Commenter: J.H. Baxter
Comment Number: 58
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defer this decision until it has information to determine whether the extraordinary increases in disposal costs that would be associated with a dioxin standard would be commensurate with any additional protection for the public derived from the standard.

Commenter: Hazardous Waste Management Association
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Secondly, the Agency has not adequately considered the extent of the existing capacity to combust this waste as supported by the Agency's own statement that, "EPA has identified one commercial facility currently permitted to combust wastes that may have PCDD and PCDF constituents with concentrations one to two orders of magnitude higher than those levels found in F032" (60 FR 43682). This statement contradicts the Agency's capacity analysis which indicates that there is sufficient incineration capacity for wood preserving waste streams. Currently, there may be incineration capacity for the F034 wastes; however, that capacity does not include capacity for dioxins and furans that are proposed as BDAT for F032. Furthermore, it is not clear how the Agency's Combustion Strategy will alleviate this problem as asserted by the Agency. The establishment of stricter dioxin and furan requirements on combustion facilities will still not alleviate the myth in the eyes of the public that dioxin is the most toxic compound known to man and that no exposure is acceptable. As a result, the Agency should reevaluate this position and either promulgate a two-year national capacity variance or remove the dioxins and furans from the F032 treatment standards.

4.6 NO ALTERNATIVE DIOXIN/FURAN TECHNOLOGIES ARE COMMERCIALLY AVAILABLE

Summary:

Several commenters noted that none of the alternative technologies proposed by EPA for dioxin and furan wastes have been developed to a commercial scale, are permitted, and are capable of meeting the standards for these constituents [Beazer East (23); Penta Task Force (32); American Wood Preservers Institute (39)]. Beazer East described problems associated with each proposed technology (BCD technology, Shirco infrared thermal process, Hubber supercritical oxidation process, pyrolitic destruction, APEG and KPEG processes, ultraviolet photolysis, biotreatment) (23:12-17). Penta Task Force stated that EPA is unjustified in reliance on non-demonstrated, innovative technologies to resolve capacity shortfall for treatment of dioxin and furan wastes, and provided a detailed evaluation of alternative non-combustion technologies for the treatment of F032 wastes (32:19-21, Att.A). American Wood Preservers Institute stated that of the 13 identified dioxin and furan treatment technologies, only one (a rotary kiln incinerator) has been developed, permitted, and used on a site cleanup (39:25).

Response:

Given the treatment standards being finalized today, EPA has determined that adequate capacity exists to treat the newly listed wood preserving wastes (other than soil and debris; see Section 4.9). In addition to traditional combustion treatment technologies, facilities may also use alternative non-combustion technologies to meet these standards. Any non-combustion treatment capacity that can meet the LDRs for the newly listed wood preserving wastes will serve to increase the available treatment options for these wastes. However, even if there is no capacity available for the alternative technologies cited in the proposed rule, there should not be a capacity shortfall for the newly listed wood preserving wastes (see Sections 4.3 through 4.5).

EPA does agree, however, that a capacity shortfall will exist for soil and debris contaminated with the newly listed wood preserving wastes. As described in Chapter 2 of this document, EPA estimates that the required treatment capacity for contaminated soils and debris is over 100,000 tons per year while the maximum available treatment is likely less than 50,000 tons per year. For this and other reasons (discussed in Chapter 3), EPA is granting a two-year variance for soil and debris contaminated with the newly listed wood preserving wastes.

Comments:

See next page.

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3. **The proposed LDR for F032 will force incineration as the only treatment alternative.**

Beazer believes the selection of incineration as the Best Demonstrated Available Technology ("BDAT") is arbitrary and erroneous, because although the technology may be "demonstrated," it is clearly "not available." EPA's forced incineration mandate does not realistically consider the issues associated with public resistance, capacity, cost, or commercial viability. Although EPA states in the Proposed Rule that the LDR level can be met using "any available technology," 60 Fed. Reg. 43680, Col. 3., and although Beazer believes that flexibility in treatment technology selection is imperative for both wastewaters and nonwastewaters, as discussed in these comments, just saying it "doesn't make it so." The reality of the performance capabilities of alternative treatment technologies (other than incineration) associated with dioxin/furan treatment leads to the unescapable conclusion that the only arguably "available" technology to meet the proposed Universal Treatment Standards ("UTSs") is incineration and its "availability" is seriously limited or non-existent as discussed more fully below.

To Beazer's knowledge, no alternate technologies have been developed to commercial scale that are permitted and capable of meeting the nonwastewater dioxin/furan UTSs of 1 ppb. The alternate technologies noted in the Proposed Rule are not options for remediation. These technologies are evaluated in the Dioxin Treatment Technologies-Background Paper (U.S. Congress, Office of Technology Assessment ("OTA"), OTA-BP-O-93, Nov. 1991) (the "Dioxin Treatment Document") wherein OTA notes that of thirteen identified types of dioxin/furan

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treatment technologies in development, only one, rotary kiln incineration, has been tested, permitted, and actually used on a site clean-up for dioxins/furans. Dioxin Treatment Document, p.13. Two other technologies (liquid injection incineration and fluidized bed incineration) were built and tested, but both are incineration technologies and neither has been used in a dioxin/furan site clean-up. Id. pp. 17 & 19. Neither technology has been directly available to U.S. sites because the former is a sea-based process for treating only thin slurries and combustible liquid wastes and the other is a European developed and tested technology that has not yet been permitted for destruction of dioxins/furans. Id. The remaining thermal and non-thermal technologies noted in the Dioxin Treatment Document (which include those noted in the Proposed Rule) were all in either the research, bench scale, or pilot scale stages of development and have significant limitations as noted below.

a. BCD Technology

EPA has asked for comment on the use of BCD technology and other technologies to treat dioxin/furan. 60 Fed. Reg. 43681, Col. 3. Beazer does not believe that the BCD technology has been sufficiently demonstrated to warrant its inclusion in the list of candidate nonwastewater treatment technologies. Our information suggests that EPA researchers, at its Risk Reduction and Engineering Lab ("RREL/ORD"), advised that demonstration tests at two sites have resulted in evidence that the dechlorination process in the "liquid reactor" is not successfully performing, specifically for dechlorinating dioxin/furan. A test in 1993 indicated that

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dioxin/furan could be removed from soils, but the off-gas stream treatment could not be evaluated due to analytical interferences.[4] A recent 1995 test in Region X was terminated due to the inability of the process to meet the air emissions standards for dioxins/furans. Id.

b. Shirco Infrared Thermal Process

The Agency has suggested in the Proposed Rule tnat the Shirco infrared thermal process can be used to treat dioxin/furan. 60 Fed. Reg. 43681. This process was tested by EPA in 1987 for destruction of PCBs. Id. However, Beazer found no data in EPA's Superfund Innovative Technology on-line database regarding use of the technology for destruction of dioxins/furans. Indeed, the Dioxin Treatment Document indicates that although infrared destruction has advanced to commercial use in Germany, no permitted facilities exist in the United States for destruction of dioxins/furans. Dioxin Treatment Document, p. 26.

c. Hubber Supercritical Oxidation Thermal Process

The Agency also suggests that the Hubber supercritical oxidation process can be used to treat dioxin/furan wastes. 60 Fed. Reg. 43681, Col. 3. According to the Dioxin Treatment Document, however, the Hubber supercritical oxidation thermal process referred to in the Proposed Rule can only be used to treat liquid wastes and perhaps finely ground, thin slurries. Dioxin Treatment Document,

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[4] Teleconferences with Terrance Lyons of ORD/RREL on 8/15/95 and 10/25/95.

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p. 60. It has not been tested at a commercial scale on any solid wastes or even the proposed thin slurries, thus further limiting its appropriateness as a viable technology. Id.

d. Pyrolitic Destruction

Pyrolitic destruction is another technology that EPA believes is capable of treating dioxin/furan wastes. Id. Like the Hubber process, pyrolitic destruction of dioxin/furan has the same limitations in that it can only treat liquid wastes and perhaps finely ground, thin slurries (with a viscosity similar to 30 wt. motor oil). The technology is being pursued by only one company and has not been demonstrated at commercial scale for destruction of dioxin/furan. Dioxin Treatment Document, p. 60.

e. APEG and KPEG Processes

In the Proposed Rule, EPA requests comments on whether the APEG or KPEG processes can be used to meet the dioxin/furan LDRs. Id. The APEG and KPEG processes were introduced in the 1980s and found application at commercial scale for dechlorinating organic fluids and oils. However, the treatment of nonwastewaters has not progressed successfully since its introduction. As an example, a Region VI CERCLA site in Houston mobilized a full scale APEG treatment system owned by Galson Research Corporation six or seven years ago and was unable

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to meet the treatment requirements for PCBs. The unit was demobilized and Galson has not pursued the technology further.

f. Ultraviolet Photolysis

EPA has also requested information on the use of ultraviolet photolysis in treating dioxin/furan. 60 Fed. Reg. 43682, Col. 1. The use of ultraviolet photolysis for destruction of dioxin/furan in soils requires dissolution of the dioxin/furan from the soil into a solvent extract and subsequent destruction of the dioxin/furan in the liquid solvent. This technology will face the same developmental difficulties impeding the development of critical fluid extraction for soils (material handling and agglomeration) and for the BCD liquid reactor (destruction of the dissolved dioxins/furans in the solvent extract to levels low enough to allow recycle of the solvent). Further, the process has not yet been demonstrated at commercial scale.

g. Biotreatment

Finally, the Agency proposes the use of biotreatment for wastewater. 60 Fed. Reg. 43681, Col. 1. Beazer contacted several water treatment equipment manufacturers to verify that the proposed treatment standards could be achieved with the specified technologies. Zimpro, the manufacturer of one of the most effective wastewater biotreatment systems available had no data to support removal of dioxin/furan to the proposed UTS levels. Because the ability of biotreatment to achieve the very stringent dioxin/furan UTS levels for wastewater was

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not confirmed by Beazer's contacts with equipment vendors, Beazer requests that EPA provide performance data to confirm the assertion made above regarding biotreatment of wastewaters.

RECOMMENDATION:

Beazer recommends that EPA critically and realistically re-evaluate the technologies which it has suggested are alternatives to incineration. These technologies have not been demonstrated as effective treatment for dioxin/furan congeners and EPA should not imply that they are "available." By setting standards that can only be met using incineration, EPA is improperly excluding other viable treatment systems for wood preserving site remediation waste, and placing the regulated community in the untenable position of having no workable options for managing remediation waste containing F032.

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E. **EPA Can Not Properly Rely Upon Alternative Technologies To Solve The Capacity Problem.**

EPA's contractor has acknowledged that because incineration capacity for dioxin/furan wastes is severely limited, EPA has sought to identify alternatives to

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incineration as BDAT for F032 wastes. See Memorandum from J. Castellanos, Versar, to J. Labiosa, EPA, Evaluation of Management Alternatives to Incineration for Dioxin/Furan-Contaminated F032 Wastes (June 30, 1992) (Dkt. No. F33P-S0318). As part of that effort, EPA has considered various chemical, non-incineration thermal, physical, and biological methods as potential BDAT alternatives. None of the alternate treatment methods evaluated by EPA can serve as BDAT for F032 wastes, because not a single one of these alternatives is a "demonstrated" treatment technology. As EPA has explained:

> its [BDAT] determinations should not be based on emerging and innovative technologies. This would be in violation of the intent of the statute as indicated in the legislative history . . . . To be considered a "demonstrated" treatment technology for purposes of the final rule, a full scale facility must be known to be in operation for the waste or similar wastes.

51 Fed. Reg. 40,572, 40,588 (Nov. 7, 1986).

Because, as the background documents make clear, the various alternative technologies are not in commercial operation, they cannot be BDAT for F032 wastes. Indeed, in each case, the data considered by the Agency on a given alternate technology pertains only to laboratory or bench-scale tests or pilot scale tests on dissimilar waste streams (generally PCB-contaminated soils). See June 30, 1992 Castellanos Memo (summaries of tests on APEG method (laboratory tests only); SEA MARCONI method (experimental); pyrohydrolytic dechlorination method (bench-scale experiments); UV photolytic methods (pilot-scale experiments); UV oxidation method (bench-scale); in-situ verification method (bench, pilot and field tests); in-situ stabilization method (laboratory

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study); thermal desorption method (bench-scale); infrared heating method (mobile pilot unit); and electric pyrolysis method (field test)). As the Office of Technology Assessment has noted: "[a]lthough some alternatives look promising and have been shown effective in laboratory settings (or in application to other pollutants), none have received enough development and testing to make them viable for large-scale treatment of dioxin contamination today." Office of Technology Assessment, Background Paper -- Dioxin Treatment Technologies, at 8 (Nov. 1991); see, id., Table 1-5 at 8 (table summarizing development status of dioxin treatment technologies). (These matters are more fully discussed in the attached report entitled "Evaluation of Non-Combustion Technologies for the Treatment of Pentachlorophenol Wood Treating Wastes" (Tab 1).) In short, reliance on these emerging technologies to solve the significant cost and capacity problems associated with the proposed standards would be unjustified.

Commenter: Penta Task Force
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Evaluation of Non-Combustion Technologies for the Treatment of Pentachlorophenol Wood Treating Wastes

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Background

As a result of implementation of the Phase IV Land Disposal Restriction Rule, the US-EPA is considering promulgation of standards for tetra-, penta-, and hexa-chlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/F) in the residues from the treatment of pentachlorophenol wood treating wastes (F032). A maximum of 1 ppb for the total concentration of all listed isomers in the treatment residue has been proposed as the standard. Thermal treatment via cement kiln recycling or incineration has long been the treament of choice for these wastes. However, this standard will be difficult for thermal treatment methods to achieve due to formation of PCDD/F as combustion by-products. Consequently, costly retreatment and reanalysis of each waste residue will likely be required. The US-EPA has identified other technologies that they believe are capable of achieving the 1ppb standard. They are:

- Infrared Incineration
- Pyrolysis
- Supercritical Oxidation
- Base Catalyzed Decomposition
- UV Photolysis.

Unfortunately, some of these processes are quite old but have not been widely implemented, others have been shown to be effective on specific waste streams, while others are still in the developmental stages. The purpose of this review is to evaluate the potential effectiveness of each of these technologies for reducing the concentration of PCDD/F in

pentachlorophenol wood treating wastes to less than 1ppb.

Infrared Incineration

So-called infrared incineration was originally introduced by Shirco Infrared Systems. In the late 1980's they filed for bankruptcy and sold or licensed their units to various organizations including the ECOVA Corp. of Richmond Washington. In the Shirco Infrared Incineration System, solid waste materials are fed on a metering conveyor where they are heated by infrared heating elements to volatilize, oxidize, or pyrolyze the more volatile or reactive components of the waste. Originally, the system was designed to operate without an afterburner for treatment of non-RCRA soils and wastes. However, concern over emissions of toxic pollutants resulted in an addition of an afterburner to the system design. The temperature of the metering conveyor is typically varied from 900 to 1600 F depending upon the volatility or stability of the components of the waste feed material that needs to be treated.

The advantage of the Shirco design is that it can treat a wide range of types of solid wastes in a cost effective manner because of the low energy costs associated with the metering conveyor. However, its chief advantage and main reason for its continuing viability, is its transporatability for on site treatment of contaminated soils. When the wastes have high moisture contents, the process becomes slower and more costly because de-watering is required before treatment.

Because the technology has been available for some 10 years, there is considerable treatment data available, including data on treatment of PCDD/F containing materials. A summary of the availble data is presented in table 1.

Table 1
PCDD/F Treatment Results for the Shirco Infrared Incinerator

Site	PCDD/F in Residue (ppb)	Removal Efficiency (%)
Florida Steel	16.3	---
Twin-Cities	82.8	---
Tibbets	<0.385	>94.4
Times Beach	<0.035	>99.98

Examination of this data reveals that the proposed regulatory standard of 1ppb was achieved in only two of the four case studies. In addition, the concentration of PCDD/F in the waste was typically 10 to 100 ppb which is much lower than the anticipated levels in F032 which could be greater than 1000 ppb. Thus it is not clear that the removal efficiency for PCDD/F is sufficient for

the F032 waste.

However, a possibly even more severe limitation apparently exists which makes the discussion of treatment efficiency almost academic. The sludge and treatment solution wastes have high liquid contents and thus are not suitable candidates for treatment by infrared incineration. While it is possible that a "drying" unit could be added to the process, this is not a proven technology and certainly not routine or cost effective. Thus it does not appear that infrared incineration can be used for treatment of pentachlorophenol wood-treatment wastes.

Pyrolysis

Pyrolysis is a variation of thermal treatment in which the waste materials are thermally degraded under oxygen starved or oxygen depleted conditions. This is contrast to combustion in which the waste is oxidized under stoichiometric or oxygen rich conditions resulting the in the support of a visible flame. One of the more successful variations on this process is the Texaco-Syngas Inc. Entrained-Bed Gasification System.

The process operates at high temperatures, 2200 to 2800 F,and pressures above 20 atmospheres. Wastes are pumped in a slurry form to a gasification chamber which converts the waste to a gas consisting of mainly carbon monoxide and hydrogen in the case of a hydrocarbon waste and, additionaly, hydrogen chloride in a chlorine containing waste. Slag is produced that is collected in a lockhopper.

The process, in principle, is supposed to produce no hydrocarbons heavier than methane. In fact, analysis of emission data from the MRL tests indicate that significant quantities of reaction by-products were observed. These products were prinicipally PAHs with concentrations typically in the range of 1 to 100 ug/m3 in the syngas. Total PCDD/Fs of 0.042 ng/m3 were also observed in the effluent. Data on the slag residue was not available; however, the presence of PAHs and PCDD/F in the effluent gas are indicative of the presence of the same chemicals in the slag residue.

Conclusive data on the effectiveness of the process for acheiving < 1ppb of PCDD/F in the residue is not available. However, the technology does not appear to be useful for treating woodtreating wastes. The developers state that the waste must be a liquid or slurry of fine, suspendable particles containing 30 to 60 percent liquid. The nature of woodtreating wastes thus appears to preclude their treatment by this technique, as these wastes contain larger particles and wood splinters that would require major pretreatment and grinding to be a usable feed.

Supercritical Oxidation

Supercritical water oxidation (SCWO) is a process in which waste materials are oxidized in a reactor containing supercritical water and an oxidant such as air, oxygen, or hydrogen peroxide. Since the critical point of water is 374 C at 221 atmospheres, the temperature and pressure in the reactor must exceed these values. The process has been the focus of numerous academic studies and consequently, the fundamentals of the process and the kinetic behavior are relatively well characterized.

SCWO processes have the advantages that supercritical water is an excellent solvent for many chemicals and oxidation rates are extremely rapid. The solvation properties are due to the nature of water above its critical point which transform it into a moderately polar, dense gas. The rapid oxidation properties are due to the increased number of free radicals that are formed.

Both continuous and batch processes have been designed. However, scale-up of the process has some rather severe limitations. Since the waste material has to be introduced into a supercritical reactor, preheating in a pressure sealed line is required. This limits the nature and amount of material that can be processed. Corrosion of the reactor is a severe problem. High chlorine wastes exacerbate the problem even further. A major engineering challenge has been the solubility of salts. Above the critical point of water, inorganic salts are not very soluble and methods for removal to prevent their buildup in the reactor must be instituted.

Performance data on real wastes for SCWO appears to be scarce, especially for chlorine containing waste streams. The process has gained prominence as a method for treating nerve agents and rocket fuels which are non-chlorinated. High destruction efficiencies (>99.9%) have been reported for pentachlorophenol and PCBs. Limited data is availble fro PCDD/F. In a treatability on pulp and paper mill sudge, residue concentrations and destruction efficiencies were determined for operation at 450 C and 500 C. At the lower temperature, the PCDD/F concentration in the residue was 0.090 ppb (destruction efficiency of >96%). At the higher temperature, the residue concentration was only 0.011 ppb. These residue concentrations are obviously very low; however, the starting concentration was only 0.674 ppb, which is already below the proposed regulatory limit. Thus it is not clear if the technology is capable of treating wastes with 10 to 1000 ppb of PCDD/F in the waste material.

Based on the lack of data demonstrating the effectiveness in destroying PCDD/Fs and the difficulty in handling chlorinated wastes, this technology cannot be considered as demonstrated or appropriate for treatment of wood treating wastes.

Base Catalyzed Decomposition

Base catalyzed decompostion (BCD) is a general term applied to treatment of wastes using an inorganic alkali to strip chlorine and other halogens from organic waste materials. This technology is based on the use of potassium/polyethylene glycolate (KPEG) reagent to destroy PCBs which was subsequently also applied to destruction of other waste materials using either potassium or sodium alkali and polyethylene glycolate (APEG) as the reagent. The function of the polyethylene glycolate was to protect the alkali from hydroysis by any water that was present in the waste materials. However, it was found that APEG reagents only partially dechlorinated organic wastes (i.e. producing lower less chlorinated PCBs, chlorobenzenes, PCDD/Fs, etc.). Consequently, "non-PEG" containing reagents were developed that resulted in improved destruction efficiencies. These new "BCD" technologies operated at 300-350 C to volatilize water and increase their reaction rate.

The claims of developers concerning the efficiency of this process in destroying halogenated wastes and PCDD/Fs are promising. Soils spiked with PCDD/Fs had the concentration reduced from 2000 ppb to below 1 ppb using KPEG for treatment times of 1 to 2 hours. Identical results were reported for another TCDD spiked soils treated with KOH/DMSO reagent for 1-7 days. TCDD in a 2,4-D/2,4,5-T waste was reduced from 1300 ppb to non-detectable levels using KPEG and reaction times of 2 days. Some failures have also been reported. Proprietary K-400, KM-350, and K-120 reagents only reduced TCDD at the Timberline Stables and Denny Farm Sites in Missouri by 12 to 45% for treatment times of 7 to 28 days.

Although the process appears to be generally quite efficient in destroying halogenated chemicals, it applicability is severly limited by its inability to destroy non-halogenated wastes. This is a severe limitation for the pentachlorophenol wood treating wastes that also contain a number of polynuclear aromatic hydrocarbons (PAHs). Thus if BCD is used for these wastes, it will have to be used in conjunction with other treatment technologies for the non-halogenated pollutants. Sequential treatment by at least two technologies will severly increase the cost and time associated with the treatment of these wastes. If both treatment technologies are not present at the same site, additional on-road transportation will be required. Considering the complexity and variability of the F032 wastes streams, the used of BCD in combination with other treament technologies appears inappropriate.

UV Photolysis

Over the past 10 to 15 years a number of innovative waste treatment technologies have been introduced based on UV photolysis. The basic process involves irradiating the waste with light

with wavelengths in the 190 to 300 nm range and inducing photochemical decompostion. A photoactive catalyst or oxidizer is necessary for the destruction of most organic wastes. This is because most waste chemicals either do no efficiently absorb light at the wavelength emitted by the radiation source, or they do not decompose efficiently once they are photoexcited. Catalyst/oxidizer systems include: ozone, hydrogen peroxide, ozone/hydrogen peroxide, iron (II) complexes/hydrogen peroxide (i.e. Fenton's Reagent), titanium dioxide, and titanium dioxide/hydrogen peroxide/ozone. In addition, it has been shown that mildly elevated gas-phase temperatures (200-500 C) can significantly increase the rate of photodecompostion in the gas-phase.

Some of these processes are reasonably effecient for destruction of chlorinated hydrocarbons which decompose by elimination of chloride ion or radical. Certain PCDD/F isomers are also quite photo-chemically labile. Hydrocarbons tend to be much less photochemically reactive, especially in non-catalyzed systems.

One can debate the merits of each type of photochemical process that has been developed or proposed and document the measured efficiencies of each process variation on each waste type. However, these technologies are inherently non-applicable to wood treating wastes because these wastes do not transmit light. For a photocatalytic process to work, one must design a reactor that allows the waste molecule, the light, and the catalyst to be at the same place at the same time. This is a difficult task for a transparent waste but is impossible for a highly turbid waste. Wood treating wastes contain large quantities of dirt and wood fiber. Without severe dilution they are opaque to light. Dilution may make some of the wastes marginally treatable; however, the waste volume would need to be increased on the order of 100 fold and consequently the throughput and cost of treatment would concomittantly increase.

In summary photochemical treatment methods are only applicable to non-turbid waste waters or air streams. They are clearly inappropriate for non-waste water F032 wastes.

Commenter: American Wood Preservers Institute
Comment Number: 39
Page Number: 25

ALTERNATIVE TECHNOLOGIES TO INCINERATION DO NOT EXIST

EPA states that "any available technology can be used to meet the LDR level.[48] All of the so-called "alternatives" were evaluated by the Office of Technology Assessment (OTA) in 1991. Of the thirteen identified dioxin and furan treatment technologies, only one (rotary kiln incineration) had been developed, permitted and used on a site cleanup.[49]

COMMENT:

AWPI is unaware of any alternative technology that has been developed to commercial scale, permitted to receive, and capable of meeting the 1 ppb PCDD and PCDF UTSs.

4.7 INSUFFICIENT VITRIFICATION CAPACITY EXISTS FOR NEWLY LISTED WOOD PRESERVING WASTES

Summary:

The proposed treatment standards for arsenic in wood preserving wastes are based on vitrification. Two commenters [Beazer East (23) and American Wood Preservers Institute (39)] expressed concern that there is no available vitrification capacity for wood preserving wastes. Beazer East stated that only one facility in the U.S., Marine Shale Processors, uses vitrification in a tested, full scale process and that this facility's regulatory status is in question. Beazer East believes that the availability of vitrification as a treatment technology is uncertain and that stabilization should be the BDAT for arsenic in the newly listed wood preserving wastewaters (23:29-33). American Wood Preservers Institute requested that EPA identify the source for commercial vitrification (39:16).

Response:

The Agency acknowledges the commenters' statement that there is little commercially available vitrification capacity for these wastes (e.g., MSP has now ceased operation until it can obtain a hazardous waste incineration permit). However, as indicated in Chapter 2 of this document, stabilization can also meet the proposed UTS limits for arsenic. Because the treatment standards are numeric limits, facilities will be able to use stabilization to meet the LDRs for the newly listed wood preserving wastes and are not required to use vitrification as a treatment technology. Nevertheless, as discussed in Chapter 2, some vitrification capacity likely exists for wastes with high concentrations of arsenic. Therefore, as discussed in Chapters 2 and 3 of this document, EPA has determined that there is adequate stabilization capacity for wood preserving wastes.

Comments:

See next page.

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Comment Number: 23
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C. **The Proposed LDR for Hazardous Waste No. F035 Should Not Include Vitrification.**

1. **Stabilization should be BDAT for F035.**

EPA is proposing that F035 be treated using vitrification to meet LDRs. Review of the ROD Summary reveals that slag vitrification has not been specified in any of the 37 wood treating site RODs evaluated by Versar. To Beazer's knowledge, only one facility in the United States -- Marine Shale Processors ("MSP") of Morgan City, Louisiana -- utilizes vitrification in a tested, full-scale process. MSP's future regulatory status, however, remains in question. Currently, MSP is appealing EPA's rejection of MSP's Part B interim status boiler and industrial furnace permit. Due to the uncertain nature of MSP's regulatory status and potential future lack of any other vitrification facility, vitrification is not an "available" or appropriate treatment technology.

Vitrification was chosen for immobilization for arsenic presumably because conventional stabilization of arsenic can be somewhat problematic. As presented at the June 1995 AWMA National Meeting, studies by EPA's RREL on stabilization have shown that the variable solubility of arsenic in high and low pH ranges is easily overcome by treatability testing and proper pH control of the cement/lime mixture in the field. In this study, EPA successfully stabilized 13,000 cubic yards of arsenic soils using conventional stabilization techniques.

Stabilization of arsenic wastes is much more controllable than thermal processes because arsenic has been shown to volatilize in high temperature atmospheres such as an incinerator or slag furnace. The treatment alternatives

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Comment Number: 23
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specified in the Proposed Rule will transfer arsenic to a vapor stream where it is not accounted for as closely. See Table 3-B, Data Requirements for Thermal Desorption, in EPA's Presumptive Remedies for Soil, Sediments, and Sludges at Wood Treater Sites Quick Fact Sheet (Draft-Nov. 1994) ("[v]olatile metals (As, Cd, Cr, Pb, Zn) vaporize and are difficult to remove from emissions.")

The complexity of arsenic volatility is also noted in EPA's Summary of Generation, Disposal, and Treatment Practices for Wood Preserving Wastes F032, F034, and F035 (SAIC, May 1990). The SAIC document notes: "[b]ecause arsenic volatilizes at high temperatures, incineration may not be an applicable treatment for F032 or F034 wastes contaminated with arsenic." The arsenic volatility process limitation is applicable to both vitrification and incineration and should be addressed by the EPA before the Proposed Rule is finalized.

Moreover, vitrification technology is more complicated than portrayed in the Proposed Rule. Vitrification of arsenic wastes may require two additional treatment steps not specifically identified in the Proposed Rule. These additional steps are described in EPA's Vitrification Technologies for Treatment of Hazardous and Radioactive Waste Handbook (May 1992). The Vitrification Handbook notes: "[c]ertain waste feeds may require chemical or thermal pre-treatment to convert arsenic oxide to less volatile forms before vitrification..." Vitrification Handbook, p. 4-7. The Handbook explains that the process required is to convert the arsenic to a calcium oxide in another thermal process and then re-introduce the thermally treated mixture into the slag furnace. Id. This process is notably more complex than

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indicated in the Proposed Rule and further supports the use of the much less complex, conventional cementitious stabilization methods for arsenic wastes.

Finally, EPA's Presumptive Remedy document does not acknowledge the use of vitrification as a candidate immobilization technique. Rather, it specifically identifies "cementitious materials, including Portland cement, fly ash/lime, and fly ash/kiln dust" as the solidification methods.

RECOMMENDATION:

EPA should propose stabilization as the BDAT for arsenic based on a lack of "demonstrated and available" full-scale vitrification facilities. Stabilization of arsenic in wood treating wastes has been proven by EPA to be effective and has been previously selected by EPA as a presumptive technology for treating arsenic in F035 wastes. EPA should avoid the inevitable confusion that will arise in the field as a result of the conflicting programs and promulgate stabilization as BDAT for the F035 LDRs.

2. **The UTS for F035 nonwastewaters should be based on leachate concentration.**

EPA has established vitrification as BDAT for arsenic and stabilization as BDAT for chromium. 60 Fed. Reg. 43681. EPA has proposed that each constituent proposed for regulation in F035 (arsenic and chromium) comply with its applicable UTS in the treatment standard table at 40 C.F.R. § 268.40 as a prerequisite for land disposal. 60 Fed Reg. 43680. However, the UTSs for chromium and arsenic at 40 C.F.R. § 268.40 are designated as leachate levels, whereas, the

Commenter: Beazer East
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UTS for chromium and arsenic in F035 as proposed are total concentrations. 60 Fed. Reg. 43682.

Beazer's experience indicates that the proposed UTSs for chromium and arsenic cannot be achieved with the specified immobilization technologies. Immobilization technologies are not designed to reduce total concentrations of metals in the waste, so the F035 LDR as drafted, cannot be met. In studies by EPA's RREL/ORD, 13,000 cubic yards of arsenic soils at the Selma Wood Treater CERCLA site were successfully immobilized using conventional stabilization techniques. In the Selma site full scale stabilization study performed by EPA's RREL/ORD, leachable standards for the metal constituents were specified in the ROD in lieu of total concentration standards. Further, the study addressed the use of leach tests other than TCLP, such as Synthetic Precipitation Leachate Procedure ("SPLP") (pending SW846 Method 1312) and distilled water leach. Beazer supports the use of these more appropriate leach tests.

EPA's RREL/ORD researchers have shown that the variable solubility of arsenic in high and low pH ranges is easily overcome by treatability testing and proper pH control of the cement/lime mixture in the field. The alternate leach tests noted above reduce the incentive of remediation contractors to create a less environmentally-sound stabilized mixture. The misguided incentive created by the TCLP test method is that by deliberately raising the pH of the stabilized waste, the contractor ensures that when the acid is added in the TCLP test, the resultant pH of the test material falls into the mid pH range where the arsenic is not water soluble.

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Thus, the stabilized waste passes the TCLP at the deliberately elevated pH level. However, because the pH of the stabilized waste is elevated, it is now in the range of higher solubility in water. This pH management for stabilized arsenic wastes actually results in a waste that leaches more in a natural water environment than it does in the TCLP acid leach test. The alternate leach procedures discussed above would mitigate the incentive to manipulate the treatability testing and result in a more environmentally protective means of managing the waste.

RECOMMENDATION:

EPA must revise the UTSs for the metal constituents to a leachable standard for all metals. Further, Beazer recommends EPA consider the use of the SPLP or distilled water leach procedure in lieu of the TCLP method to ensure the stabilized material is truly not leachable in its final environment.

Commenter: American Wood Preservers Institute
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AWPI is puzzled at EPA's selection of vitrification as BDAT for arsenic. The Agency has recognized the potential for arsenic to volatize at high temperatures.[31]

COMMENT:

EPA should explain why it disregards this potential problem before recommending vitrification for arsenic wastes. The Agency should also explain why it disregards stabilization when EPA has successfully used this technology for arsenic at a wood treating site. AWPI is unaware of a single full-scale vitrification facility and requests that the EPA identify the source for commercial vitrification.

4.8 AVAILABLE CAPACITY DOES NOT EXIST FOR NEWLY LISTED WOOD PRESERVING WASTEWATERS

Summary:

Two commenters [Beazer East (23) and American Wood Preservers Institute (39)] stated that the proposed treatment standards for wood preserving wastewaters are not achievable in current treatment systems. Beazer East stated that the wastewater treatment standards are too low and will require construction of new wastewater treatment systems capable of meeting the standards. Beazer stated that this will result in a shutdown of remedial actions at these sites (23:5). American Wood Preservers Institute stated that standards for F032 wastewater are unachievable (39:28-29).

Response:

As discussed in detail in the BDAT background documents for this final rule, EPA has determined that the LDR treatment standards for the newly listed wood preserving wastewaters are achievable using readily available wastewater treatment practices. The Agency notes, however, that current wastewater treatment systems may have to be optimized or upgraded to meet these treatment standards, or waste may require a sequence of treatment trains to meet the standards. To allow facilities time to modify their wastewater treatment systems to be able to meet the LDR standards, EPA is granting a 90-day capacity variance for the newly listed wood preserving wastes, or on a case-by case basis if no treatment capacity exists. (EPA, however, does not believe many wastewater treatment operators will be affected by the rule. If treatment occurs in tanks, there is no land disposal. If it occurs in a surface impoundment, LDR standards need not be met assuming the impoundment meets the requirements of 3005(j)(ii), which almost all currently operating surface impoundments do.)

Comments:

See next page.

Commenter: Beazer East
Comment Number: 23
Page Number: 5

Another ramification of EPA's proposed LDRs involves the extremely low wastewater treatment standards for wood treating wastes. EPA's stringent wastewater treatment requirements (e.g., dioxin/furan levels of 0.00063 mg/l) will have a profound impact on the management of remediation of groundwater at sites. According to the regulation, the regulated community will be forced to expend valuable resources to design and construct wastewater treatment facilities capable of meeting these low limits for any wastewaters generated at sites where

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ALTERNATIVE TREATMENT STANDARDS FOR F032 WASTES

EPA has previously acknowledged that incineration effectively destroyed dioxin and furan constituents. The Agency offered incineration as an alternative technology in the F024 rulemaking although this was in response to "industry recalcitrance" and "the Agency's desire to have industry resume treatment [of F024].[58]

COMMENT:

Recognizing the stigma associated with incineration of dioxins and furans, the limited capacity, and the inherent difficulties in analyzing for dioxin and furan

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[55] Internal Memorandum, Jose Labiosa to R. Kinch and L. Rosengrant, USEPA/OSWER (undated).
[56] 53 FR 53282, 53291-53308 (December 1988) and 55 FR 50450 (December 1990).
[57] "The NTP study provides carcinogenic potency values for pentachlorophenol products... which are in the range of values associated with other wastes listed as toxic." 55 FR 50467.
[58] 55 FR 22581 (June 1, 1990).

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constituents, EPA should promulgate an alternative standard based on incineration in a four-9's combustion unit.

DIOXIN AND FURAN LIMITS FOR F032 WASTEWATERS ARE UNACHIEVABLE

EPA has proposed treatment standards for F032 wastewaters that were transferred from the UTSs for dioxins and furans in organic wastewater. These UTSs are based on biological treatment of wastewaters containing very low concentrations of dioxins and furans ranging from 0.00004 µg/L to 0.0118 µg/L.[59] The average concentrations of dioxin and furans in F032 wastewaters are much higher ranging from 0.9 µg/L to 60 µg/L.

COMMENT:

Given that the removal efficiency for biological treatment of the lesser concentrated was only 78 percent, AWPI does not believe that EPA can support the claim that the UTS can be met with the higher concentrations of dioxins and furans found in F032 wastewaters.

[59] See, "Universal Treatment Standards BDAT Background Document", Vol. A, Section 5.6

4.9 NATIONAL CAPACITY VARIANCE IS NEEDED FOR SOIL AND DEBRIS CONTAMINATED WITH NEWLY LISTED WOOD PRESERVING WASTES

Summary:

Many commenters support a national capacity variance for soil and debris contaminated with newly listed wood preserving wastes: Beazer East (23, N12), Utilities Solid Waste Activities Group et al (USWAG) (35); American Wood Preservers Institute (39); Merck (47); Chemical Waste Management (48); Safety-Kleen (65); the Hazardous Waste Management Association (97); Chemical Manufacturers Association (113); Georgia Department of Natural Resources (DNR) (N13); and DuPont (N16).[59]

Georgia DNR stated that they are cleaning up six sites under the State Superfund program that are projected to generate 150,000 tons of F032 contaminated soil, and asked that EPA consider these quantities in its capacity analysis (N13:1). DuPont also supports a capacity variance for soil contaminated with wood preserving wastes, and provides data on soil at its facilities (N16:1).

Based on an independent study, Beazer East estimates that 85.3 MM tons of soil contaminated with wood preserving wastes may require treatment to meet UTS. Beazer stated that this volume far exceeds available incineration capacity. Additionally, Beazer stated that most incinerators that can manage nonpumpable materials only accept such materials in small quantities, and fewer than five of the RCRA-permitted incinerators can handle truckloads or railcar volumes of contaminated media. Beazer believes that soils and similar remediation wastes pose material handling and capacity problems for most of the nonpumpable incinerators, and that only APTUS, USPCI Utah, and Rollins Environmental Services, Inc. Texas can handle significant soil volumes (23:17-22).

Rollins Environmental Services, Inc. acknowledges the data on the quantity of F032 contaminated media are incomplete and the quantity may exceed available capacity. Rollins suggests an alternative treatment standard be available, under limited circumstances (N19:2). American Wood Preservers Institute requested that the soil and debris variance be tied to the pending Hazardous Waste Identification Rule (HWIR) (39:14). Penta Task Force requested that EPA address cost and capacity issues that will arise at the end of the national capacity variance for contaminated soil and debris (32:4,15). The USWAG added that extensions to the variance should be granted if treatment capacity does not materialize in the future (35:15). Chemical Waste Management (48:36) and the Hazardous Waste Management Association (97:17-18) support a national capacity variance for soil and debris contaminated with Phase IV newly listed wastes and state that D004-D011 wastes should also be included in the capacity variance. Merck (47:2), Safety Kleen (65:6), and Chemical Manufacturers Association (113:24) expressed general support for a national capacity variance.

Response:

In the proposed rule, EPA requested comment on the potential quantities of soil and debris contaminated with F032, F034, and F035 that exist at wood preserving facilities, including potential quantities that will be generated from the closure of surface impoundments at these facilities or by the remediation of previously closed surface impoundments and the surrounding contaminated areas. Although EPA did not have an estimate of these quantities for the proposed rule, it believed the quantities to far exceed available capacity and therefore proposed a two-year capacity variance. EPA acknowledges the commenters' support and has incorporated the data provided into its revised capacity analysis. Furthermore, EPA has conducted additional analysis on soil and debris data obtained from Superfund Records of Decision (RODs). This analysis is presented in Chapter 3.

EPA notes that the Hazardous Waste Identification Rulemaking is on a separate schedule from this rulemaking. In determining whether to grant a national capacity variance and the appropriate duration of such a variance, if necessary, EPA considered only existing regulations. Any modifications to a variance that become necessary as a result of future rulemakings will be made as part of that rulemaking. EPA has determined that there is insufficient capacity to treat soil and debris contaminated with newly listed wood preserving wastes, and is therefore

[59] Several of the commenters listed above provided only qualitative support for a national capacity variance. Their comments are not included in this section.

granting a two-year variance. EPA notes that as a part of this two-year variance, it will not require generators to certify to EPA that they have made a request to incineration facilities and have found that there is insufficient capacity to meet the dioxin/furan treatment standard. EPA also notes that if, at the end of the two year variance additional time is necessary for treatment capacity to become available, EPA may consider case-by-case capacity extension requests.

Comments:

See next page.

Commenter: Georgia Department of Natural Resources
Comment Number: N13
Page Number: 1

Under our state superfund program, EPD is in the process of cleaning up six abandoned wood treating facilities that will eventually generate approximately 150,000 tons of soil contaminated with F032 wastes. Even though we have not yet begun transporting these wastes for dispoal, we have already entered into substantial contractual obligations just to prepare these wastes so they can be removed for disposal. This is a significant amount of material and we are concerned that any company possessing a suitable treatment technology for F032 wastes (e.g., commercial hazardous waste incinerators) will likely be overwhelmed by such a large amount of waste.

As such, the State of Georgia respectively requests the EPA to consider this substantial amount of F032 wastes when determining whether a capacity variance for soils contaminated with FO32 wastes will be granted. Your consideration of this matter is greatly appreciated. If you have any questions regarding this matter, please contact me at 404-656-7802.

Commenter: Utilities Solid Waste Activities Group
Comment Number: 35
Page Number: 15

V. USWAG SUPPORTS THE PROPOSED CAPACITY VARIANCE FOR SOIL AND DEBRIS ASSOCIATED WITH WOOD PRESERVING WASTES.

The Agency is proposing a capacity variance for two years for soil and debris that are contaminated with wastes from newly listed wastes from wood preserving processes. 60 Fed. Reg. at 43686. USWAG agrees with EPA that there is a lack of adequate treatment capacity to meet the demand for this wastestream, and supports the Agency's proposal to grant a capacity variance. As with mixed waste, USWAG also requests that the Agency express its willingness to grant additional variances in the future should disposal options remain limited.

Commenter: Beazer East
Comment Number: 23
Page Number: 17

4. **Selection of incineration as BDAT will necessarily bring cleanups to a halt due to lack of capacity and skyrocketing treatment costs.**

a. Capacity for incineration is simply not available.

Significant quantities of soil and groundwater impacted by previous wood treating operations may require treatment and disposal, further overburdening existing waste management capacity to unmanageable levels, if media is not exempted from the proposed LDR rules. EPA's approach in the Proposed Rule serves to reveal EPA's lack of a sense of reality in addressing treatment/storage capabilities. EPA's own *National Capacity Assessment Report: Capacity Planning Pursuant to CERCLA Section 104(c)(9)* (the "CAP document"), EPA530-R-94-040

Commenter: Beazer East
Comment Number: 23
Page Number: 18

concludes that sufficient capacity currently exists for current and projected hazardous wastes through the year 2013. This assessment grossly overestimates capacity due to the potentially large volume of additional remediation waste requiring treatment and disposal as proposed in the LDR rules and not accounted for in the CAP document. Specifically, EPA's capacity estimates do not account for the treatment and disposal of F032, F034 and F035 wastes or media as specified in the proposed LDR rules. EPA estimates that approximately 30% (310,000 tons/year) of surplus commercial capacity exists for nonpumpable incinerator wastes through the year 2013. EPA estimates that the total current nonpumpable incineration capacity is approximately 1.1 MM tons/year. Based on an independent study performed by the National Environmental Technology Application Corporation ("NETAC") for Beazer, an estimated 85.3 MM tons of soil impacted by previous wood treating operations may require treatment to UTSs under the proposed regulations. See Attachment A. Clearly, if media is not exempted from the Proposed Rule and if incineration is the only demonstrated technology, then capacity is not available to treat this quantity of material. It would take over 200 years to treat this quantity of material based on the existing incineration capacity. Even if only one quarter of the estimated 85.3 MM tons/year of soil were to be managed at off-site commercial facilities and all the remaining hazardous waste capacity was used for this material, it would take over 60 years to complete the task.

Further, EPA's "nonpumpable" capacity estimate cited in the CAP document of 1.1 MM tons/year fails to account for remediation wastes handling

Commenter: Beazer East
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limitations. Most of the RCRA-permitted incinerators which manage nonpumpable materials accept these materials only in small quantities. Based on Beazer's research, fewer than five of these facilities can actually manage truckload or railcar volumes of contaminated media. Soils and similar remediation wastes pose material handling and capacity problems for most of the nonpumpable incinerators, such as high inert content, low heating value, conveyance, and shredding. To our knowledge, only APTUS in Coffeyville, Kansas, US PCI in Utah, and Rollins' facility in Texas can handle significant soil volumes and their combined total capacity (not surplus capacity, assuming any exists) is on the order of 250,000 tons/year. Thus, even if the US PCI and Rollins incinerator in Texas were permitted to accept F032 wastes, adequate capacity for remediation wastes containing F032 would still be unavailable.

The Agency admitted in the Advanced Notice of Proposed Rulemaking (ANPR) Land Disposal Restrictions: Potential Treatment Standards for Newly Identified and Listed Wastes and Contaminated Soils (October, 1991) that "the commercial hazardous waste treatment industry tends to shy away from these [dioxin-containing] wastes, thus resulting in unnecessary delays in such treatment." 56 Fed. Reg. 55160, 55179 (October 24, 1991). EPA indicated in the ANPR that there is a high level of public concern over wastes containing the chlorodioxins and requested ideas regarding the development of F032 standards which would lessen public concern and the associated delays in treatment and disposal. Apparently, EPA has ignored these concerns. Clearly, the effect of the proposed LDR rules will heighten

Commenter: Beazer East
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the public's concern regarding dioxin/furan thermal treatment and slow, if not halt effective remediation waste management.

As stated by EPA in the Proposed Rule, only one incinerator is permitted in the United States to accept and thermally treat dioxin-containing wastes - Rollins' APTUS facility. Recent trends have shown a decrease in incinerator permit applications, permits issued and resulting capacities. Due to public concern regarding dioxin/furan treatment, the cost of permitting and the restrictions placed by EPA on incinerators in its Combustion Strategy, it is probable that the APTUS facility will be the only facility permitted to treat dioxin-containing wastes for some time.

As stated in Presumptive Remedies for Soil, Sediments, and Sludges at Wood Treater Sites Quick Fact Sheet (Draft-Nov. 1994):

> incineration of large volumes [greater than 5,000 cubic yards] of contaminants may be prohibitively costly....There may be significant considerations with respect to compliance with ARARs and other laws....Space availability and public opposition may make this option infeasible. Consideration must be given to public reaction concerning the use of incineration because the Agency has encountered significant opposition at some sites. Commercial incineration facilities (i.e., units permitted for the incineration of hazardous wastes) may be used when off-site incineration is desirable. However, only a limited number of these facilities are available nationwide, and the possibility of increased capacity in the future is constrained by EPA's Draft Strategy for Combustion of Hazardous Waste, issued in May 1993

Based on data collected by EPA and contained in the Resource Conservation and Recovery Information System (RCRIS) database as of May 1, 1994, 164 incinerators were permitted or in interim status. Of these facilities, only 28 were commercial facilities; 7 of which were operating under interim status.

Commenter: Beazer East
Comment Number: 23
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More significantly, of these 28 commercial facilities, only one (APTUS) will be able to accept F032 wastes as currently proposed in the rule. Significantly, between July 1, 1993 and May 1, 1994, 7 commercial facilities canceled plans to develop new capacity and 1 commercial facility in interim status terminated operations. During this same timeframe, only 1 commercial facility submitted a new permit application. More critically, 17 facilities (both commercial and non-commercial) were closed and plans to build new facilities were canceled during this period.

In order for a treatment facility to incinerate dioxins/furans, the facility must demonstrate a destruction and removal efficiency (DRE) of 99.9999 percent. The permitting process is extremely costly and cost prohibitive for most incineration facilities. These facilities must demonstrate the 99.9999 percent DRE in a trial burn in order to obtain such a permit. Based on discussions with Rollins Environmental, these costs can range from $2,000,000-$4,000,000.

The APTUS facility will be the lone BDAT facility for destruction of dioxins/furans for some time in the future. EPA's Combustion Strategy restricted incineration facilities from obtaining Part B permits to treat dioxin-containing wastes by mandating site-specific risk assessments for all Part B facilities and placing Part B applications on hold. Further, EPA has not yet proposed emission standards for particulate matter and dioxins/furans from Hazardous Waste Combustors (HWCs) as mandated in EPA's Combustion Strategy. Once proposed, these standards must be made available to the public for review and comment prior to the time any regulatory proposal is developed. Clearly, the timeframe required for EPA to implement this

Commenter: Beazer East
Comment Number: 23
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portion of its Combustion Strategy is significant based on the current negative public perception regarding dioxin/furan incineration as well as current Combustion Strategy restrictions and lack of EPA guidance.

With regard to the selection of incineration as the primary treatment for organics, there are tremendous, and in all probability, insurmountable complexities imposed by incineration of a waste with a dioxin/furan effluent performance standard similar to the performance standard applicable to the APTUS incinerator. This difficulty was demonstrated recently in EPA Region IX, where the Agency revised the treatment method for a dioxin/furan containing waste at a CERCLA wood treater site in California to an on-site landfill because of the insurmountable problem of public resistance to incineration of the material on-site. The foregoing studies and analysis demonstrate clearly that incineration capacity is simply not "available" for wood treating site remediation wastes even today, before the large volume of materials resulting from the proposed LDRs would have to be incinerated. Further, there is absolutely no reason to believe that any greater capacity will become available in the foreseeable future.

Commenter: Rollins Enivironmental, Inc.
Comment Number: N19
Page Number: 2

There is a demonstratively sufficient amount of capacity to meet the proposed Dioxin/Furan treatment standards for F032 process wastes. Additionally, RES contends there is sufficient capacity to meet the proposed Dioxin/Furan treatment standards for F032 contaminated media wastes. However, since the data on the quantity of F032 contaminated media is incomplete, it is conceivable there may be a large F032 contaminated media cleanup that exceeds the capacity of facilities able to meet the Dioxin/Furan treatment standard. RES also acknowledges that some incineration facilities may not be able to meet the Dioxin/Furan treatment standard, thereby limiting the available capacity for large contaminated media projects.

Therefore, RES recommends the option of an alternative treatment standard for F032 contaminated media waste, available under limited circumstances. This option would allow an F032 contaminated media generator to utilize the alternative treatment standard under the following condition:

- The generator certifies to the EPA that a request to at least five incineration facilities indicates there is insufficient capacity to treat the F032 contaminated media while meeting the Dioxin/Furan treatment standard.

RES further recommends that EPA adopt the combination of suboptions 2 & 3 as outlined in the NODA as the alternative treatment standard. Under this recommendation, after certifying there is insufficient capacity for treatment of F032 contaminated media, a generator could utilize the alternative treatment standard of "Combustion in a Part B permitted facility that meets a Dioxin/Furan emission standard of 0.20 ng/DSCF."

Commenter: American Wood Preservers Institute
Comment Number: 39
Page Number: 14

V. TREATMENT STANDARDS FOR SOIL CONTAMINATED WITH NEWLY LISTED WASTES (60 FR 43680)

AWPI agrees with EPA's presumption that the treatment standards for as-generated wastes are generally inappropriate or unachievable for soils contaminated with hazardous wastes within the meaning of 40 CFR 268.44(a).[26] AWPI supports the proposed national capacity variance for soil and debris contaminated with Phase IV newly listed wastes.

However, the Agency has not clearly demonstrated the relationship of contaminated soil under the Phase IV LDR's and the pending Hazardous Waste Identification Rule (HWIR) for soil and debris. Will the treatment standards be compatible? Based on this potential conflict, the capacity variance for soil and debris should be tied to the implementation of the pending HWIR rule.

The Agency should ensure that the proposed treatment standards for soils will not conflict with EPA's "Presumptive Remedies for Wood Preserving Sites." AWPI believes that the proposed Universal Treatment Standards (UTSs) for F032 wastes are not consistent with the proposed presumptive remedies nor is the vitrification of arsenic wastes.

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[26] 55 FR 8759-60 (March 8, 1990).

Commenter: Penta Task Force
Comment Number: 32
Page Number: 4

Also, the same 49 wood preserving sites generate some 10,520 tons of F032-contaminated soil and debris annually and there may be untold millions of tons of contaminated soils from past operations at these sites and at former wood preserving sites that may require remediation and treatment. Although EPA has proposed a two-year national treatment variance for contaminated soil and debris, the Agency has not squarely addressed either the capacity or cost issues that necessarily will arise at the end of the variance period.

Commenter: Penta Task Force
Comment Number: 32
Page Number: 15

Moreover, some 10,520 tons of F032-contaminated soil and debris are generated annually at wood processing facilities and large volumes (perhaps as high as 102 million tons) of contaminated soils from past operations may require treatment. See Capacity Analysis, 3-10 to 3-11. Although EPA has proposed a two-year national capacity treatment variance for F032-contaminated soil and debris, neither the Capacity Analysis nor the Regulatory Impact Analysis provide any indication of the significant costs and capacity issues that necessarily will arise after the variance period ends and these contaminated soils require treatment. EPA's failure to squarely address this problem is another example of the significant conceptual problems associated with the current proposal.

Commenter: DuPont Engineering
Comment Number: N16
Page Number: 1

DuPont supports a capacity variance for TC metal wastes.

DuPont is actively engaged in remediation activities involving metal contaminated soils and debris at five locations and has identified more than 100,000 cubic yards of potentially impacted soil. Perhaps 50,000 cubic yards of this material will be managed in the next few years. Pending implementation of the recently proposed HWIR-media rule, some or all of this soil would need to managed under LDRs. In order to not create impediments to remediation, DuPont requests that the Agency grant a variance.

Commenter: Chemical Waste Management, Inc.
Comment Number: 48
Page Number: 36

The Agency is proposing a national capacity variance for soil and debris contaminated with Phase IV newly listed wastes.

CWM supports this proposal in principal, however, it is not clear to CWM whether this includes newly identified newly identified wastes. The Agency states "EPA is proposing a national capacity variance for soil and debris contaminated with Phase IV newly listed wastes." (See 60 Fed. Reg. at 43,686) This statement implies that the capacity variance is for all newly identified Phase IV soil and debris. This should include the newly identified D004-D011 wastes.

Commenter: Hazardous Waste Management Association
Comment Number: 97
Page Number: 17

Treatment Standards for Soil Contaminated With Newly Listed Wastes (60 FR 43680)

The Agency is proposing a national capacity variance for soil and debris contaminated with Phase IV newly listed wastes. HWMA supports this proposal in principal; however, it is not clear whether this includes D004-D011 newly identified wastes. The Agency states that, "EPA is proposing a national capacity variance for soil and debris contaminated with Phase IV newly listed wastes" (60 FR 43686). This statement implies that the capacity variance is for all newly identified Phase IV soil and debris, a universe which does include D004-D011 newly identified wastes. However, the Agency does not indicate that this national capacity variance is being

Commenter: Hazardous Waste Management Association
Comment Number: 97
Page Number: 18

granted to D004-D011 newly identified wastes. Neither the table in the preamble discussion (60 FR 43686) or proposed §268.30 (60 FR 43694) state that D004-D011 newly identified wastes are subject to the capacity variance.

D004-D011 newly identified wastes should also be included in this capacity variance based on the logic for granting the capacity variance for F032, F034, F035, and D004-D011 mixed with radioactive wastes. The Agency states, "It has been the Agency's experience that contaminated soils are significantly different in their treatability characteristics from the wastes that have been evaluated in establishing the BDAT standards, and thus, will generally qualify for a treatability variance for soils,....". HWMA does not see any logical reason for not granting this capacity variance for D004-D011 newly identified soil and debris while granting it for the other waste streams.

Commenter: Merck
Comment Number: 47
Page Number: 2

1) The Agency is proposing a national capacity variance for soil and debris contaminated with Phase IV newly listed wastes. We support this proposal fully. The Agency's assertion that treatment of constituents in debris and soil streams is significantly different than treating as generated waste streams. We concur with that assertion and therefore believe that the Agency will need to carefully evaluate treatment standards for these new streams especially since they are metal bearing streams and as such are very difficult to treat as a soil or debris wastestream.

Commenter: Safety-Kleen
Comment Number: 65
Page Number: 6

13. **Safety-Kleen supports the Agency's intent to provide a national capacity variance for soil and debris contaminated with Phase IV newly listed wastes.**

Safety-Kleen agrees that the treatment standards for as-generated wastes are inappropriate for soil and debris contaminated with hazardous wastes. Imposing treatment that is not available in the short term will delay or interrupt remediation efforts under RCRA corrective action and other remediation and construction programs. In addition, 90-day generators of hazardous waste soils and debris would be in jeopardy of not-being able to comply with regulations because viable treatment alternatives do not exist. Safety-Kleen therefore supports granting a national capacity variance for contaminated soil and debris for the maximum time allowable.

Commenter: Chemical Manufacturer's Association
Comment Number: 113
Page Number: 24

F. CMA Supports National Capacity Variances For The Phase IV Rule.

CMA agrees with the Agency that National Capacity Variances are appropriate and necessary to allow uninterrupted manufacturing capability at many sites. The Agency's estimate of wastewaters affected by the Phase IV rule may be unrealistically low, considering that many facilities have not previously determined quantities of wastewaters which are characteristically hazardous at the point of generation. This concern emphasizes the need for national capacity variances.