baseline in the same manner as an indirect operating cost.

The percentage of facilities that are currently generators and/or TSDFs was determined form EPA's Hazardous Waste Data Management System (HWDMS). The percentage of facilities that have some form of drip pad in the process and/or storage area was determined from a 1987 survey of wood preservers conducted by the American Wood Preserving Institute (AWPI) submitted as part of the comments to the proposed rule (F-88-WPWP-00128.A).

e. *Facility closures and national costs.* To estimate the number of facility closures, the Agency developed an economic model that estimated the profitability of wood preserving facilities before and after compliance with the listing rule. Based on the number of closures, EPA also estimated losses of production and jobs. The economic model provided the Agency with greater resolution in predicting facility closures than the methodology used for the analysis of the proposed rule. This methodology differed from that used for the proposed rule in that it allowed the Agency to predict impacts on a percentage of facilities within a model, rather than on the entire model only.

Facility closures were determined using a three step process. First, a supply curve was estimated for each model to represent the range of pre-regulatory short-run operating costs of facilities within the model. The supply curves were estimated based on the assumption that short-run operating costs are less than or equal to revenues for all facilities represented by each model. Second, long-run operating costs were added to short-run operating costs and total costs were compared to revenues. With the addition of long-run operating costs, total costs for some marginal facilities were pushed above revenues, and the facilities were projected to close. These facilities were considered to be non-viable in the long run even without the new regulations and their closure was not considered an impact of the rule. Finally, compliance costs were added to total operating costs; if this pushed total costs above revenues, then a percentage of facilities were projected to close due to the rule.

Under the first cost pass-through scenario, it was assumed that no compliance costs would be passed on to consumers through price increases. For this scenario, costs and economic impacts were estimated jointly; i.e., the results were presented as both costs paid by facilities remaining open and the number of facilities that close. Second order effects, such as jobs lost and production lost, were also estimated.

It may be somewhat unrealistic to assume that facilities would be unable to recoup any of the compliance costs by raising prices, as assumed in the first cost pass-through scenario above. To the extent that prices were raised, additional facilities would likely find it profitable to remain in business. The Agency accordingly considered in the second cost pass-through scenario the effect of assuming full cost pass-through, whereby facilities raise prices to cover all compliance costs. Under such an assumption, there would be no closures of wood preserving facilities as a result of the rule; however, national costs would be higher because compliance costs would be paid by more facilities. (Scenario 2, which assumes no facility closures, could also be used to represent impacts on facilities that pay compliance costs out of savings or land sales rather than current profits.) In the event of full cost pass-through there may be some impacts on the purchasers of treated wood products due to the higher prices for these products. However, assessing such impacts was beyond the scope of this analysis.

2. Results

Of the initial population of approximately 580 wood preserving facilities, about 150 facilities, or almost 25 percent, were projected to close in the baseline due to indirect costs and the cost of existing corrective action requirements. The nearly 440 facilities remaining open represent the population of facilities potentially impacted by the regulation.

Under the assumption that facilities would not be able to pass compliance costs on to consumers in the form of higher prices, the rule was estimated to close less than 20 facilities. At the remaining 420 facilities, total national costs were estimated at between $11 million and $14 million per year, in 1990 dollars. The majority of the cost was for drip pad construction. Small inorganic

[7] U.S. Environmental Protection Agency (USEPA). June 25, 1990. Regulatory Impact Analysis for the Proposed Rulemaking on Corrective Action for Solid Waste Management Units. Washington, DC: Office of Solid Waste.

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facilities were estimated to incur a larger share of the compliance costs and closures than any other category of facility, approximately $4.5 million and 15 closures. This was due to the fact that most wood preserving facilities are of this type and that these facilities have the lowest profit margins of any type of wood preserving facility. Production of treated lumber and timber was estimated to decrease by three percent, while utility pole production was estimated to decrease by six percent (from closure of one large PCP facility). Railroad tie production was not estimated to change because no creosote facilities were projected to close. Approximately 250 jobs were projected to be lost.

Under the assumption that facilities can pass on all compliance costs through higher prices, the rule was also estimated to cost between $11 million and $14 million per year. No facilities were projected to close under this scenario. The costs are the same under the two cost pass-through scenarios because the compliance cost to the facilities projected to close were small.

3. Limitations

Some important limitations of the analysis tend to underestimate, overestimate, or create uncertainty in the results of the costs and economic impacts of the rule. The following factors tend to underestimate the costs and economic impacts:

• As discussed in section III.C, EPA did not have sufficient information on non-pressure treaters to include them in the analysis. However, one commenter asserted that there are approximately 100 non-pressure treaters in the Northwest. If these facilities generate more than 100 kg of hazardous waste per month, they would be subject to RCRA regulation and could be impacted by this rule.

• When closing their existing drip pads, facilities could be required to clean up contamination underlying the pads. Since the cost of this clean-up was not included in the cost analysis, estimates of costs and impacts are likely to be understated.

• The method of annualizing costs assumes that facilities have unlimited access to borrowing at a real rate of interest of 8 percent for 20 years. To the degree that this type of borrowing is not available, annual costs and/or closures would be higher.

• Facilities may need to halt production during construction of a new drip pad or repair of an existing drip pad. In addition, facilities that are unable to construct a drip pad before the effective date of the rule may need to halt production for a longer period of time until they are able to comply with the rule. The cost of this lost production was not included in the analysis.

The following factors tend to overestimate the cost and economic impacts:

• It was assumed that all facilities with existing pads would need to replace them immediately with new pads meeting subpart W standards. To the degree that facilities with existing pads are able to annually certify that the pad will not cause releases, they will be able to delay replacement of the pad. Thus, this assumption leads to an overestimate of the true costs and impacts of the rule.

• In the analysis, it was assumed that all jobs and production of treated wood products would be lost at closing facilities. To the degree that jobs and production are tranferred to other facilities, this assumption leads to an overestimate of the true economic impacts.

• Under the subpart W requirements, if facilities build a roof over their drip pad, they may build a smaller sump that is not designed to contain a 25-year/24-hour storm event. To the degree that this option represents a cost savings to facilities, the costs and economic impacts have been overestimated.

The following factors tend to create uncertainty that could over- or underestimate the cost and economic impacts:

• The corrective action costs estimated for the baseline were based on examination of seven Superfund sites that are not necessarily representative of the universe of active wood preserving facilities. Also, the number of facilities assumed to incur corrective action costs in the baseline was based on estimates in the RIA for the proposed subpart S corrective action rule. Estimates from the corrective action RIA may, however, not be representative of wood preserving facilities. These assumptions could lead to an over- or underestimate of the number of facilities projected to close in the baseline and, therefore, the number of facilities remaining open to incur the cost of the rule.

• Several potential costs were not included in the baseline operating costs, such as costs for surface impoundment closure, wastewater treatment, and management of K001 wastes. Had these costs been included, more facilities would have closed in the baseline leaving fewer facilities open to pay the costs of compliance, in turn leading to lower costs and impacts due to the rule. However, facilities remaining open after baseline closures would have appeared financially weaker, with lower profits, due to the additional baseline costs, leading to higher impacts due to the rule.

*D. Benefits*

EPA analyzed the benefits of this rule using modeling, case studies, and screening analyses. The modeling analysis estimated risks posed to human health and the environment from drippage wastes using a multi-media exposure and risk estimation model. The case studies provide evidence of contamination at actual wood preserving facilities, complementing the modeling results. In addition, EPA conducted two benefits screening analyses on potential resource damage and food chain bioaccumulation. These analyses are summarized briefly below; complete documentation is provided in the RIA.

1. Modeling

*a. Methodology.* EPA used a computerized multi-media exposure and risk estimation model (the MMSOILS model) to simulate human health and environmental impacts from wood preserving drippage in the baseline (pre-regulatory case) and then again under the final rule. The Agency used MMSOILS to simulate releases of contaminants from wood preserving facilities and resulting concentrations in ground water and surface water.

The ground-water pathway examines leaching of pollutants from contaminated soils by infiltrating rainwater. EPA used the predicted pollutant concentrations in ground water as a basis for estimating cancer and non-cancer risks to humans drinking the contaminated water. The surface water pathway simulates concentrations of contaminants in streams as a result of (1) discharge of contaminated ground water into the stream and (2) erosion of contaminated soils which are then carried to the stream over the land surface. EPA examined two types of effects associated with contaminated surface water: human health risk from consumption of contaminated fish and stream water, and adverse effects on aquatic life.

(1) *Selection and characterization of sample facilities.* Modeling was conducted for a random sample of 55 actual wood preserving facilities. The sample was stratified by preservative type and was comprised of 44 facilities using inorganics, five using creosote, and six using PCP. To extrapolate the modeling results from the sample to the national population of wood preserving facilities, a weighting system was developed. The weights reflect the

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frequency of occurrence of preservative types in the population compared to the frequency within the sample.

Running the MMSOILS model required a wide variety of data inputs for each of the 55 sample facilities. Facility-specific information relating to climate, soil characteristics, and hydrogeology was obtained from a variety of sources, including the U.S. Department of Agriculture Soil Conservation Service (county soil surveys); the U.S. Geological Survey (topographic maps, water supply papers, computerized stream reach data); well logs kept by state departments responsible for ground-water management; documents used in the Superfund program; the on-line "Graphical Exposure Modeling System" or GEMS; and the scientific literature. U.S. Geological Survey topographic maps provided site-specific information on the location of private drinking water wells within one mile downgradient of the site. Information on the distance to the nearest public well and the number of people served was obtained from U.S. Geological Survey topographic maps and the on-line Federal Reporting Data System (FRDS).

(2) *Facility size and waste characterization.* Information on facility size and the amount of drippage generated by each sample facility were unavailable. EPA estimated the surface area of each facility by assuming that there is a direct correlation between facility size and wood production rate; wood production rates were calculated as described above in section VIII.C.1.b(3). EPA then calculated an annual drippage volume for each sample facility by multiplying the production rates by an estimated drippage rate per volume of treated wood. A limited amount of data on drippage rates per volume of treated wood were provided by commenters to the proposed wood preserving rule, which EPA used as a basis for estimating an average rate for each preservative type.

Pollutant concentrations in drippage were assumed to be the same across all facilities using each preservative type. Data on the chemical composition of inorganic, creosote, and PCP drippage were reported in the background document supporting the proposed rule.

(3) *Constituents of concern.* The Agency selected a subset of the constituents in the background document for risk modeling, referred to as constituents of concern (COCs). Only those constituents with EPA-approved toxicological parameters were considered. From the list of constituents with EPA-approved values, the Agency identified those with the highest potential for posing risk to humans or aquatic life based on their concentrations in drippage, mobility in the environment, and toxicity. The COCs selected for modeling were: arsenic, hexavalent chromium, and copper for inorganic facilities; acenaphthene, benzo(a)pyrene, fluoranthene, and naphthalene for creosote facilities; and naphthalene, pentachlorophenol, polychlorinated dibenzo-p-dioxins (referred to in this section as "dioxins"), and polychlorinated dibenzofurans (referred to in this section as "furans") for PCP facilities.

To assess human health risks from exposure to these contaminants in ground water, EPA used cancer potencies for carcinogenic COCs and reference doses (RfDs) for non-carcinogenic COCs. Cancer potencies and RfDs were taken from two sources: the Integrated Risk Information System or IRIS, and Health Effects Assessment (HEA) Summary Tables. The only exceptions were for pentachlorophenol (PCP), dioxins, and furans. The cancer potency for PCP was recently verified by the Agency; the cancer potencies for dioxins and furans were derived using procedures recommended by EPA's Risk Assessment Forum.[8]

To assess human health and environmental risk from exposure to contaminated surface water, EPA generally used Ambient Water Quality Criteria (AWQC) from EPA's Office of Water Regulations and Standards "Quality Criteria for Water" (May 1986). AWQCs for the protection of human health are the concentrations in surface water that would pose a cancer risk of $10^{-6}$, or doses above the RfD, for humans that both drink the surface water and ingest fish living in the stream. AWQCs for aquatic life are the concentrations in surface water considered by EPA to be protective of aquatic life.

(4) *Estimation of baseline and post-regulatory risk.* For each facility, MMSOILS provided the annual concentration of each COC in ground water over a 300-year time frame, and the concentration of each COC in the nearest stream. For the ground-water pathway, EPA calculated risks to the most exposed individual at each site (i.e., to an individual exposed at the actual nearest well) and population risk (i.e., the number of cancer cases expected in the population and number of people at risk for non-cancer effects) across all wells at each site. To measure potential adverse effects on aquatic organisms in nearby streams, EPA calculated the ratio of the annual concentration of each pollutant in the stream to the AWQC for the protection of aquatic life. Human health risks from exposure to contaminated surface water were calculated in a similar fashion, using AWQC for the protection of human health.

To simulate the benefits of the rule, EPA focused on facilities already in existence on the effective date of the wood preserving listing. To determine how long each facility had been in operation prior to the rule, the Agency calculated the average current age of wood preserving facilities, by preservative type, based on information provided by the American Wood Preserving Institute and the Society of American Wood Preservers, Inc. To be consistent with the cost and economic impacts analyses, EPA assumed that all facilities would be in operation for an additional 20 years after the effective date of the rule. EPA modeled risks for a period equal to the current average age of the facility plus an additional 300 years.

To simulate risks in the baseline, EPA assumed for modeling purposes that the drippage is uniformly distributed across the process and storage areas. An average drippage rate for both the process and storage areas was developed for each preservative type based on limited data provided by commenters to the proposed wood preserving rule. EPA multiplied the average drippage rates derived from commenter data by 10 to account for uncertainty in the data and the likelihood that actual drippage rates would be higher than indicated by the available data.

EPA also assumed that drip pads currently in place at wood preserving facilities do not effectively prevent contaminants from being released to or from soil. Examination of one of the wood preserving case study sites indicates that even where drip pads have been installed, cracking in the pad or inadequate berms may result in significant soil and ground water contamination. (See the discussion of case study #4 in chapter 8 and appendix F of the RIA background document.)

Consistent with the cost analysis, EPA assumed that 31 percent of the TSDFs would trigger corrective action in the baseline. Human health and environmental risks for facilities that trigger corrective action in the baseline were assumed to be negligible.

[8] *Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and –Dibenzofurans (CDDs and CDFs) and 1989 Update* (USEPA, 1989)

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EPA assumed that all facilities would install drip pads on the effective date of the rule. Thus, the facilities were assumed to operate without pads for a period of time equal to their current age and then for 20 years with the pads in place. Becuase MMSOILS does not have the capability to simulate drip pads that cover only a portion of the facility, EPA assumed that the drip pads would cover both the process area and storage yard. EPA assumed that the pads are 100 percent effective in preventing both drippage and rainwater from entering the soil throughout the entire facility and that they remain 100 percent effective throughout the remainder of the modeling period. For facilities with significant existing storage yard contamination, or that allow preservatives to drip to storage yard soils in the future, this assumption overestimates the effectiveness of the rule.

b. *Results*—(1) *Baseline risk/hazard.* The results indicated that, in the baseline, exposure to contaminated ground water poses 300-year average individual risks exceeding $10^{-6}$ at about 23 percent of wood preserving facilities. About 5.3 percent of facilities had risks in excess of $10^{-3}$. All of the facilities that pose cancer risk via ground water were inorganic plants, for which the cancer-causing pollutant is arsenic. Facilities using only creosote or PCP preservatives posed no ground-water risk within the modeling period because the contaminants of concern move very slowly in the subsurface environment. The Agency estimated that, across all facilities, exposure to contaminated ground water could lead to 300 cancer cases over 300 years in the baseline, virtually all of which (296 cases) would be attributable to arsenic exposure at public water supply wells near inorganic facilities.

The predominance of arsenic-related risk at public wells raised two issues. First, arsenic is a Safe Drinking Water Act pollutant monitored by public water supply systems; presumably, municipal water supply systems would treat arsenic-contaminated drinking water to reduce levels below the MCL. It is also noteworthy that arsenic poses a lifetime risk of $3\times10^{-3}$ at its MCL of 0.05 mg/l; nearly all the baseline population risk and most of the MEI risk is due to arsenic concentrations below the MCL. Second, pollutant concentrations were simulated at the top of the aquifer, where concentrations are highest. This is a conservative assumption for all drinking water wells, but is particularly conservative for public water supply systems which tend to draw ground water from deep within the aquifer, where pollutant concentrations are likely to be lower.

Soil erosion from PCP plants is of concern for its potential adverse effects on aquatic life in nearby streams. The model results indicated that, in the baseline, erosion of soils contaminated with dioxins and furans led to surface water concentrations that threaten aquatic life at 83 percent of the PCP plants. Predicted concentrations of dioxins in streams near PCP plants were also high enough to threaten human health if people drink the water or eat the fish; simulated risks to hypothetically exposed individuals exceeded $10^{-5}$ at 83 percent of the PCP plants and $10^{-3}$ at one-third of the PCP facilities. Contaminated surface water was also potentially of concern for human health at the inorganic and creosote facilities, but the simulated risks to hypothetically exposed individuals rarely exceeded $10^{-5}$. The Agency did not examine whether people actually use these streams as a drinking water supply or for fishing. Most of the affected streams are too small to support public water systems, suggesting that few people are likely to be exposed on a continuing basis via the drinking water route; however, consumption of contaminated fish could still threaten human health.

(2) *Risk/hazard reduction due to the rule.* EPA estimates that requiring drip pads (and the associated inspection and response requirements) will eliminate all of the risk from on-going operations at the affected wood preserving facilities that meet the new pad standards. The pads should prevent releases to ground water or surface water. If there is failure of the pads, the leak detection and response provisions, along with the closure provisions, should assure that there is no release from on-going operations at new pads.

The modeling done for this rule did show that there are facilities where past contamination poses cancer risks above 10–4. If those facilities are reviewed in a permit context or in the context of remediation under CERCLA, EPA policy (as articulated in the proposed RCRA corrective action regulation and the NCP for CERCLA) will be to seek to reduce the risk at such sites.

In deciding in this regulation that compliance with the drip pad standards could be accomplished with a provision similar to the 90-day generator requirements for tanks, EPA is making a decision regarding what procedure is appropriate for addressing waste it is deciding to list in this regulation. It is not implying that it finds risks from past contamination at these facilities to be acceptable.

c. *Limitations.* There is considerable uncertainty in the modeling results. The following factors tend to bias the Agency's results in the direction of understating risks from wood preserving facilities:

- Contaminant sources other than drippage (e.g., routine preservative spills, on-site disposal of process residuals) were not considered.
- The ground-water modeling was limited to a time frame of 300 years and a distance of one mile. An extended time horizon and additional well distance could have resulted in some additional risk. For example, a longer modeling period would eventually have resulted in constituent breakthrough at wells down-gradient from PCP and creosote facilities.
- Only pollutants with EPA-approved risk values (human health or aquatic) were simulated. This could underestimate risk for creosote and PCP plants, as the preservative solutions contain many potentially high-risk pollutants for which EPA has not yet derived dose-response information.
- Population growth over time was not considered when calculating the number of cancer cases. If larger populations are exposed, then a greater number of cases would be predicted.
- Health risks through several potential pathways of exposure, including inhalation of contaminated particulate matter, incidental ingestion of contaminated soils, and dermal contact with contaminated soils were not examined.

The following factors tend to bias the Agency's results in the direction of overstating risks from wood preserving facilities:

- Very little information on drippage rates was available; conservative assumptions for drippage rates (10 times the values provided by commenters) could overstate risks.
- Assuming that drip pads currently in place are totally ineffective, while those installed in response to the rule are 100 percent effective over the duration of the modeling period, tends to overstate the benefits of the regulation.
- Pollutant concentrations in ground water were modeled at the top of the aquifer, where pollutant concentrations are highest. This overstates baseline risks, particularly for facilities with public drinking water wells.
- The potential for decline in the population utilizing ground water was not considered; if fewer persons are exposed, then the number of cancer cases would be lower than predicted.

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Some of the major factors that contribute to uncertainty in risk results are as follows:

- The algorithms used in MMSOILS to represent different environmental transport mechanisms are simple models that can only approximate the detailed heterogeneity and complex environmental influences affecting the fate and transport of chemicals at specific sites.
- MMSOILS, like most currently available fate and transport models, does not simulate contaminant flow through fractures or discrete zones of high permeability. This type of flow could act to channel contaminants toward, or away from, exposure points, potentially resulting in significantly higher or lower risks than estimated.
- EPA did not attempt to simulate two-phase flow. This is a potentially significant source of uncertainty for creosote and PCP facilities, which apply preservatives to wood in oil-based solutions.
- The analysis was based on limited information on pollutant concentrations in drippage, process and storage area sizes, and annual drippage volumes
- EPA assumed that drippage is uniformly distributed across the process and storage areas, as very little information was available to quantify the difference in drippage rates between these two areas. Assuming that drippage is concentrated in the process area could potentially have resulted in higher risk than estimated.

2. Case Studies

a. *Purpose of the case studies.* There is strong evidence that significant environmental contamination has resulted from both routine operations and waste mismanagement at wood preserving facilities. For example, as of June 1990, 54 wood preserving facilities had been listed on the Superfund National Priorities List (NPL), while RCRA corrective action measures had been mandated for numerous other facilities. At many facilities where Superfund Remedial Investigations/Feasibility Studies (RI/FSs) and RCRA Facility Assessments (RFAs) have been performed, extensive groundwater and soil contamination has been found.

Although many of these sites involve contamination resulting from management practices that are no longer permitted under current regulations, such as the use of unlined surface impoundments, environmental contamination can also be attributed to routine operating practices that would be affected by the listing of wood preserving wastes. These practices include allowing freshly treated wood to drip preservatives onto the soil and the on-site disposal of process residuals.

The Agency developed seven case studies to document examples of contamination resulting from operating practices addressed by the listing rule. The case studies also serve to provide "real world" evidence to complement the modeling analysis performed for the listing. Complete versions of the case studies are included in appendix G of the RIA.

b. *Selection of the case studies.* EPA selected seven case studies after screening the available information on contamination at wood preserving facilities. This information included the case studies from the public docket for the proposed rule; Superfund RODs, fact sheets, and RI/FSs; and RCRA RFAs. EPA focused its research efforts on those facilities where evidence of contamination was substantially documented and where contamination could be directly attributable to wastes and management practices addressed by the listing. Facilities were not used as case studies if contamination resulted primarily from surface impoundment releases, or if such contamination could not be distinguished from other types of contamination.

Of the seven case studies selected, four were based on information from RI/FSs, two were based on RCRA RFA data, and one was developed using a Superfund Endangerment Assessment.

c. *Results of the case study analysis.* Soil contamination with wood preservatives was detected in the process and drip track areas at all seven case study facility sites, and was above health-based levels at five of them. Of the five sites showing soil contamination above health-based levels, derivatives of creosote and PCP were the primary contaminants at three sites and inorganic constituents from CCA were the primary contaminants at the other two sites. At the sixth site, no soil samples were taken, but the RFA noted that creosote stains could be seen in soil samples as deep as 33 feet. At the seventh site, contamination was found, but at concentrations below health-based levels.

Ground water underlying or downgradient of the process area and drip track area was contaminated above health-based levels in all seven case studies. Three of the cases involved inorganic contaminants from CCA and four involved contamination from creosote and/or PCP.

Soil and ground-water contamination in the drip track area is most likely the result of excessive drippage of preservatives from freshly treated wood. For example, at several of the case study facilities, soil samples were taken directly under the drip track and contamination can, therefore, be unambiguously attributed to drippage. At another case study facility, soil samples were taken in a natural drainage area where storm water runoff is believed to have carried contamination from the drip track.

The exact cause of some of the soil contamination in process areas is not clear. Contamination in the work tank area at most of the facilities, for example, likely resulted from a combination of factors including product spills, leaking tanks, and poor housekeeping practices. These practices are not covered by the listing. They are, however, covered by other EPA regulations. To the extent that contamination results from releases of a CERCLA hazardous substance in excess of the Reportable Quantity, the facility must notify EPA and the State, and could be liable for cleanup under CERCLA section 107. Such contamination may also result from substances deemed to be RCRA hazardous waste, either as a characteristic waste under the toxicity characteristic, or as a U or P waste, such as U051 (creosote), or another listed waste. Release of these materials could constitute land disposal of a RCRA hazardous waste which would require interim status of a part B permit and, therefore, subject the facility to RCRA corrective action requirements.

Soil contamination was also found in the storage yard at case study facilities, but less frequently and at lower levels than in the process area. Soil contamination above health-based levels was found at two sites and creosote stains were observed at one other facility. Ground water underlying the storage area was contaminated above health-based levels at three sites. Detailed descriptions of the production process at case study facilities were usually not provided in the RI/FS, therefore, the observed storage yard contamination could not be linked to specific management practices. Storage yard contamination could have resulted from continuing drippage in the storage yard, precipitation runoff carrying excess preservative from the treated wood, or from management of other wastes in the storage yard.

Off-site contamination was found at one case study site. At this site, surface water runoff contaminated with preservative from the drip track and storage areas formed ponds on an area entirely off-site. Soil samples taken from this area revealed high levels of chromium and arsenic. Ground-water

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monitoring in this area also revealed high levels of contamination. Because this ponding area was downgradient of the rest of the facility, some of the ground-water contamination may have resulted from other parts of the facility upgradient of this area.

The primary benefit of the rule will be to eliminate contamination from drippage of excess preservative in the drip track area, a significant source of contamination at the case study wood preserving facilities. Because contamination from the drip track can migrate through ground water, contamination of other areas both on-site and off-site will also be curtailed.

d. *Limitations of the case study analysis.* The seven case studies provide substantial evidence that soil and ground-water contamination can result from routine operational practices. There are, however, limitations on the degree to which these findings can be generalized to the universe of wood preserving facilities. First, the analysis is based on only seven facilities, two of which are closed and are, therefore, not on the list of 583 active wood preserving faciltiies. Second, the seven case study sites were specifically selected because they were contaminated and detailed data were available. Hence, they are more likely to represent the most severely contamination facilities rather than the typical facility. In addition, the quality and quantity of data contained in available documents varied greatly. In some cases, documents explicitly identified sources of contamination, while in other cases, the source of contamination was inferred from the location of the samples and information on ground-water flow.

3. Resource Damage Screening Analysis

The impact of ground-water contamination can be measured in terms of the loss of ground water as a resource, as well as the threat posed to human health. EPA performed a screening analysis of the 55 sample wood preserving facilities discussed in section VIII.D.1.a to determine whether resource damage is potentially of concern at wood preserving sites. For this analysis, resource damage was considered to occur whenever ground water is rendered unfit for use as a drinking water supply (i.e., when contaminant concentrations in ground water exceed Maximum Contaminant Levels (MCLs) or taste and odor thresholds). EPA's basic approach was to identify facilities at which estimated constituent concentrations in ground water at the downgradient facility boundary were above these thresholds.

EPA estimated that over a 300-year time frame, pollutant concentrations in ground water at the downgradient facility boundary would exceed resource damage thresholds at 68 percent of wood preserving facilities (70 percent of the inorganic facilities, 60 percent of the creosote facilities, and 67 percent of the PCP facilities). The magnitude of the resource damage at each site would depend on several factors that were not considered in this simple screening approach, such as the extent of plume growth over time, the number of people whose water supply would be affected, the proximity of the site to alternate drinking water supplies, and the cost of utilizing those supplies. However, the analysis does indicate that, when the resource value of ground water is considered, the number of facilities with potentially significant environmental contamination can be higher than indicated based on human health risks alone. The analysis also indicates that compliance with the rule would reduce but not eliminate ground-water contamination and resource damage.

4. Food Chain Contamination Screening Analysis

a. *Methodology.* EPA conducted a screening analysis of potential human health risks from exposure through the food chain to contaminants released to soil from wood preserving drippage. The Agency used the MMSOILS model to simulate releases of contaminants to soil at 4 of the 55 sample wood preserving facilities (see section VIII.D.1.a.), resulting concentrations in crops grown in contaminated soils and in food products derived from cattle consuming the crops, and potential health risks to humans ingesting the crops and food products. Human health risks from incidental ingestion of soil and dermal contact with soil were examined as well. The results were used to identify which exposure pathways are potentially of concern under the assumption that wood preserving operations cease 20 years after the effective date of the rule and the land is converted to food and feed production.

The Agency selected two inorganic and two PCP facilities for the screening analysis; each pair of facilities includes a "typical" and a "worst-case" facility (based on average soil concentration of constituents) to represent "typical" and "worst-case" potential human health risks. The Agency used the same information on facility size and drippage rates as those used for the ground-water and surface water risk modeling (see section VIII.D.1.a.). Facility-specific information relating to feed (i.e., pasture) and food (i.e., vegetable) production and factors affecting the deposition of contaminated soil particulates was obtained from a variety of sources, including the U.S. Department of Agriculture (county soil surveys); the on-line GEMS: and the scientific literature. Information on the typical consumption rates of crops and food products by humans and/or cattle was obtained from EPA documents on exposure assessment and the scientific literature.

From the set of constituents of concern (COCs) developed for ground-water risk modeling (see section VIII.D.1.a.), the Agency selected only those constituents that are known to translocate in food and feed crops. The COCs selected for food chain modeling were arsenic and hexavalent chromium for the inorganic facilities; and pentachlorophenol, polychlorinated dibenzo-p-dioxins (referred to in this section as "dioxins"), and polychlorinated dibenzofurans (referred to in this section as "furans") for the PCP facilities. To evaluate the mobility of COCs in the food chain pathways, the Agency used transfer factors obtained from the scientific literature. To assess human health risks from exposure to these contaminants in soil and the food chain, EPA used the same cancer potencies for carcinogenic COCs and reference doses for non-carcinogenic COCs as those used for ground-water risk modeling.

b. *Results.* The modeling results indicated that several of the food chain pathways analyzed are potentially of concern (i.e., may present high MEI risk) under the hypothetical scenario where wood preserving sites are converted to food production. At both the typical and worst-case inorganic facilities, the greatest potential for cancer risk is through exposure to arsenic in vegetables; potential exposure to chromium, a non-carcinogen, in any of the food chain and soil pathways is limited and would not result in chronic health effects. At the typical PCP facility, the greatest potential for cancer risk is through exposure to dioxins in vegetables and to furans in beef and milk. At the worst-case PCP facility, the greatest potential for cancer risk is through exposure to both dioxins and furans in vegetables, beef, and milk. At the worst-case PCP facility, potential exposure to pentachlorophenol in vegetables is significant and would result in chronic (i.e., non-cancer) health effects. The analysis also indicated that the final rule, by requiring process area drip pads and preventing further soil contamination, would reduce the

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potential for adverse health effects caused by ingestion of contaminated foods.

c. *Limitations.* The food chain pathway and soil exposure modeling was undertaken as a screening analysis and, therefore, the Agency made many simplifying assumptions. The most important of these assumptions include the following:

- The potential health risks correspond to a hypothetical maximum exposed individual (MEI) who lives in a nearby farm household (i.e., a subsistence farmer) and whose diet consists, in part, of foods which are grown directly on the former wood preserving site and food products derived from cattle grazing at the site.
- Constituent levels in soil and feed that would cause plant or animal mortality, thereby eliminating the possibility of human exposure to the foods, were not considered.
- Neither chemical decay in soils nor erosion of soils from the site were considered.
- Potential institutional restrictions prohibiting food production on former wood preserving sites were ignored.

Other limitations of the MMSOILS model are identified in section VIII.D.1.c.

5. Summary of Benefits

The primary focus of the wood preserving listing rule is to prevent drippage in the process area from being released to the surrounding environment. The results of the benefits modeling analysis unambiguously indicate that uncontrolled drippage at wood preserving facilities poses a risk to human health and the environment via transport through the soil to the ground water and surface water. These results are substantiated by "real world" evidence from case studies of actual facilities which indicates that uncontrolled drippage in the process area has resulted in contamination of soil and ground water. EPA's actions to require drip pads in the process area at wood preserving facilities will prevent such contamination from occurring in the future.

## IX. Regulatory Flexibility Analysis

### *A. Approach*

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires that whenever an agency publishes a notice of rulemaking, it must prepare a Regulatory Flexibility Analysis (RFA) that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions). An RFA is unnecessary, however, if the Agency's administrator certifies that the rule will not have a significant economic effect on a substantial number of small entities.

EPA examined the final rule's potential effects on small entities as required by the Regulatory Flexibility Act. Two measures, based on EPA guidelines for conducting an RFA, were used to determine whether the rule would have a "significant economic effect" on small entities. The first measure was the ratio of compliance cost to cost of production (the "COP ratio"). A COP ratio exceeding five percent was assumed to represent a significant impact because it indicated that facilities would need to raise their prices by more than five percent, assuming costs could be passed through to customers, in order to maintain the same level of profits. The second measure was the potential number of facility closures, estimated assuming no costs could be passed through to customers. The methodology used to estimate the costs of production, compliance costs, and potential closures is discussed in section VIII.C.1.

A "substantial number" of small entities was assumed to be 20 percent or more of the population of small businesses, small organizations, or small government jurisdictions within the universe of facilities affected by the rule. The only entities found to be affected by the final rule were small businesses; no small organizations or small government jurisdictions would likely be affected. "Small" businesses were defined based on the volume of production. This production-based definition varied by preservative type and geographic region. Production volume was used to define a small business instead of the number of employees (which was used in the Economic Impact Analysis conducted for the proposed rule) because the ratio of labor to final output varies widely among wood preserving operations; two firms with the same number of employees may have significantly different production volumes, revenues, and profits.

### *B. Results*

The cost and economic impact model calculated average COP ratios for facilities in each model. The average COP ratio did not exceed five percent for any of the models representing small facilities. The model with the highest average COP ratio had a COP ratio of 1.8 percent. The average COP ratio for most models was below one percent. The percent of small facilities projected to close was also very low. Closures of small facilities were projected only for inorganic facilities, with four percent of these facilities estimated to close.

EPA has concluded that today's final rule will not have a significant effect on a substantial number of small entities. As a result of this finding, EPA has not prepared a formal RFA in support of the rule. More detailed information on small business impacts is available in the RIA for this rule.

## X. Paperwork Reduction Act

The information collection requirements in this rule will be submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* These requirements are not effective until OMB approves them and a technical amendment to that effect is published in the **Federal Register.**

Public reporting burden for this collection of information is estimated to average 230 hours per facility per year, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M St., SW., Washington, DC 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503, marked "Attention: Desk Officer for EPA."

## XI. Compliance Procedures and Deadlines

This section is intended to assist the regulated community in understanding their regulatory obligations for managing today's listed wastes. As discussed in section VI of this preamble, the F032 listing is promulgated pursuant to HSWA and is therefore effective in all states. The F034 and F035 listings are promulgated pursuant to pre-HSWA authority and will take effect only in unauthorized States; the effective date in authorized States for these two listings will be established when each State adopts the rule. The compliance discussion in this section first discusses notification requirements for all facilities, then generator and transportation requirements in all States, and finally the requirements for treatment, storage and disposal facilities in authorized and in unauthorized States, where some of the rule will not

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take effect until States adopt the non-HSWA listings.

*A. Notification*

Pursuant to RCRA section 3010, the Administrator may require all persons who handle hazardous wastes to notify EPA of their hazardous waste management activities within 90 days after the wastes are identified or listed as hazardous. This requirement may be applied even to those generators, transporters, and TSDF's who have previously notified EPA with respect to the management of other hazardous wastes.

In the December 30, 1988, **Federal Register** notice, EPA proposed to waive the notification requirement for persons who manage F032, F034, or F035 wastes and have already (1) notified the Agency that they manage other hazardous wastes and (2) received an EPA identification number under RCRA section 3010. EPA has decided to waive the notification requirement for these persons as proposed. The Agency believes that a notification requirement for persons already identified within the hazardous waste management universe is unnecessary.

EPA is not waiving the notification requirement for handlers of F032, F034, or F035 that have not notified the Agency that they manage hazardous wastes under RCRA section 3010. Thus, by March 6, 1991, all generators, transporters, and owners or operators of treatment, storage, and disposal facilities who are managing F032 hazardous waste must notify EPA. Similarly, by March 6, 1991, all generators, transporters, and owners or operators of treatment, storage, and disposal facilities who are managing F034 and F035 hazardous waste in an unauthorized State must notify EPA. This is done by completing a section 3010 notification form and sending it to the appropriate EPA Regional Office. (See EPA Form 8700–12, dated 7/90. See 55 FR 31389, August 2, 1990 for a copy of the form. Notification instructions are set forth in 45 FR 12746.)

Persons in authorized States that are handling F034 and F035 wastes subject to today's final rule are not required to notify EPA of such activity. Notification will be required of these facilities after the State receives authorization or otherwise amends its program to regulate these wastes or require such notification. EPA has concluded that it is appropriate to waive the notification requirement at this time in authorized States because (1) the universe of newly regulated activities will be identified when State regulations are revised, as they must be for the States to retain authorization; and (2) RCRA identification numbers provided to notifiers in authorized States are obtained by the State from EPA, so in this way EPA is informed of the notification that authorized States receive.

*B. Generators and Transporters*

Generators of F032 wastes in authorized States and generators of any of the wastes listed today in unauthorized States will be subject to the generator requirements set forth in 40 CFR part 262. These requirements include standards for hazardous waste determination (40 CFR 262.11), compliance with the manifest (40 CFR 262.20 to 262.23), pretransport procedures (40 CFR 262.30 to 262.34), generator accumulation (40 CFR 262.34), recordkeeping and reporting (40 CFR 262.40 to 262.44), and import/export procedures (40 CFR 262.50 to 262.60). Persons who transport these wastes will be required to obtain an EPA identification number by submitting Form 8700–12 as described above and will be subject to the transporter requirements set forth in 40 CFR part 263.

Until the authorized State adopts today's F034 and F035 listings, these wastes are not considered to be hazardous (unless they are hazardous due to other listings or characteristics under the State program or the Federal HSWA program). Therefore, generators, transporters, and treatment, storage, and disposal facilities managing wastes that are hazardous solely due to the F034 and F035 listing are not subject to today's rule until the State adopts the rule.

EPA expects that most generators of today's wood preserving wastes will choose to manage these wastes in units that are not subject to the permitting requirements of parts 264 to 270. The following discussion identifies the most likely compliance options that will be followed by generators of wood preserving wastes.

EPA anticipates that most generators will use drip pads and comply with the 90 day accumulation provision in § 262.34(a)(2) of today's rule. This provision requires the drip pad to comply with the management standards of part 265, subpart W, as well as other specific standards of part 265. The generators' drip pad units that are used to treat or store F032, F034, and F035 are not subject to RCRA permitting provided the specific conditions of § 262.34(a)(2) are met.

Similarly, F032, F034, F035, or Toxicity Characteristic wastes may be treated or stored by generators in tanks or containers for 90 days or less under the generator accumulation provisions of 40 CFR 262.34. (Small quantity generators have more than 90 days for accumulation. See § 262.34) These tank and container accumulation units are not subject to permitting, but must comply with specified part 265 standards.

In addition, because some of the wastes listed today are wastewaters, they may be managed in tanks that are part of wastewater treatment systems. Drip pads are not tanks nor are they ancillary equipment to tanks. Under 40 CFR 264.1(g)(6) and 265.1(c)(10), tanks and tank systems that meet the definition of wastewater treatment unit in 40 CFR 260.10 are not subject to the permitting and interim status requirements of 40 CFR parts 264 and 265. The wastewater treatment unit definition includes devices that (1) are part of a wastewater treatment facility that is subject to section 402 or 307(b) of the Clean Water Act; (2) treat or store an influent wastewater that is a hazardous waste, or that generate and accumulate a wastewater treatment sludge that is a hazardous waste, or that treat or store a wastewater treatment sludge which is a hazardous waste; and (3) meet the definition of tank or tank system in 40 CFR 260.10 (see 53 FR 34079). Therefore, all tanks and tank systems that meet the wastewater treatment unit definition, and in which the newly listed wastes are generated, accumulated, treated, or stored, are exempt from the regulatory requirements of 40 CFR parts 264 and 265. Because the definition of tank system includes all connected ancillary equipment as defined in 40 CFR 260.10, which includes piping, fittings, flanges, valves, and pumps, any such equipment that is part of an exempt wastewater treatment unit in which the newly listed wastes are generated, accumulated, treated, or stored is also excluded from the requirements of parts 264 and 265. (See 53 FR 34079 for further discussion of the scope of the exemption.) The listed sludges, once removed from the excluded units in which they are generated, are subject to all applicable RCRA subtitle C regulations. Wastes left in inactive units also are subject to RCRA subtitle C.

*C. Treatment, Storage, and Disposal Facilities in Unauthorized States*

There are three types of treatment, storage, and disposal facilities (TSDF's) in unauthorized States which may be affected by today's rule: (1) Facilities which are subject to RCRA permit requirements for the first time as a result of today's rule, (2) facilities which are

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already operating under interim status, and (3) facilities that have been issued a RCRA permit.

Permitted and interim status facilities can also be affected by today's rule in two distinct ways: (1) The facility may already be managing wastes that are hazardous under the existing EP or TC rules and which also are wastes newly listed under today's rule (and thus the waste would have a new waste code), or (2) the facility may be managing a solid waste which is newly subject to regulation as a result of today's listing.

Of course, generators that qualify for the accumulation provisions of § 262.34 are not considered to be TSDF's with respect to wastes managed under that provision and are not subject to permitting for those activities. The following sections describe the compliance obligations for facilities that have units subject to permitting due to today's listings.

1. Newly Regulated Facilities

Newly regulated facilities (i.e., facilities at which the only hazardous wastes that are treated, stored, or disposed are wastes newly regulated by today's final rule) must qualify for interim status by the effective date of the rule in order to continue managing wastes listed by today's rule prior to receiving a permit. To obtain interim status, an eligible facility must submit a section 3010 notification form to EPA by March 6, 1991 and submit a part A permit application to EPA by June 6, 1991. (See 270.70(a).) Interim status facilities are subject to regulation under 40 CFR part 265 (including the drip pad standards in subpart W) until a permit is issued by EPA or an authorized state. To retain interim status, a newly-regulated land disposal facility must submit a RCRA permit application within one year after the effective date of the rule and certify that the facility is in compliance with all applicable ground water monitoring and financial responsibility requirements (see RCRA section 3005(e)(3) and 40 CFR 270.73(d)).

2. Permitted and Interim Status Facilities

Facilities which have been managing EP or TC wastes which now also meet the listing description for the wastes listed today must notify EPA of the waste code changes for these wastes. Permitted facilities must submit permit modifications to EPA as required under 40 CFR 270.42 that reflect the new waste codes. Interim status facilities must submit revised part A permit applications in accordance with 40 CFR 270.72. These facilities must continue to comply with the applicable federal standards for hazardous waste management.

Permitted and interim status facilities which manage a solid waste that is newly defined as hazardous waste as a result of today's rule must also submit Class 1 permit modification requests or part A permit application revisions to EPA. Facilities must manage these wastes in accordance with 40 CFR part 265 or 40 CFR part 264 until permit modification or issuance, depending on whether the waste is managed in a newly regulated or previously regulated unit.

For permitted facilities, the Class 1 modification must be submitted to EPA by June 6, 1991, and should include a revised part A form clearly indicating all activities that are newly regulated as a result of today's listings, and any other description that will clarify which units at the facility are managing the new wastes. Also as part of the § 270.42(g) procedure for identifying newly listed wastes at permitted facilities, the permittee must notify the public within 90 days of the Class 1 submittal to the Agency.

A subsequent Class 2 or 3 permit modification (if necessary) must be submitted 180 days after the effective date of today's listings, and it is at this time that detailed part B information must be submitted. If a new land disposal unit is newly-regulated due to today's rule, the permittee must certify that the facility is in compliance with all applicable ground water monitoring and financial responsibility requirements within one year after the effective date of the rule (see 40 CFR 270.42(g)(1)(v)).

*D. Treatment, Storage, and Disposal Facilities in Authorized States*

There are also three types of facilities located in authorized states which are affected by today's rule; already permitted facilities managing F032 wastes, facilities operating under interim status managing F032 wastes, and facilities newly subject to RCRA permit requirement under today's rule because they manage F032 wastes. As in unauthorized states, some of the permitted and interim status facilities have been managing EP or TC wastes that meet today's listing descriptions.

For facilities which have been managing EP wastes under an authorized State program which are also F032 wastes, the facility will need to change the waste code (and possibly also change the unit type, if a drip pad is used) assigned to its wastes. Permitted facilities must submit permit modifications to EPA reflecting the new waste codes (and unit types, if applicable). Because EPA must implement this rule until the state is authorized to do so, the permittee must comply with Federal permit modification procedures under 40 CFR 270.42 rather than state permit modification procedures. However, because the permit undergoing modification is most likely a joint EPA-State RCRA permit, a copy of the modification request should also be submitted to the authorized State. Similarly, interim status facilities managing F032 wastes must submit a revised part A permit application to EPA pursuant to 40 CFR 270.72, with a copy to state permitting authorities. Although these facilities must make appropriate waste code (and unit type, if applicable) modifications to reflect the new listing, the wastes are already regulated as EP wastes under the authorized state program. Accordingly, such wastes may not be subject to any new management requirements as a result of this rule if they are managed in tanks, land disposal units, or other units described in 40 CFR parts 264/265, subparts I through Q.

Some permitted and interim status facilities in authorized states will be managing F032 wastes which are hazardous as a result of the toxicity characteristic, which became effective on September 25, 1990, but were not regulated as EP wastes under the authorized state program. See discussion of relationship between EPTC and revised TC at 55 FR 11847–11849 (March 29, 1990). Since no state is authorized for TC wastes, facilities managing TC wastes which are also hazardous as F032 under today's rule must comply with EPA procedures for permit modifications or interim status changes in order to continue management of these wastes after the effective date of today's rule.

Some permitted and interim status facilities in authorized States may be managing F032 wastes which will become hazardous as a result of today's rule, rather than the TC or EP. These facilities must also submit permit modifications or part A permit application revisions to EPA. However, because these wastes were previously unregulated under RCRA, they also were not regulated under the authorized state program. As a result, if these wastes are in a previously unregulated unit, they will be subject to the self-implementing Federal standards for hazardous waste management at 40 CFR part 265 until permit issuance (for interim status facilities) or modification (for permitted facilities). After permit issuance or modification, the Federal permitting standards at 40 CFR part 264 will apply to these wastes (or the state

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permitting standards if the permit is ultimately issued or modified by a state authorized for F032). However, if the wastes are at a permitted facility in a unit that is already regulated by the State, that unit will continue to comply with the applicable permit conditions based on 40 CFR part 264 (or State equivalent) standards.

Facilities in authorized States which are newly subject to RCRA permit requirements as a result of today's rule for F032 must obtain an EPA identification number and submit their part A permit application and section 3010 notification to EPA in order to obtain interim status (see 40 CFR 270.70). Such facilities are subject to regulation under 40 CFR part 265 until a permit is issued by EPA or a State authorized for F032.

**List of Subjects**

*40 CFR Part 260*

Administrative practice and procedure, Confidential business information, Hazardous materials, Recycling, Reporting and recordkeeping, Waste treatment or disposal.

*40 CFR Part 261*

Hazardous materials, Waste treatment and disposal, Recycling.

*40 CFR Part 262*

Administrative practice and procedure, Hazardous materials, Reporting and recordkeeping.

*40 CFR Part 264*

Hazardous materials, Packaging and containers, Reporting requirements, Security measures, Surety bonds, Waste treatment and disposal.

*40 CFR Part 265*

Air pollution control, Hazardous materials, Packaging and containers, Reporting requirements, Security measures, Surety bonds, Waste treatment and disposal, Water supply.

*40 CFR Part 270*

Administrative practice and procedures, Air pollution control, Hazardous materials, Reporting requirements, Waste treatment and disposal, Water pollution control, Water supply, Confidential business information.

*40 CFR Part 271*

Administrative practice and procedures, Confidential business information, Hazardous materials transportation, Hazardous waste, Indian lands, Intergovernmental relations, Penalties, Reporting and recordkeeping requirements, Water pollution control, Water supply.

*40 CFR Part 302*

Air pollution control, Chemicals, Hazardous materials transportation, Hazardous substances, Intergovernmental relations, Natural resources, Nuclear materials, Pesticides and pests, Radioactive materials, Reporting and recordkeeping requirements, Superfund, Waste treatment and disposal, Water pollution control.

Dated: November 15, 1990.

**William K. Reilly,**

*Administrator.*

For the reasons set out in the preamble, 40 CFR parts 260, 261, 262, 264, 265, 270, 271, and 302 are amended as follows:

## PART 260—HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

1. The authority citation for part 260 continues to read as follows:

**Authority:** 42 U.S.C. 6905, 6912(a), 6921 through 6927, 6930, 6934, 6935, 6937, 6938, and 6939.

2. Section 260.10 is amended by adding the definition of "Drip Pad", in alphabetical order, as follows:

**§ 260.10 Definitions.**

* * * * *

*Drip pad* is an engineered structure consisting of a curbed, free-draining base, constructed of non-earthen materials and designed to convey preservative kick-back or drippage from treated wood, precipitation, and surface water run-on to an associated collection system at wood preserving plants.

* * * * *

## PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

3. The authority citation for part 261 continues to read as follows:

**Authority:** 42 U.S.C. 6905, 6912(a), 6921, 6922, and 6938.

4. Section 261.4 is amended by adding paragraph (a)(9) to read as follows:

**§ 261.4 Exclusions.**

* * * * *

(a) * * *

(9) Spent wood preserving solutions that have been used and are reclaimed and reused for their original intended purpose.

* * * * *

5. Section 261.31(a) is amended by adding the following hazardous waste listings in alphanumeric order to read as follows:

**§ 261.31 Hazardous wastes from non-specific sources.**

(a) * * *

| Industry and EPA hazardous waste No. | Hazardous waste | Hazard code |
|---|---|---|
| * | * * * * | * |
| F032 | Wastewaters, process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that currently use or have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with § 261.35 of this chapter and where the generator does not resume or initiate use of chlorophenolic formulations). This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol. | (T) |
| F034 | Wastewaters, process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use creosote formulations. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol. | (T) |
| F035 | Wastewaters, process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use inorganic preservatives containing arsenic or chromium. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol. | (T) |

6. Section 261.35 is added to read as follows:

**§ 261.35 Deletion of Certain Hazardous Waste Codes Following Equipment Cleaning and Replacement.**

(a) Wastes from wood preserving processes at plants that do not resume or initiate use of chlorophenolic preservatives will not meet the listing definition of F032 once the generator has

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met all of the requirements of paragraphs (b) and (c) of this section. These wastes may, however, continue to meet another hazardous waste listing description or may exhibit one or more of the hazardous waste characteristics.

(b) Generators must either clean or replace all process equipment that may have come into contact with chlorophenolic formulations or constituents thereof, including, but not limited to, treatment cylinders, sumps, tanks, piping systems, drip pads, fork lifts, and trams, in a manner which minimizes or eliminates the escape of hazardous waste or waste constituents, leachate, contaminated drippage, or hazardous waste decomposition products to the ground and surface waters and to the atmosphere. Generators must either:

(1) Prepare and sign a written equipment cleaning or replacement plan that describes the equipment to be cleaned or replaced, how the equipment will be cleaned or replaced, and the appropriate solvent chosen to use in cleaning and conduct cleaning and/or replacement in accordance with the plan by replacing the equipment and managing the discarded equipment as F032 waste; or

(2) Removing all visible residues from process equipment; and rinsing process equipment with an appropriate solvent until dioxins and dibenzofurans are not detected in the final solvent rinse at or below the lower method calibration limit (MCL) in Table 1 when tested in accordance with SW-846 Method 8290; and managing all residues from the cleaning process as F032 waste; or

(3) Document that previous equipment cleaning or replacement was performed in accordance with the requirements of this section and occurred after a change in preservative.

(c) The generator must maintain the following records documenting the cleaning and replacement as part of the facility's operating record:

(1) The name and address of the facility;

(2) Formulations previously used and the date on which their use ceased in each process at the plant;

(3) Formulations currently used in each process at the plant;

(4) The equipment cleaning or replacement plan;

(5) The name and address of any persons who conducted the cleaning and replacement;

(6) The dates on which cleaning and replacement were accomplished;

(7) The dates of sampling and testing;

(8) A description of the sample handling and preparation techniques, including techniques used for extraction, containerization, preservation, and chain-of-custody of the samples;

(9) A description of the tests performed, the date the tests were performed, and the results of the tests;

(10) The name and model numbers of the instrument(s) used in performing the tests;

(11) QA/QC documentation; and

(12) The following statement signed by the generator or his authorized representative:

I certify under penalty of law that all process equipment required to be cleaned or replaced under 40 CFR 261.35 was cleaned or replaced as represented in the equipment cleaning and replacement plan and accompanying documentation. I am aware that there are significant penalties for providing false information, including the possibility of fine or imprisonment.

7. Table 1 in appendix III to part 261 is amended to add the following compound in alphabetical order as follows:

**Appendix III—Chemical Analysis Test Methods**

TABLE 1.—ANALYSIS METHODS FOR ORGANIC CHEMICALS CONTAINED IN SW-846

| Compound | Method Nos. |
|---|---|
| * * * * * | |
| Benzo(k) fluoranthene | 8100,8250, 8270, 8310 |
| * * * * * | |

* * * * *

8. Appendix VII to part 261 is amended to add the following waste streams in alphanumeric order as follows:

**Appendix VII—Basis for Listing Hazardous Waste**

| EPA hazardous waste No. | Hazardous constituents for which listed |
|---|---|
| * * * * * | |
| F032 | Benz(a)anthracene, benzo(a)pyrene, dibenz(a,h)-anthracene, indeno(1,2,3-cd)pyrene, pentachlorophenol, arsenic, chromium, tetra-, penta-, hexa-, heptachlorodibenzo-p-dioxins, tetra-, penta-, hexa-, heptachlorodibenzofurans. |
| F034 | Benz(a)anthracene, benzo(k)fluoranthene, benzo(a)pyrene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, naphthalene, arsenic, chromium. |
| F035 | Arsenic, chromium, lead. |
| * * * * * | |

9. Appendix VIII to part 261 is amended to add the following hazardous constituents in alphabetical order as follows:

**Appendix VIII—Hazardous Constituents**

| Common name | Chemical abstracts name | Chemical abstracts No. | Hazardous waste No. |
|---|---|---|---|
| * * * * * | * | * | |
| Benzo(k)fluoranthene | Same | 207-08-9 | |
| * * * * * | * | * | |
| Heptachlorodibenzofurans | | | |
| Heptachlorodibenzo-p-dioxins | | | |
| * * * * * | * | * | |

## PART 262—STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE

10. The authority citation for part 262 continues to read as follows:

Authority: 42 U.S.C. 6906, 6912, 6922, 6923, 6924, 6925, and 6937.

11. Section 262.34 is amended by redesignating paragraphs (a)(2) through (a)(4) as (a)(3) through (a)(5) and by adding a new paragraph (a)(2) to read as follows:

**§ 262.34 Accumulation time.**

(a) * * *

(2) The waste is placed on drip pads and the generator complies with subpart

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W of 40 CFR part 265 and maintains the following records at the facility:

(i) A description of procedures that will be followed to ensure that all wastes are removed from the drip pad and associated collection system at least once every 90 days; and

(ii) Documentation of each waste removal, including the quantity of waste removed from the drip pad and the sump or collection system and the date and time of removal.

In addition, such a generator is exempt from all the requirements in subparts G and H of 40 CFR part 265, except for § 265.111 and § 165.114.

* * * * *

## PART 264—STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

12. The authority citation for part 264 continues to read as follows:

**Authority:** 42 U.S.C. 6905, 6912(a), 6924, and 6925.

13.–14. Section 264.190 is amended by revising the introductory text and by adding paragraph (c) to read as follows:

**§ 264.190 Applicability.**

The requirements of this subpart apply to owners and operators of facilities that use tank systems for storing or treating hazardous waste except as otherwise provided in paragraphs (a), (b), and (c) of this section or in § 264.1 of this part.

* * * * *

(c) Tanks, sumps, and other such collection devices or systems used in conjunction with drip pads, as defined in § 260.10 of this chapter and regulated under 40 CFR part 264 subpart W, must meet the requirements of this subpart.

* * * * *

15. Part 264 is amended by adding subpart W as follows:

**Subpart W—Drip Pads**

264.570 Applicability.
264.571 Assessment of existing drip pad integrity.
264.572 Design and operating requirements.
264.573 Inspections.
264.574 Closure.
264.575 Design and installation of new drip pads.

### Subpart W—Drip Pads

**§ 264.570 Applicability.**

(a) The requirements of this subpart apply to owners and operators of facilities that use new or existing drip pads to convey treated wood drippage to an associated collection system. Existing drip pads are those constructed before December 6, 1990 and those for which the owner or operator has a design and has entered into binding financial or other agreements for construction prior to December 6, 1990. All other drip pads are new drip pads.

(b) The owner or operator of any drip pad that is inside or under a structure that provides protection from precipitation so that neither run-off nor run-on is generated is not subject to regulation under § 264.572(e) or § 264.572(f), as appropriate.

**§ 264.571 Assessment of existing drip pad integrity.**

(a) For each existing drip pad as defined in § 264.570 of this subpart, the owner or operator must evaluate the drip pad and determine that it meets all of the requirements of this subpart, except the requirements for liners and leak detection systems of § 264.572(b). No later than the effective date of this rule, the owner or operator must obtain and keep on file at the facility a written assessment of the drip pad, reviewed and certified by an independent, qualified registered professional engineer that attests to the results of the evaluation. The assessment must be reviewed, updated and re-certified annually until all upgrades, repairs, or modifications necessary to achieve compliance with all of the standards of § 264.572 of this subpart are complete. The evaluation must document the extent to which the drip pad meets each of the design and operating standards of § 264.572 of this subpart, except the standards for liners and leak detection systems, specified in § 264.572(b) of this subpart, and must document the age of the drip pad to the extent possible, to document compliance with paragraph (b) of this section.

(b) The owner or operator must develop a written plan for upgrading, repairing, and modifying the drip pad to meet the requirements of § 264.572(b) of this subpart and submit the plan to the Regional Administrator no later than 2 years before the date that all repairs, upgrades, and modifications will be complete. This written plan must describe all changes to be made to the drip pad in sufficient detail to document compliance with all the requirements of § 264.572 of this subpart and must document the age of the drip pad to the extent possible. The plan must be reviewed and certified by an independent qualified, registered professional engineer. All upgrades, repairs, and modifications must be completed in accordance with the following:

(1) For existing drip pads of known and documentable age, all upgrades, repairs, and modifications must be completed within two years of the effective date of this rule, or when the drip pad has reached 15 years of age, whichever comes later.

(2) For existing drip pads for which the age cannot be documented, within 8 years of the effective date of this rule, but if the age of the facility is greater than 7 years, all upgrades, repairs and modifications must be completed by the time the facility reaches 15 years of age or by two years after the effective date of this rule, whichever comes later.

(3) If the owner or operator believes that the drip pad will continue to meet all of the requirements of § 264.572 of this subpart after the date upon which all upgrades, repairs and modifications must be completed as established under paragraphs (b) (1) and (2) of this section, the owner or operator may petition the Regional Administrator for an extension of the deadline as specified in paragraph (b) (1) or (2) of this section. The Regional Administrator will grant the petition for extension based on a finding that the drip pad meets all of the requirements of § 264.572, except those for liners and leak detection systems specified in § 264.572(b), and that it will continue to be protective of human health and the environment.

(c) Upon completion of all, repairs, and modifications, the owner or operator must submit to the Regional Administrator or State Director, the as-built drawings for the drip pad together with a certification by an independent, qualified registered professional engineer attesting that the drip pad conforms to the drawings.

(d) If the drip pad is found to be leaking or unfit for use, the owner or operator must comply with the provisions of § 264.572(m) of this subpart or close the drip pad in accordance with § 264.574 of this subpart.

**§ 264.572 Design and operating requirements.**

(a) Drip pads must:

(1) Be constructed of non-earthen materials, excluding wood and non-structurally supported asphalt;

(2) Be sloped to free-drain treated wood drippage, rain and other waters, or solutions of drippage and water or other wastes to the associated collection system;

(3) Have a curb or berm around the perimeter;

(4) Be impermeable, e.g., concrete pads must be sealed, coated, or covered with an impermeable material such that the entire surface where drippage occurs or may run across is capable of

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containing such drippage and mixtures of drippage and precipitation, materials, or other wastes while being routed to an associated collection system; and

(5) Be of sufficient structural strength and thickness to prevent failure due to physical contact, climatic conditions, the stress of installation, and the stress of daily operations, e.g., variable and moving loads such as vehicle traffic, movement of wood, etc.

Note: EPA will generally consider applicable standards established by professional organizations generally recognized by the industry such as the American Concrete Institute (ACI) or the American Society of Testing Materials (ASTM) in judging the structural integrity requirement of this paragraph.

(b) A drip pad must have:

(1) A synthetic liner installed below the drip pad that is designed, constructed, and installed to prevent leakage from the drip pad into the adjacent subsurface soil or groundwater or surface water at any time during the active life (including the closure period) of the drip pad. The liner must be constructed of materials that will prevent waste from being absorbed into the liner and to prevent releases into the adjacent subsurface soil or ground water or surface water during the active life of the facility. The liner must be:

(i) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or drip pad leakage to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation (including stresses from vehicular traffic on the drip pad);

(ii) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression or uplift; and

(iii) Installed to cover all surrounding earth that could come in contact with the waste or leakage; and

(2) A leakage detection system immediately above the liner that is designed, constructed, maintained and operated to detect leakage from the drip pad. The leakage detection system must be:

(i) Constructed of materials that are:

(A) Chemically resistant to the waste managed in the drip pad and the leakage that might be generated; and

(B) Of sufficient strength and thickness to prevent collapse under the pressures exerted by overlaying materials and by any equipment used at the drip pad; and

(ii) Designed and operated to function without clogging through the scheduled closure of the drip pad.

(iii) Designed so that it will detect the failure of the drip pad or the presence of a release of hazardous waste or accumulated liquid at the earliest practicable time.

(c) Drip pads must be maintained such that they remain free of cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the drip pad.

Note: See § 264.572(m) for remedial action required if deterioration or leakage is detected.

(d) The drip pad and associated collection system must be designed and operated to convey, drain, and collect liquid resulting from drippage or precipitation in order to prevent run-off.

(e) Unless protected by a structure, as described in § 264.570(b) of this subpart, the owner or operator must design, construct, operate and maintain a run-on control system capable of preventing flow onto the drip pad during peak discharge from at least a 24-hour, 25-year storm, unless the system has sufficient excess capacity to contain any run-on that might enter the system, or the drip pad is protected by a structure or cover, as described in § 264.570(b) of this subpart.

(f) Unless protected by a structure or cover, as described in § 264.570(b) of this subpart, the owner or operator must design, construct, operate and maintain a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

(g) The drip pad must be evaluated to determine that it meets the requirements of paragraphs (a) through (f) of this section and the owner or operator must obtain a statement from an independent, qualified registered professional engineer certifying that the drip pad design meets the requirements of this section.

(h) Drippage and accumulated precipitation must be removed from the associated collection system as necessary to prevent overflow onto the drip pad.

(i) The drip pad surface must be cleaned thoroughly at least once every seven days such that accumulated residues of hazardous waste or other materials are removed, using an appropriate and effective cleaning technique, including but not limited to, rinsing, washing with detergents or other appropriate solvents, or steam cleaning. The owner or operator must document the date and time of each cleaning and the cleaning procedure used in the facility's operating log.

(j) Drip pads must be operated and maintained in a manner to minimize tracking of hazardous waste or hazardous waste constituents off the drip pad as a result of activities by personnel or equipment.

(k) After being removed from the treatment vessel, treated wood from pressure and non-pressure processes must be held on the drip pad until drippage has ceased. The owner or operator must maintain records sufficient to document that all treated wood is held on the pad following treatment in accordance with this requirement.

(l) Collection and holding units associated with run-on and run-off control systems must be emptied or otherwise managed as soon as possible after storms to maintain design capacity of the system.

(m) Throughout the active life of the drip pad and as specified in the permit, if the owner or operator detects a condition that could lead to or has caused a release of hazardous waste, the condition must be repaired within a reasonably prompt period of time following discovery, in accordance with the following procedures:

(1) Upon detection of a condition that has led or could lead to a release of hazardous waste (e.g., upon detection of leakage in the leak detection system), the owner or operator must:

(i) Enter a record of the discovery in the facility operating log;

(ii) Immediately remove the portion of the drip pad affected by the condition from service;

(iii) Determine what steps must be taken to repair the drip pad and clean up any leakage from below the drip pad, and establish a schedule for accomplishing the repairs;

(iv) Within 24 hours after discovery of the condition, notify the Regional Administrator of the condition and, within 10 working days, provide written notice to the Regional Administrator with a description of the steps that will be taken to repair the drip pad and clean up any leakage, and the schedule for accomplishing this work.

(2) The Regional Administrator will review the information submitted, make a determination regarding whether the pad must be removed from service completely or partially until repairs and clean up are complete, and notify the owner or operator of the determination and the underlying rationale in writing.

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(3) Upon completing all repairs and clean up, the owner or operator must notify the Regional Administrator in writing and provide a certification, signed by an independent, qualified registered professional engineer, that the repairs and clean up have been completed according to the written plan submitted in accordance with paragraph (m)(3) of this section.

(n) Should a permit be necessary, the Regional Administrator will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this section are satisfied.

(o) The owner or operator must maintain, as part of the facility operating log, documentation of past operating and waste handling practices. This must include identification of preservative formulations used in the past, a description of drippage management practices, and a description of treated wood storage and handling practices.

**§ 264.573 Inspections.**

(a) During construction or installation, liners and cover systems (e.g., membranes, sheets, or coatings) must be inspected for uniformity, damage, and imperfections (e.g., holes, cracks, thin spots, or foreign materials). Immediately after construction or installation, liners must be inspected and certified as meeting the requirements of § 264.572 of this subpart by an independent qualified, registered professional engineer. The certification must be maintained at the facility as part of the facility operating record. After installation liners and covers must be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters.

(b) While a drip pad is in operation, it must be inspected weekly and after storms to detect evidence of any of the following:

(1) Deterioration, malfunctions or improper operation of run-on and run-off control systems;

(2) The presence of leakage in and proper functioning of leak detection system.

(3) Deterioration or cracking of the drip pad surface.

Note: See § 264.572(m) for remedial action required if deterioration or leakage is detected.

**§ 264.574 Closure.**

(a) At closure, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (pad, liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leakage, and manage them as hazardous waste.

(b) If, after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures, and equipment as required in paragraph (a) of this section, the owner or operator finds that not all contaminated subsoils can be practically removed or decontaminated, he must close the facility and perform post-closure care in accordance with closure and post-closure care requirements that apply to landfills (§ 264.310). For permitted units, the requirement to have a permit continues throughout the post-closure period. In addition, for the purposes of closure, post-closure, and financial responsibility, such a drip pad is then considered to be a landfill, and the owner or operator must meet all of the requirements for landfills specified in subparts G and H of this part.

(c)(1) The owner or operator of an existing drip pad, as defined in § 264.570 of this subpart, that does not comply with the liner requirements of § 264.572(b)(1) must:

(i) Include in the closure plan for the drip pad under § 264.112 both a plan for complying with paragraph (a) of this section and a contingent plan for complying with paragraph (b) of this section in case not all contaminated subsoils can be practicably removed at closure; and

(ii) Prepare a contingent post-closure plan under § 264.118 of this part for complying with paragraph (b) of this section in case not all contaminated subsoils can be practicably removed at closure.

(2) The cost estimates calculated under §§ 264.112 and 264.144 of this part for closure and post-closure care of a drip pad subject to this Paragraph must include the cost of complying with the contingent closure plan and the contingent post-closure plan, but are not required to include the cost of expected closure under paragraph (a) of this section.

**§ 264.575 Design and installation of new drip pads.**

Owners and operators of drip pads must ensure that the pads are designed, installed and operated in accordance with all of the applicable requirements of §§ 264.572, 264.573 and 264.574 of this subpart.

## PART 265—INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

16. The authority citation for part 265 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, 6925, and 6935.

17.–18. Section 265.190 is amended by revising the introductory text and by adding paragraph (c) to read as follows:

**§ 265.190 Applicability.**

The requirements of this subpart apply to owners and operators of facilities that use tank systems for storing or treating hazardous waste except as otherwise provided in paragraphs (a), (b), and (c) of this section or in § 265.1 of this part.

* * * * *

(c) Tanks, sumps, and other collection devices used in conjunction with drip pads, as defined in § 260.10 of this chapter and regulated under 40 CFR part 265 subpart W, must meet the requirements of this subpart.

* * * * *

19. Part 265 is amended by adding subpart W as follows:

**Subpart W—Drip Pads**

265.440 Applicability.
265.441 Assessment of existing drip pad integrity.
265.442 Design and installation of new drip pads.
265.443 Design and operating requirements.
265.444 Inspections.
265.445 Closure.

## Subpart W—Drip Pads

**§ 265.440 Applicability.**

(a) The requirements of this subpart apply to owners and operators of facilities that use new or existing drip pads to convey treated wood drippage to an associated collection system. Existing drip pads are those constructed before December 6, 1990, and those for which the owner or operator has generated a design and has entered into binding financial or other agreements for construction prior to December 6, 1990. All other drip pads are new drip pads.

(b) The owner or operator of any drip pad that is inside or under a structure that provides protection from precipitation so that neither run-off nor run-on is generated is not subject to regulation under § 265.443(e) or § 265.443(f), as appropriate.

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**§ 265.441 Assessment of existing drip pad integrity.**

(a) For each existing drip pad as defined in § 265.440 of this subpart, the owner or operator must evaluate the drip pad and determine that it meets all of the requirements of this subpart, except the requirements for liners and leak detection systems of § 265.443(b). No later than the effective date of this rule, the owner or operator must obtain and keep on file at the facility a written assessment of the drip pad, reviewed and certified by an independent, qualified registered professional engineer that attests to the results of the evaluation. The assessment must be reviewed, updated and re-certified annually until all upgrades, repairs, or modifications necessary to achieve compliance with all of the standards of § 265.443 of this subpart are complete. The evaluation must justify and document the extent to which the drip pad meets each of the design and operating standards of § 265.443 of this subpart, except the standards for liners and leak detection systems, specified in § 265.443(b) of this subpart, and must document the age of the drip pad to the extent possible, to document compliance with paragraph (b) of this section.

(b) The owner or operator must develop a written plan for upgrading, repairing, and modifying the drip pad to meet the requirements of § 265.443(b) of this subpart and submit the plan to the Regional Administrator no later than 2 years before the date that all repairs, upgrades, and modifications will be complete. This written plan must describe all changes to be made to the drip pad in sufficient detail to document compliance with all the requirements of § 265.443 of this subpart and must document the age of the drip pad to the extent possible. The plan must be reviewed and certified by an independent qualified, registered professional engineer. All upgrades, repairs, and modifications must be completed in accordance with the following:

(1) For existing drip pads of known and documentable age, all upgrades, repairs, and modifications must be completed within two years of the effective date of this rule, or when the drip pad has reached 15 years of age, whichever comes later.

(2) For existing drip pads for which the age cannot be documented, within 8 years of the effective date of this rule, but if the age of the facility is greater than 7 years, all upgrades, repairs and modifications must be completed by the time the facility reaches 15 years of age or by two years after the effective date of this rule, whichever comes later.

(3) If the owner or operator believes that the drip pad will continue to meet all of the requirements of § 265.443 of this subpart after the date upon which all upgrades, repairs and modifications must be completed as established under paragraphs (b) (1) and (2) of this section, the owner or operator may petition the Regional Administrator for an extension of the deadline as specified in paragraph (b) (1) or (2) of this section. The Regional Administrator will grant the petition for extension based on a finding that the drip pad meets all of the requirements of § 265.443, except those for liners and leak detection systems specified in § 265.443(b), and that it will continue to be protective of human health and the environment.

(c) Upon completion of all, repairs, and modifications, the owner or operator must submit to the Regional Administrator or State Director, the as-built drawings for the drip pad together with a certification by an independent, qualified registered professional engineer attesting that the drip pad conforms to the drawings.

(d) If the drip pad is found to be leaking or unfit for use, the owner or operator must comply with the provisions of § 265.443(m) of this subpart or close the drip pad in accordance with § 265.445 of this subpart.

**§ 265.442 Design and installation of new drip pads.**

Owners and operators of new drip pads must ensure that the pads are designed, installed and operated in accordance with all of the applicable requirements of §§ 265.443, 265.444 and 265.445 of this subpart.

**§ 265.443 Design and operating requirements.**

(a) Drip pads must:

(1) Be constructed of non-earthen materials, excluding wood and non-structurally supported asphalt;

(2) Be sloped to free-drain treated wood drippage, rain and other waters, or solutions of drippage and water or other wastes to the associated collection system;

(3) Have a curb or berm around the perimeter;

(4) Be impermeable, e.g., concrete pads must be sealed, coated, or covered with an impermeable material such that the entire surface where drippage occurs or may run across is capable of containing such drippage and mixtures of drippage and precipitation, materials and other wastes, while being routed to an associated collection system; and

(5) Be of sufficient structural strength and thickness to prevent failure due to physical contact, climatic conditions, the stress of installation, and the stress of daily operations, e.g., variable and moving loads such as vehicle traffic, movement of wood, etc.

Note: EPA will generally consider applicable standards established by professional organizations generally recognized by industry such as the American Concrete Institute (ACI) and the American Society of Testing Materials (ASTM) in judging the structural integrity requirement of this paragraph.

(b) A new drip pad or an existing drip pad, after the deadline established in § 265.441(b) of this subpart, must have:

(1) A synthetic liner installed below the drip pad that is designed, constructed, and installed to prevent leakage from the drip pad into the adjacent subsurface soil or groundwater or surface water at any time during the active life (including the closure period) of the drip pad. The liner must be constructed of materials that will prevent waste from being absorbed into the liner and prevent releases into the adjacent subsurface soil or ground water or surface water during the active life of the facility. The liner must be:

(i) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or drip pad leakage to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation (including stresses from vehicular traffic on the drip pad);

(ii) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression or uplift; and

(iii) Installed to cover all surrounding earth that could come in contact with the waste or leakage; and

(2) A leakage detection system immediately above the liner that is designed, constructed, maintained and operated to detect leakage from the drip pad. The leakage detection system must be:

(i) Constructed of materials that are:

(A) Chemically resistant to the waste managed in the drip pad and the leakage that might be generated; and

(B) Of sufficient strength and thickness to prevent collapse under the pressures exerted by overlaying materials and by any equipment used at the drip pad; and

(ii) Designed so that it will detect the failure of the drip pad or the presence of

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a release of hazardous waste or accumulated liquid at the earliest practicable time.

(c) Drip pads must be maintained such that they remain free of cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the drip pad.

**Note:** See § 265.443(m) for remedial action required if deterioration or leakage is detected.

(d) The drip pad and associated collection system must be designed and operated to convey, drain, and collect liquid resulting from drippage or precipitation in order to prevent run-off.

(e) Unless protected by a structure, as described in § 265.440(b) of this subpart, the owner or operator must design, construct, operate and maintain a run-on control system capable of preventing flow onto the drip pad during peak discharge from at least a 24-hour, 25-year storm unless the system has sufficient excess capacity to contain any run-on that might enter the system, or the drip pad is protected by a structure or cover, as described in § 265.440(b) of this subpart.

(f) Unless protected by a structure or cover, as described in § 265.440(b) of this subpart, the owner or operator must design, construct, operate and maintain a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

(g) The drip pad must be evaluated to determine that it meets the requirements of paragraphs (a) through (f) of this section and the owner or operator must obtain a statement from an independent, qualified registered professional engineer certifying that the drip pad design meets the requirements of this section.

(h) Drippage and accumulated precipitation must be removed from the associated collection system as necessary to prevent overflow onto the drip pad.

(i) The drip pad surface must be cleaned thoroughly at least once every seven days such that accumulated residues of hazardous waste or other materials are removed, using an appropriate and effective cleaning technique, including but not limited to, rinsing, washing with detergents or other appropriate solvents, or steam cleaning. The owner or operator must document the date and time of each cleaning and the cleaning procedure used in the facility's operating log.

(j) Drip pads must be operated and maintained in a manner to minimize tracking of hazardous waste or hazardous waste constituents off the drip pad as a result of activities by personnel or equipment.

(k) After being removed from the treatment vessel, treated wood from pressure and non-pressure processes must be held on the drip pad until drippage has ceased. The owner or operator must maintain records sufficient to document that all treated wood is held on the pad following treatment in accordance with this requirement.

(l) Collection and holding units associated with run-on and run-off control systems must be emptied or otherwise managed as soon as possible after storms to maintain design capacity of the system.

(m) Throughout the active life of the drip pad, if the owner or operator detects a condition that could lead to or has caused a release of hazardous waste, the condition must be repaired within a reasonably prompt period of time following discovery, in accordance with the following procedures:

(1) Upon detection of a condition that has led or could lead to a release of hazardous waste (e.g., upon detection of leakage by the leak detection system), the owner or operator must:

(i) Enter a record of the discovery in the facility operating log;

(ii) Immediately remove the portion of the drip pad affected by the condition from service;

(iii) Determine what steps must be taken to repair the drip pad, remove any leakage from below the drip pad, and establish a schedule for accomplishing the clean up and repairs;

(iv) Within 24 hours after discovery of the condition, notify the Regional Administrator of the condition and, within 10 working days, provide a written notice to the Regional Administrator with a description of the steps that will be taken to repair the drip pad, and clean up any leakage, and the schedule for accomplishing this work.

(2) The Regional Administrator will review the information submitted, make a determination regarding whether the pad must be removed from service completely or partially until repairs and clean up are complete, and notify the owner or operator of the determination and the underlying rationale in writing.

(3) Upon completing all repairs and clean up, the owner or operator must notify the Regional Administrator in writing and provide a certification, signed by an independent qualified, registered professional engineer, that the repairs and clean up have been completed according to the written plan submitted in accordance with paragraph (m)(3) of this section.

(n) The owner or operator must maintain, as part of the facility operating log, documentation of past operating and waste handling practices. This must include identification of preservative formulations used in the past, a description of drippage management practices, and a description of treated wood storage and handling practices.

**§ 265.444 Inspections.**

(a) During construction or installation, liners and cover systems (e.g., membranes, sheets, or coatings) must be inspected for uniformity, damage, and imperfections (e.g., holes, cracks, thin spots, or foreign materials). Immediately after construction or installation, liners must be inspected and certified as meeting the requirements of § 265.443 of this Subpart by an independent qualified, registered professional engineer. The certification must be maintained at the facility as part of the facility operating record. After installation liners and covers must be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters.

(b) While a drip pad is in operation, it must be inspected weekly and after storms to detect evidence of any of the following:

(1) Deterioration, malfunctions or improper operation of run-on and run-off control systems;

(2) The presence of leakage in and proper functioning of leakage detection system.

(3) Deterioration or cracking of the drip pad surface.

**Note:** See § 265.443(m) for remedial action required if deterioration or leakage is detected.

**§ 265.445 Closure.**

(a) At closure, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (pad, liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leakage, and manage them as hazardous waste.

(b) If, after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures, and equipment as required in paragraph (a) of this section, the owner or operator finds that not all contaminated subsoils can be practically removed or decontaminated, he must close the facility and perform post/closure care in accordance with closure and post-closure care

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requirements that apply to landfills (§ 265.310). For permitted units, the requirement to have a permit continues throughout the post-closure period.

(c)(1) The owner or operator of an existing drip pad, as defined in § 265.440 of this subpart, that does not comply with the liner requirements of § 265.443(b)(1) must:

(i) Include in the closure plan for the drip pad under § 265.112 both a plan for complying with paragraph (a) of this section and a contingent plan for complying with paragraph (b) of this section in case not all contaminated subsoils can be practicably removed at closure; and

(ii) Prepare a contingent post-closure plan under § 265.118 of this part for complying with paragraph (b) of this section in case not all contaminated subsoils can be practicably removed at closure.

(2) The cost estimates calculated under §§ 265.112 and 265.144 of this part for closure and post-closure care of a drip pad subject to this paragraph must include the cost of complying with the contingent closure plan and the contingent post-closure plan, but are not required to include the cost of expected closure under paragraph (a) of this section.

## PART 270—EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM

20. The authority citation for part 270 continues to read as follows:

**Authority:** 42 U.S.C. 6905, 6912, 6925, 6927, 6939, and 6974.

21.—22. Subpart B of part 270 is amended by adding § 270.22 as follows:

### § 270.22 Special part B information requirements for drip pads.

Except as otherwise provided by § 264.1 of this chapter, owners and operators of hazardous waste treatment, storage, or disposal facilities that collect, store, or treat hazardous waste on drip pads must provide the following additional information:

(a) A list of hazardous wastes placed or to be placed on each drip pad.

(b) If an exemption is sought to subpart F of part 264 of this chapter, as provided by § 264.90 of this chapter, detailed plans and an engineering report describing how the requirements of § 264.90(b)(2) of this chapter will be met.

(c) Detailed plans and an engineering report describing how the drip pad is or will be designed, constructed, operated and maintained to meet the requirements of § 264.572 of this chapter, including the as-built drawings and specifications. This submission must address the following items as specified in § 264.571 of this chapter:

(1) The design characteristics of the drip pad;

(2) The liner system;

(3) The leakage detection system, including the leak detection system and how it is designed to detect the failure of the drip pad or the presence of any releases of hazardous waste or accumulated liquid at the earliest practicable time;

(4) Practices designed to maintain drip pads;

(5) The associated collection system;

(6) Control of run-on to the drip pad;

(7) Control of run-off from the drip pad;

(8) The interval at which drippage and other materials will be removed from the associated collection system and a statement demonstrating that the interval will be sufficient to prevent overflow onto the drip pad;

(9) Procedures for cleaning the drip pad at least once every seven days to ensure the removal of any accumulated residues of waste or other materials, including but not limited to rinsing, washing with detergents or other appropriate solvents, or steam cleaning and provisions for documenting the date, time, and cleaning procedure used each time the pad is cleaned.

(10) Operating practices and procedures that will be followed to ensure that tracking of hazardous waste or waste constituents off the drip pad due to activities by personnel or equipment is minimized;

(11) Procedures for ensuring that, after removal from the treatment vessel, treated wood from pressure and non-pressure processes is held on the drip pad until drippage has ceased, including recordkeeping practices;

(12) Provisions for ensuring that collection and holding units associated with the run-on and run-off control systems are emptied or otherwise managed as soon as possible after storms to maintain design capacity of the system;

(13) If treatment is carried out on the drip pad, details of the process equipment used, and the nature and quality of the residuals.

(14) A description of how each drip pad, including appurtenances for control of run-on and run-off, will be inspected in order to meet the requirements of § 264.572 of this chapter. This information should be included in the inspection plan submitted under § 270.14(b)(5) of this part.

(15) A certification signed by an independent qualified, registered professional engineer, stating that the drip pad design meets the requirements of paragraphs (a) through (f) of § 264.571 of this chapter.

(16) A description of how hazardous waste residues and contaminated materials will be removed from the drip pad at closure, as required under § 264.573(a) of this chapter. For any waste not to be removed from the drip pad upon closure, the owner or operator must submit detailed plans and an engineering report describing how § 264.310 (a) and (b) of this chapter will be complied with. This information should be included in the closure plan and, where applicable, the post-closure plan submitted under § 270.14(b)(13).

## PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

23. The authority citation for part 271 continues to read as follows:

**Authority:** 42 U.S.C. 6905, 6912(a), and 6926.

24. Section 271.1(j) is amended by adding the following entry to Table 1 in chronological order by date of publication and a new footnote 2 to read as follows:

### § 271.1 Purpose and scope.

* * * * *

(j) * * *

TABLE 1—REGULATIONS IMPLEMENTING THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

| Promulgation date | Title of regulation | Federal Register reference | Effective date |
|---|---|---|---|
| * | * | * | * |
| December 6, 1990 | The listing of wastes from wood preserving processes.[2] | [Insert FR publication citation] | June 6, 1991. |
| * | * | * | * |

[2] These regulations implement HSWA only to the extent that they apply to the listing of Hazardous Waste No. F032. Listings of Hazardous Waste Nos. F034 and F035, test methods for benzo(k)fluoranthene, and technical standards for drip pads do not implement HSWA.

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## PART 302—DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION

25. The authority citation for part 302 continues to read as follows:

Authority: 42 U.S.C. 9602; 33 U.S.C. 1321 and 1361.

26. Section 302.4(a) is amended by adding the waste streams F032, F034, and F035 to Table 302.4 in alphanumeric order. The appropriate footnotes in Table 302.4 are republished without change.

**§ 302.4 Designation of hazardous substances.**

(a) * * *

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES

| Hazardous Substance | CASRN | Regulatory Synonyms | Statutory RQ | Statutory Code † | Statutory RCRA Waste Number | Final RQ Category | Final RQ Pounds (Kg) |
|---|---|---|---|---|---|---|---|
| * * * * | | * | | * | | * | |
| F032 | | | 1 * | 4 | F032 | X | 1(0.454) |
| Wastewaters, process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that currently use or have previously used chlorophenolic formulations (except wastes from processes that have had the F032 waste code deleted in accordance with § 261.35 and do not resume or initiate use of chlorophenolic formulations). This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.. | | | | | | | |
| F034 | | | 1 * | | F034 | X | 1(0.454) |
| Wastewaters, process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use creosote formulations. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.. | | | | | | | |
| F035 | | | 1 * | 4 | F035 | X | 1(0.454) |
| Wastewaters, process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use inorganic preservatives containing arsenic or chromium. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.. | | | | | | | |
| * * * * | | * | | * | | * | |

† indicates the statutory source as defined by 4 below.
1* indicates that the 1-pound RQ is a CERCLA statutory RQ.
4 indicates that the statutory source for designation of this hazardous substance under CERCLA is RCRA section 3001

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