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1991

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### Recommended Citation

Jeffrey M. Gaba, The Mixture and Derived-from Rules under RCRA: Once a Hazardous Waste Always a Hazardous Waste, 21 *Envtl. L. Rep. News & Analysis* 10033

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# The Mixture and Derived-From Rules Under RCRA: Once a Hazardous Waste Always a Hazardous Waste?

by Jeffrey M. Gaba

*Editors' Summary: EPA's rules for determining what substances must be regulated as hazardous waste under RCRA are, to put it mildly, complicated. Understanding these rules, however, is vital, since hazardous wastes are subject to much more complex and costly requirements than nonhazardous solid wastes. Two of EPA's most important rules for determining whether a material will be classified as a hazardous waste are the "mixture" and "derived-from" rules. These two rules are examples of EPA's general policy that once a waste becomes hazardous, it is presumed to remain hazardous regardless of changes in its form or its combination with other substances. The mixture rule provides that any mixture of a listed hazardous waste and a nonhazardous solid waste is itself a RCRA hazardous waste. The derived-from rule states that any waste derived from the treatment, storage, or disposal of a listed waste is deemed hazardous.*

*This Article discusses EPA's current position on these two rules, analyzes their specific provisions and applications, and discusses the relationship between the two rules and EPA's land ban rules. The Article also discusses the possibility for a de minimis exemption that would exclude wastes that were mixed or derived from hazardous waste if they contained only insignificant quantities of hazardous constituents. The author concludes that these rules are needed in some form to prevent major loopholes in EPA's hazardous waste program. However, EPA may finally be willing to address some of the problems with the rules, including overbreadth and inadequacies in the delisting process.*

Under Subtitle C of the Resource Conservation and Recovery Act (RCRA),<sup>1</sup> materials that are classified as hazardous wastes are subject to complex, confusing, and worse, costly requirements for management and disposal.<sup>2</sup> The greater the quantity of hazardous waste for which a generator is responsible, the more expensive and difficult compliance becomes. In comparison, RCRA management requirements for solid waste seem minor.<sup>3</sup>

Environmental Protection Agency (EPA) rules, however, imbue hazardous waste with the power to transform solid waste, otherwise not hazardous, into a hazardous waste. As if through original sin, a solid waste can receive the taint of hazardousness solely by virtue of its association or descent from a listed hazardous waste. In general, only specific dispensation from EPA (by means of a delisting petition) can remove the taint.

This power to render solid waste into hazardous waste stems from EPA's general policy that once a waste is hazardous, it is presumed to be forever hazardous regardless of changes in its form or its combination with other substances. The most important applications of this policy are

EPA's "mixture" and "derived-from" rules. The mixture rule provides that any mixture of a listed hazardous waste and a solid waste is itself a RCRA hazardous waste. The derived-from rule states that any waste derived from the treatment, storage, or disposal of a listed hazardous waste is itself a hazardous waste. Under these rules, a waste may be classified as hazardous although it has insignificant or even no amounts of hazardous constituents.

Since their adoption in 1980, the mixture and derived-from rules have been basic elements of EPA's hazardous waste program. Recent cases, in which application of the RCRA land ban requirements has hinged on these rules, have only highlighted their importance. Although EPA has frequently hinted at the possibility of change, the Agency has recently reaffirmed its commitment to the mixture and derived-from rules.

This Article discusses EPA's current position on the mixture and derived-from rules. It begins with a review of the basic provisions for classification and termination of hazardous waste status under RCRA. It then discusses the rationale and some of the consequences of EPA's presumption of hazardousness and the mixture and derived-from rules. The Article next analyzes the specific provisions and applications of these rules. It then discusses the application of these rules and EPA's "contained in" interpretation to contaminated soil and groundwater. The next section discusses the relationship between the mixture and derived-from rules and EPA's land ban rules and the "dilution prohibition." The Article concludes with a discussion of the prospects for EPA's long-promised general de minimis exemption, which would exclude wastes that were mixed or derived from hazardous waste if they contained

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1. 42 U.S.C. §§6901-6991i, ELR STAT RCRA 001-050.

2. For a general discussion of the requirements of Subtitle C of RCRA, see D. STEVER, *THE LAW OF CHEMICAL REGULATION AND HAZARDOUS WASTE* (1986).

3. The requirements applicable to nonhazardous solid waste are found in Subtitle D of RCRA. Additionally, many states have adopted management requirements for "industrial wastes" that might not be classified as hazardous under RCRA. See Dernbach, *Industrial Solid Waste: Saving the Worst for Last?*, 20 ELR 10283 (1990).

only insignificant quantities or concentrations of hazardous constituents.

## Classification of Hazardous Wastes Under RCRA

### *Commencing Status as Hazardous Waste*

Under RCRA §3001 and EPA's implementing regulations, solid wastes may be classified as hazardous if they either exhibit a hazard "characteristic" ("characteristic wastes") or have been specifically listed as hazardous waste by EPA ("listed wastes").<sup>4</sup> EPA regulations provide that a solid waste initially becomes a hazardous waste when, in the case of a characteristic waste, it first exhibits the characteristic or, in the case of a listed waste, the waste first meets the listing description (or if a mixture, when the listed waste is first added to the mixture).<sup>5</sup>

Since both the mixture and derived-from rules distinguish listed from characteristic wastes, to understand the rules it is important to understand the basis for designating a waste as hazardous.

□ **Characteristic Waste.** Characteristic wastes are classified as hazardous if, based on tests performed by the generator, they exhibit one of four hazard "characteristics" promulgated by EPA: (1) ignitability, (2) corrosivity, (3) reactivity, and (4) toxicity or TC ("toxicity characteristic").<sup>6</sup> EPA recently adopted the new "TC" rule, which revises the earlier "extraction procedure" or "EP" toxicity characteristic.<sup>7</sup> The new TC rule now provides that a waste is hazardous if an extract of the waste contains certain designated metals or toxic organic constituents above a defined threshold level.

□ **Listed Waste.** Listed wastes are hazardous wastes that have been designated by EPA as hazardous on a generic, nationwide basis. A waste is hazardous simply if it falls within the listing description.<sup>8</sup> The lists are broken down into categories of wastes from nonspecific sources (such as certain spent solvents),<sup>9</sup> wastes from specific sources (such as slop oil emulsions in the petroleum refining industry),<sup>10</sup> or wastes from "discarded commercial chemical products."<sup>11</sup>

Although EPA may list a waste because it exhibits one of the four hazard characteristics, it may also list a waste based on the Agency's determination that the waste meets certain "toxicity" or "acute toxicity" criteria.<sup>12</sup> In general, a waste may be listed based on toxicity if it contains any one of a large number of specified toxic chemicals unless the Agency determines that it will not present a substantial risk to human health or to the environment if mismanaged.<sup>13</sup> A waste may be listed based on "acute toxicity" if it has been found to be fatal to humans in low doses or fails certain animal toxicity tests.<sup>14</sup>

Unlike the hazard characteristics, there is no simple numerical standard for listing wastes, and application of the criteria generally involves an exercise in judgment. The toxicity listing, for example, involves determinations about various factors, including the concentration and bioaccumulation potential of the toxic constituents, their fate and possible chemical alteration in the environment, and likelihood and consequences of possible mismanagement. The bases for listing wastes—toxicity and acute toxicity—are quite different from the basis for classifying wastes based on the hazard characteristics; a waste may be a listed waste even if it does not exhibit a characteristic.

### *Terminating Status as a Hazardous Waste*

EPA's basic position on termination of a material's status as a hazardous waste is simple. Once a waste has been classified as a hazardous waste it generally remains a hazardous waste.<sup>15</sup> There are only two explicit bases for termination of this status. First, an unlisted, characteristic waste ceases to be a hazardous waste if it no longer exhibits a hazardous waste characteristic.<sup>16</sup> Second, a listed waste, a waste containing a listed waste, or a waste derived from a listed waste ceases to be a hazardous waste only if it has been "delisted" from classification.<sup>17</sup> Although a characteristic waste can lose its status as a hazardous waste without action by EPA, in most cases a listed waste will remain hazardous until EPA affirmatively grants a petition to reclassify the material as nonhazardous.<sup>18</sup>

The delisting process is normally undertaken on a case-by-case basis; generators submit delisting petitions requesting that the specific waste at their facility be removed from classification as hazardous.<sup>19</sup> In general, delisting requires a demonstration that the specific facility's waste does not meet the criteria under that the waste was listed and

4. Under Subtitle C of RCRA, hazardous wastes are defined as a subset of solid wastes. See RCRA §1004(5), 42 U.S.C. §6903(5), ELR STAT. RCRA 005. Thus, a material must first be classified as a solid waste before it can be classified as a hazardous waste. See Gaba, *Separating Chaff From Wheat: Solid Waste and Recycled Materials Under RCRA*, 16 Ecol. L.Q. 623 (1989).

RCRA's provisions for classification of hazardous waste are found in §3001, 42 U.S.C. §6921, ELR STAT. RCRA 010. EPA's implementing regulations are found at 40 C.F.R. pt. 261.

5. 40 C.F.R. §261.3(b).

6. *Id.* at §§261.20-23; see 55 Fed. Reg. 11862 (1990) (to be codified at 40 C.F.R. §261.24).

7. See 55 Fed. Reg. 11798 (1990); see also RCRA §3001(g)-(h), 42 U.S.C. §6921(g)-(h), ELR STAT. RCRA 011.

8. In the past, a generator was not required to test its listed waste to determine if it is hazardous; if listed, the generator could simply declare the waste as hazardous. Pursuant to the new RCRA land ban rules, a generator will be required to determine whether the listed waste also exhibits a hazard characteristic to determine necessary treatment for land disposal. See 55 Fed. Reg. 22530 (1990).

9. See 40 C.F.R. §261.31.

10. See *id.* at §261.32.

11. See *id.* at §261.33. This section is described as containing wastes

from "discarded commercial chemical products, off-specification species, container residues and spill residues thereof."

12. *Id.* at §261.11(a)(1)-(3).

13. *Id.* at §261.11(a)(2). The list of toxic constituents is found in Appendix VIII of Part 261.

14. *Id.* at §261.11(a)(2).

15. *Id.* at §261.3(c)(1).

16. *Id.* at §261.3(d)(1). Under EPA's third-third land ban rules, however, it may not always be clear whether characteristic wastes that no longer exhibit a hazard characteristic may be disposed of as nonhazardous solid waste. See *infra* notes 126-37 and accompanying text.

17. *Id.* at §261.3(d)(2).

18. Additionally, as discussed below, hazardous wastes that are used to create products may in some limited cases cease to be hazardous wastes. See *infra* notes 115-18 and accompanying text.

19. These provisions are contained at 40 C.F.R. §260.20 and .22. For a discussion of the delisting process, see STEVER, *supra* note 2 at §5.02[f].

that there are no other factors that would warrant classifying the waste as hazardous.<sup>20</sup> Although the delisting process is intended as an escape hatch for overly stringent listing decisions, the process has been criticized for its slowness, difficulty, and expense.<sup>21</sup>

### The Presumption of Hazardousness

As a general rule, EPA takes the position that once wastes are listed as hazardous they are presumed to remain hazardous.<sup>22</sup> As one court has stated, EPA has consistently adhered to the general principle "that a hazardous waste does not lose its hazardous character simply because it changes form or is combined with other substances."<sup>23</sup> The mixture and derived-from rules are an outgrowth of this principle.

The need for some form of regulation of mixed and derived-from wastes is obvious. If wastes could become nonhazardous simply by being mixed with other wastes, there would be a tremendous incentive simply to dilute hazardous wastes to avoid regulation. Potentially large quantities of hazardous waste could escape regulation.

Similarly, exempting wastes derived from the treatment or disposal of hazardous wastes would also create a regulatory loophole. Wastes generated from listed hazardous wastes may contain the hazardous constituents that caused the original waste to be listed. Additionally, the treatment or disposal process may alter the chemical characteristics of the waste and generate new toxic constituents.<sup>24</sup>

In developing a response to these problems, EPA was faced with the dilemma of avoiding both overbreadth and underbreadth. A rule that treated all mixtures or derived-from wastes as hazardous would bring an enormous amount of material into the hazardous waste system even though it contained only small amounts of hazardous constituents or had been rendered nonhazardous by the mixing or treatment (e.g., neutralization).<sup>25</sup> A rule requiring that the resulting mixture or derived-from waste itself exhibit a hazard characteristic, on the other hand, would exclude materials that were listed for reasons other than the four Subpart C hazard characteristics and would encourage dilution of wastes through mixing.<sup>26</sup> Claiming reluctance,

EPA's response was to presume the continued hazardousness of wastes mixed with or derived from listed, but not characteristic, waste.<sup>27</sup>

Two important consequences follow from these rules. First, wastes subject to the mixture and derived-from rules are hazardous regardless of the concentration of hazardous constituents. Wastes containing minute or even no amounts of hazardous constituents can still be classified as hazardous wastes under these rules. Although EPA has repeatedly acknowledged that this approach creates "inequities,"<sup>28</sup> EPA's basic response has been to rely on the slow, case-by-case "delisting" process to exclude wastes that may not, in fact, be hazardous.<sup>29</sup> Additionally, as discussed below, EPA has adopted several limited de minimis exceptions to the mixture rule for certain wastes that are mixed prior to treatment in waste streams regulated under the Clean Water Act.<sup>30</sup>

Notwithstanding this problem, EPA recently confirmed its position that the mixture and derived-from rules apply regardless of the concentration of hazardous constituents in the wastes. In the preamble to the new toxicity characteristic rule, EPA stated that mixtures of listed wastes or wastes derived from listed wastes that do not exhibit the toxicity characteristic would still be classified as hazardous wastes.<sup>31</sup> EPA again acknowledged that there were "inequities" in applying the mixture rule to "dilute waste streams" and stated that it was considering proposing a rule that would establish "self-implementing de minimis exemption levels for hazardous constituents found in listed wastes."<sup>32</sup>

The second major consequence of the mixture and derived-from rules is that they encourage facilities to segregate or eliminate their listed waste streams.<sup>33</sup> The incentive to separately manage listed wastes will in the long run result in minimization of the total quantity of hazardous wastes. This is perhaps the most compelling policy justification for the Agency's rule.

### Wastes Mixed With Wastes: The Mixture Rule

EPA's current mixture rule is deceptively simple. In essence, the mixture rule provides that (1) mixtures of characteristic wastes and nonhazardous wastes are hazardous

not be caught by the Subpart C characteristics because they would contain wastes which were listed for reasons other than that they exhibit the characteristics (e.g., they contain carcinogens, mutagens or toxic organic materials). Obviously, this would leave a major loophole in the Subtitle C management system and create inconsistencies in how wastes must be managed under that system.

*Id.*

27. When it adopted the mixture rule, the Agency conceded that "we have been unable to devise any workable, broadly applicable formula which would distinguish between those waste mixtures which are and are not hazardous." *Id.* In describing the derived-from rule, EPA stated that it "is the best regulatory approach we can devise at this time for dealing with solid wastes generated by solid waste management facilities." *Id.* at 33096.

28. See *id.* at 33095; 55 Fed. Reg. 11831 (1990).

29. See, e.g., 46 Fed. Reg. 56582 (1981). EPA has, however, granted one generic, industrywide exclusion for wastes from application of the derived-from rule. See *infra* notes 96-108 and accompanying text.

30. See *infra* notes 50-74 and accompanying text.

31. 55 Fed. Reg. 11831 (1990).

32. *Id.* at 11832.

33. See 45 Fed. Reg. 33095 (1980); 55 Fed. Reg. 11831 (1990).

20. 40 C.F.R. §260.22(a). Additionally, the petitioner must demonstrate that the waste does not demonstrate a hazard characteristic. *Id.* at §260.22(d)(3), .22(e)(2). In the 1984 RCRA amendments, Congress specifically required that EPA, in assessing a delisting petition, consider factors in addition to its original basis for listing. RCRA §3001(f), 42 U.S.C. §6921(f), ELR STAT. RCRA 011.

21. See Compton & Patterson, *Delisting Hazardous Wastes—Do the RCRA Amendments Spell Relief?*, 14 ELR 10374 (1984); cf. Silverman, *Delisting Hazardous Waste Under RCRA: A Response to Compton and Patterson*, 15 ELR 10006 (1985); see also Florini, Denison & Rathbun, *EPA's Delisting Program for Hazardous Wastes: Current Limitations and Future Directions*, 19 ELR 10558 (1989).

22. See 45 Fed. Reg. 33095-96 (1980); see also Chemical Waste Management, Inc. v. U.S. EPA, 869 F.2d 1526, 1538-40, 19 ELR 20641, 20647-48 (D.C. Cir. 1989).

23. 869 F.2d at 1539, 19 ELR at 20648.

24. See 45 Fed. Reg. 33096 (1980).

25. See *id.* at 33095.

26. In the preamble to the 1980 regulations, EPA stated:

Without such a rule [the mixture rule], generators could evade Subtitle C requirements simply by commingling listed wastes with nonhazardous solid waste. Most of these mixtures would

only if the mixture exhibits a characteristic and (2) mixtures of listed wastes and nonhazardous wastes are hazardous regardless of the amount of listed waste in the mixture. It was originally adopted in 1980 as part of EPA's first regulation defining hazardous wastes.<sup>34</sup> Although the mixture rule was never expressly proposed, EPA claimed that it "intended" waste mixtures containing hazardous waste to be hazardous and managed accordingly.<sup>35</sup> The absence of a mixture rule, EPA stated, would allow generators to simply commingle hazardous and nonhazardous waste and would create "a major loophole in the Subtitle C management system."<sup>36</sup>

The mixture rule provides that a mixture of a hazardous and solid waste is hazardous if

(iii) It is a mixture of a solid waste and a hazardous waste that is listed in Subpart D solely because it exhibits one or more of the characteristics of hazardous waste identified in Subpart C, unless the resultant mixture no longer exhibits any characteristic of hazardous waste identified in Subpart C.

(iv)[I]t is a mixture of a solid waste and one or more hazardous wastes listed in Subpart D and has not been excluded from this paragraph under §§260.20 and 260.22 [or is not subject to one of the wastewater treatment exclusions].<sup>37</sup>

When reviewing this rule, remember that Subpart C specifies the four characteristics—ignitability, corrosivity, reactivity, and the toxicity characteristic—by which unlisted wastes may be classified as hazardous by generators. Subpart D contains the specific lists of wastes classified as hazardous by EPA. There are a number of important issues that arise in applying the mixture rule.

#### *The Mixture Rule Applies Solely to Listed Wastes*

It is important to note that the mixture rule by its own terms applies solely to *listed* wastes. Unlisted, characteristic wastes are handled through the general provision for termination of status as hazardous waste.<sup>38</sup> Under that provision, unlisted hazardous wastes cease being hazardous wastes when they no longer exhibit a hazard characteristic.<sup>39</sup> Thus, a mixture of an unlisted hazardous waste and a solid waste is not hazardous if it does not exhibit a hazard characteristic.

Some of the listed wastes have been listed, however, simply because they exhibit one of the hazard characteristics. As originally promulgated, the mixture rule would have classified mixtures of these wastes as hazardous, although unlisted wastes exhibiting the same characteristic were not regulated. In 1981, EPA amended the mixture rule to treat wastes that were listed because they exhibit a hazard characteristic the same as characteristic waste.<sup>40</sup> Under the current mixture rule, mixtures of solid waste and listed wastes that were listed solely because they exhibit one of the four hazard characteristics will not be considered

hazardous if the resulting mixture does not display a characteristic. This exclusion is self-executing without requiring the filing of a delisting petition.

Consequently, to apply the mixture rule properly it is necessary to identify the criteria used to list the waste. The Subpart D lists contain codes that identify the criteria used.<sup>41</sup> If a waste was listed solely on the basis of one of the four hazard characteristics, the mixture rule does not apply.

#### *The Mixture Rule Applies Solely to Mixtures of Wastes*

A second important point to note about the mixture rule is that it applies only to mixtures of *wastes*. Products that are produced using hazardous wastes as ingredients may not, as discussed below, themselves be classified as hazardous wastes.<sup>42</sup> Additionally, wastes resulting from the mixture of hazardous substances within an industrial process may not be hazardous. The mixture rule applies only if materials are mixed after they have already become wastes.<sup>43</sup> Thus, it is important to determine at what point in the process materials become both solid wastes and hazardous wastes for purposes of applying the mixture rule.

This issue, determining the "point of generation" of wastes may not be simple to resolve. The basic definition of "solid waste" must be used to determine whether a substance satisfies the criteria for classification as a waste.<sup>44</sup> In addition, it is necessary to determine at what point a solid waste becomes a hazardous waste. In most cases, identification of the status of a listed waste will not be difficult. Many of the listed wastes are from easily identifiable specific or nonspecific waste streams identified by EPA.<sup>45</sup>

#### *The Act of Mixing May Be Treatment of Hazardous Waste*

There is one final critical point to note about the mixture rule. Under Subtitle C of RCRA the "treatment, storage and disposal" of hazardous waste are subject to stringent regulation.<sup>46</sup> The mixture rule simply provides that in certain circumstances the (nonhazardous) mixture resulting from combining hazardous and nonhazardous waste is not itself a hazardous waste that is subject to Subtitle C requirements. However, the act of mixing, such that the resulting mixture is nonhazardous, may itself be "treatment"

41. See 40 C.F.R. §261.30.

42. See *infra* notes 115-18 and accompanying text.

43. See §40 C.F.R. 261.3(a)(2)(iii)-(iv).

44. *Id.* at §261.2. See generally Gaba, *supra* note 4.

45. Classification of wastes listed in §261.33, "Discarded commercial chemical products, off-specification species, container residues, and spill residues thereof," may be more difficult. These commercial products may be hazardous wastes

when they are discarded or intended to be discarded as described in EPA's definition of solid waste at §261.2(a)(2)(i), when they are burned for purposes of energy recovery in lieu of their original intended use, when they are applied to the land in lieu of their intended use or when they are contained in products applied to land in lieu of their original intended use.

40 C.F.R. §261.33.

46. RCRA §§3004-3005, 42 U.S.C. §§6924-6925, ELR STAT. RCRA 012-019.

34. See 45 Fed. Reg. 33095-96 (1980).

35. *Id.*

36. *Id.*

37. 40 C.F.R. §261.3(a)(2)(iii)-(iv).

38. See *supra* notes 15-20 and accompanying text.

39. 40 C.F.R. §261.4(d)(1); see *infra* notes 126-37 and accompanying text for a discussion of the significance of the third-third land ban rule on this issue.

40. 46 Fed. Reg. 56588 (1981).

that is regulated under Subtitle C.<sup>47</sup> In other words, the mixing process may be subject to Subtitle C permit requirements even though the resulting mixture is nonhazardous.<sup>48</sup> Thus, in some cases the cure may be worse than the disease.<sup>49</sup>

### Wastewater Treatment Exclusions

When EPA first promulgated the mixture rule in 1980, it acknowledged that under the rule, many mixtures containing de minimis quantities of hazardous constituents would be classified as hazardous.<sup>50</sup> In 1981, EPA responded to comments on this issue by promulgating a limited exclusion for mixtures of certain listed wastes added to regulated wastewater treatment systems.<sup>51</sup> Pursuant to this exclusion, quantities of listed spent solvents, heat exchanger bundle cleaning sludges, discarded commercial chemical products, and laboratory wastes may be added to wastewater streams for treatment without the waste stream or its residue being classified as hazardous.<sup>52</sup>

The exclusion is only applicable, however, if the generator of the mixture can demonstrate that the mixture is subject to regulation under §402 (direct dischargers needing national pollutant discharge elimination system discharge permits) or §307(b) (indirect discharges to municipal sewage treatment systems subject to pretreatment requirements) of the Clean Water Act.<sup>53</sup> This exclusion is not a general exemption from regulation for listed wastes added to wastewater treatment systems; the exclusion is limited to specific listed wastes, subject to limits described

below. EPA maintains the general position that mixtures of other listed wastes and wastewater may be classified as hazardous waste.<sup>54</sup>

□ *Spent Solvents.* This exclusion applies to a variety of spent solvents listed in §261.31 (wastes from nonspecific sources) of Subpart D. EPA concluded that these spent solvents, unlike other wastes listed in §261.31, are generally not principal waste streams and are often discharged in small quantities into wastewater for treatment.<sup>55</sup> The exclusion contains limits on the amounts of spent solvents that may be added to a waste stream. For certain spent solvents that EPA has identified as showing substantial evidence of carcinogenicity, the exclusion applies only if the maximum total weekly usage of the solvents (other than the amounts that can be demonstrated not to be discharged to wastewater) divided by the average weekly flow of wastewater into the headworks of the facility's treatment system does not exceed 1 part per million.<sup>56</sup> For the other listed spent solvents, the exclusion applies if this amount does not exceed 25 parts per million.<sup>57</sup>

□ *Heat Exchanger Bundle Cleaning Sludge.* EPA has applied the mixture rule exclusion to only one listed waste from a specific source. The Agency has stated that, in most cases, listed wastes from specific sources constitute a significant portion of wastewater generated at a facility and that an exclusion would pose a substantial hazard to human health and the environment.<sup>58</sup> The Agency has, however, stated that industries may petition to have their listed waste subject to the exclusion.<sup>59</sup>

The sole exclusion EPA adopted is for heat exchanger bundle cleaning sludges from the petroleum refining industry.<sup>60</sup> This exclusion was based on data indicating that the sludges composed a very small percentage of the wastewater flow into the treatment facilities and contained relatively nontoxic trivalent chromium.<sup>61</sup> Unlike spent solvents, there is no specific limitation in the regulation on the amount of this waste that may be added to the waste stream. Additionally, there is no limitation on the location of treatment of the wastes.<sup>62</sup>

47. RCRA defines "treatment" to include actions, such as neutralization, that render the waste nonhazardous:

The term "treatment," when used in connection with hazardous waste, means any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste or so as to render such waste nonhazardous, safer for transport, amenable for recovery, amenable for storage, or reduced in volume. Such term includes any activity or processing designed to change the physical form or chemical composition of hazardous waste so as to render it nonhazardous.

RCRA §1004(34), 42 U.S.C. §6903(34), ELR STAT. RCRA 004; see also 40 C.F.R. §260.10 (definition of "treatment").

48. In the preamble to the 1980 rule in which it first adopted the mixture rule, EPA gave the following example: "The DEF company pipes waste acid on-site into a tank, where it is neutralized by adding lime. The company must determine whether the acid meets Subpart C characteristics when it enters the neutralization tank. The neutralization operation is a treatment process." 45 Fed. Reg. 33096 (1980) (emphasis added). Under the mixture rule, if the waste acid was an unlisted waste or was listed based on corrosivity, the resulting noncorrosive mixture would not be a hazardous waste.

This consequence of the mixture rule could create an interesting anomaly in which wastes excluded under the mixture rule are hazardous under the derived-from rule. See *infra* notes 83-84 and accompanying text.

49. EPA apparently has taken the position, however, that if a generator treats a waste on site and satisfies the requirements of the 90-day accumulation rule, 40 C.F.R. 262.34, the generator will not be subject to permitting as a treatment, storage, or disposal facility. See 55 Fed. Reg. 30807 (1990); Stoll, *Coping With the RCRA Hazardous Waste System: A Few Practical Points for Fun and Profit*, 1 ENV'TL HAZARDS 6 (1989).

50. See, e.g., 45 Fed. Reg. 33095 (1980).

51. See 46 Fed. Reg. 56582 (1981).

52. See *infra* notes 55-74 and accompanying text.

53. 40 C.F.R. §261.3(a)(2)(iv).

54. See 46 Fed. Reg. 56582 n.1 (1981); see also *In Re Commonwealth Oil Refining Co.*, RCRA-II-85-0301, 1987 RCRA LEXIS 27 (Aug. 13, 1987) (EPA administrative law judge decision holding that discharge of listed wastes into a petroleum refinery's wastewater treatment facility is subject to the mixture rule); *aff'd* by chief judicial officer, Appeal No. 87-16 (Sept. 21, 1989).

55. 46 Fed. Reg. 56584-85 (1981).

56. 40 C.F.R. §261.3(a)(2)(iv)(A). The spent solvents subject to the 1 ppm limit are carbon tetrachloride, tetrachloroethylene, and trichloroethylene. For an explanation of EPA's decision to place lower limits on these solvents, see 46 Fed. Reg. 56584 (1981).

57. 40 C.F.R. §261.3(a)(2)(iv)(B). The spent solvents subject to the 25 ppm limit are methylene chloride, 1,1,1-trichloroethane, chlorobenzene, o-dichlorobenzene, cresols, cresylic acid, nitrobenzene, toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, and spent chlorofluorocarbons.

58. 46 Fed. Reg. 56585 (1981).

59. *Id.*

60. 40 C.F.R. §261.3(a)(2)(iv)(C).

61. See 46 Fed. Reg. 56585-86 (1981).

62. In one enforcement action, EPA tried to claim that wastewater mixtures at a facility that received and treated heat exchanger bundle cleaning sludge were hazardous waste. Although EPA argued that the exclusion was intended to apply only at petroleum refineries that treated the sludges, the administrative law judge concluded that the

□ *Discarded Commercial Chemical Products.* The EPA's lists of hazardous waste contain a number of discarded commercial chemical products and off-specification species of chemicals. Since RCRA only authorizes the regulation of wastes, EPA limits the listing to chemical products that have been discarded or are burned or applied to the land, in lieu of their intended use.<sup>63</sup> EPA's exclusion allows these discarded chemical products to be disposed of in regulated wastewater treatment systems if they arise from de minimis losses in the normal handling of the products.<sup>64</sup> EPA reasons that the small quantities of chemicals lost during production processes can be safely managed in a treatment system.<sup>65</sup>

Although EPA has not placed specific numerical limits on the amounts of chemicals that can be added to a system under the exclusion, the regulation does limit the exclusion to chemicals "arising from de minimis losses of these materials from manufacturing operations in which these materials are used as raw materials or are produced in the manufacturing process."<sup>66</sup> The regulation gives examples of de minimis losses including, among others, spills from unloading or transfer of materials from bins or other containers, leaks from transport pipes, minor leaks of process equipment, and rinsate from empty containers.<sup>67</sup>

The regulation does not create a general exclusion for the disposal of discarded chemical products. EPA states that the exclusion does not apply, for example, to discarding of off-specification materials or discarding of materials during operational malfunctions resulting in substantial spills or leaks.<sup>68</sup> Additionally, the exclusion applies only if materials are being used as raw materials or are being manufactured as intermediate or final products. Thus, the disposal of pesticides or solvents at a facility that does not manufacture the chemicals would not be subject to the exclusion.<sup>69</sup> Finally, the exclusion does not apply to process wastes that merely contain some of the chemicals listed in §261.33 unless the chemicals satisfied the criteria for treatment as "commercial chemical product or manufacturing chemical intermediate."<sup>70</sup>

□ *Laboratory Wastes.* EPA's mixture rule also allows the addition of certain laboratory wastes containing listed hazardous wastes to wastewater treatment systems.<sup>71</sup> Under

this exclusion, mixtures of wastewater and certain laboratory wastes will not be treated as hazardous waste. Although it was neither explained nor justified by EPA in the preamble to the regulation, the regulation expressly applies only to laboratory wastes that were listed because they contain toxic constituents. Presumably laboratory wastes that were listed because they were acutely hazardous are not eligible for the exclusion.

The rule does contain limitations on the concentration of laboratory waste that can be mixed in the wastewater. The generator of the mixture must show that the average flow of the laboratory wastewater containing toxic wastes does not exceed one percent of the total wastewater on an annual volumetric basis.<sup>72</sup> EPA explains that this can be done either through measurement or by "conservatively" calculating values of the annual average wastewater discharge from the laboratory and the annual average wastewater flow entering the treatment system.<sup>73</sup> Alternatively, the regulation extends the exclusion to facilities where laboratory wastes exceed the one percent limit if the generator can demonstrate that the annualized average concentration does not exceed one part per million.<sup>74</sup> Since these limitations are based on annual averages, there does not appear to be any limit, other than compliance with Clean Water Act requirements, on the amount of such wastes that can be mixed at any given time.

### Wastes Derived From Wastes: The Derived-From Rule

Under the derived-from rule, solid waste that is the product of the treatment, storage, or disposal of a hazardous waste is itself classified as a hazardous waste. Thus, sludges from waste treatment or leachate from a hazardous waste disposal facility is classified as hazardous simply because it was generated from a hazardous waste.

The derived-from rule was adopted in 1980.<sup>75</sup> EPA explained that it was "reasonable to assume" that wastes that are derived from hazardous wastes are themselves hazardous and asserted that leachate, treatment residues, sludges, and incineration ash typically contain hazardous constituents.<sup>76</sup> The rule, however, operates regardless of the actual concentration of toxic constituents in the resulting wastes, and EPA has stated that the derived-from rule applies even if the resulting waste does not display the toxicity characteristic.<sup>77</sup> The delisting process remains the primary method for excluding derived-from wastes from classification as hazardous wastes.<sup>78</sup>

In 1980, EPA claimed that the derived-from rule was

regulation contained no such limitation. In re Ohmsted Machine Works, RCRA-VI-437-H, 1985 RCRA LEXIS 24 (Dec. 13, 1985).

63. 40 C.F.R. §261.33.

64. 40 C.F.R. §261.3(a)(2)(iv)(D).

65. 46 Fed. Reg. 56586 (1981).

66. 40 C.F.R. §261.2(a)(2)(iv)(D).

67. *Id.*

68. 46 Fed. Reg. 56586 (1981).

69. *Id.* at 56586-87.

70. A comment to 40 C.F.R. §261.33 states that the phrase

"commercial chemical product or manufacturing chemical intermediate have the generic name listed in . . ." refers to a substance which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. *It does not refer to a material, such as a manufacturing process waste, that contains any of the substances listed in paragraphs (e) or (f).*

(Emphasis added.) See In re Ohmsted Machine Works, RCRA-VI-437-H, 1985 RCRA LEXIS 24 (Dec. 13, 1985).

71. 40 C.F.R. §261.3(a)(2)(iv)(E).

72. *Id.*

73. 46 Fed. Reg. 56587 (1981).

74. 40 C.F.R. §261.3(a)(2)(iv)(E).

75. See 45 Fed. Reg. 33096 (1980).

76. *Id.* The only deficiency with the derived-from rule that EPA identified was that it was underinclusive. Treatment, EPA stated, could produce new hazardous constituents that were not specifically regulated. Additionally, EPA noted, and the regulation provides, that the rule does not apply to precipitation run-off from a treatment or disposal facility. Such run-off would not be a hazardous waste unless it were collected and thus became a solid waste and exhibited one of the hazard characteristics. *Id.*

77. 55 Fed. Reg. 11831-32 (1990).

78. See 40 C.F.R. §261.3(d)(2); *supra* note 19-21 and accompanying text. EPA has also adopted one generic exclusion for "waste pickle liquor sludge" from the iron and steel industry; see *infra* notes 96-108 and accompanying text.

"the best regulatory approach we can devise at this time."<sup>79</sup> The rule has apparently stood the test of time, since it continues, essentially unmodified, since first promulgated.

The derived-from rule is found at 40 C.F.R. §261.3(c)(2)(i). Section 261.3(c) provides:

Unless and until it meets the criteria of paragraph (d):

(2)(i) Except as otherwise provided in paragraph (c)(2)(ii) of this section, any solid waste generated from the treatment, storage, or disposal of a hazardous waste, including any sludge, spill residue, ash, emission control dust, or leachate (but not including precipitation run-off) is a hazardous waste.

In most cases, application of the derived-from rule is simple. Obvious wastes such as sludges or ash generated by the treatment, storage, or disposal of hazardous waste will be classified as hazardous.<sup>80</sup>

As with the mixture rule, there are a number of complications to this simple rule.

### *Applicability to Unlisted Wastes*

By the terms of §261.3(c)(2)(i), any solid waste derived from treatment of a hazardous waste is itself a hazardous waste. At first, it appears that wastes derived from the treatment of unlisted, characteristic waste are hazardous waste even if they do not exhibit a characteristic. The regulations do, however, exempt such derived wastes. Under the terms of §261.3(c), the derived-from rule applies "unless and until" the waste satisfies the general criteria for cessation of status as hazardous waste.<sup>81</sup> These general criteria are (1) in the case of any solid waste that is not listed, it does not exhibit a characteristic or (2) in the case of a listed waste or a waste derived from a listed waste, it is excluded through the delisting process.<sup>82</sup> Thus, wastes that do not exhibit a characteristic that are derived from unlisted, characteristic wastes are not subject to the derived-from rule.

79. 45 Fed. Reg. 33096 (1980).

80. EPA's "land ban" regulations under RCRA raise complex questions that relate to the derived-from rule. See *infra* notes 130-41 and accompanying text for a discussion of the land ban. Under EPA's theory of "waste code carry through," derived-from wastes have the same listing classification as the waste from which they are derived; they are also subject to the most stringent treatment standards applicable to those wastes. See 53 Fed. Reg. 31146-47 (1988). In *Chemical Waste Management, Inc. v. U.S. EPA*, 869 F.2d 1526, 19 ELR 20641 (D.C. Cir. 1989), industry challenged application of the waste code carry through to multi-source leachate, arguing, among other things, that EPA must develop separate treatability standards for the leachate. Shortly before argument on the issue, petitioners and EPA requested that all issues relating to the waste code carry through be withdrawn in light of an imminent settlement agreement. The agreement was to provide for conducting a treatability study to determine if separate standards could be developed for leachate derived from multiple sources. *Id.* at 1531-32, 19 ELR 20643.

In its final third-third land ban rule, EPA has adopted a separate "treatability group" for multi-source leachate (except for leachate derived from a group of dioxin containing wastes that will be classified as single-source leachate subject to treatment requirements for the underlying waste codes). See 55 Fed. Reg. 22619 (1990). The Agency has also promulgated one set of treatment standards for waste and nonwastewater. See *id.* at 22621-22. Multi-source leachate that exhibits a hazard characteristic must also be treated to satisfy the treatability requirements for characteristic wastes. See *id.* at 22622; *infra* notes 139-41 and accompanying text.

81. 40 C.F.R. §261.3(c).

82. *Id.* at §261.3(d).

EPA, however, has apparently created an odd quirk. In 1981, it exempted from the mixture rule mixtures of listed waste that were listed solely because they exhibited a hazard characteristic.<sup>83</sup> EPA did not adopt a comparable exclusion from the derived-from rule. Under the express language of the regulations, wastes derived from listed wastes that were listed solely because they exhibit a characteristic are hazardous even if they do not exhibit a characteristic. Furthermore, if, as discussed above, mixture constitutes treatment, the mixtures of such listed wastes that were excluded from the mixture rule become hazardous under the derived-from rule.<sup>84</sup> It is hard to imagine that this outcome was intended.

### *The Material Derived From Treatment Must Be a Waste*

The derived-from rule acts to classify "solid wastes" generated from the treatment, storage, or disposal of hazardous waste as hazardous wastes. As described below, products that are "derived from" hazardous wastes may not themselves be hazardous wastes.<sup>85</sup> Thus, materials, such as metal reclaimed from the treatment of hazardous waste, will not be hazardous.

In most cases it will be clear that the residue of treatment, such as sludges or ash, is itself a waste. If, however, the residue was used in such a way as to be excluded from the definition of solid waste, it would presumably not be subject to the derived-from rule. For example, the regulations exclude from classification as solid waste materials that are part of an ongoing commercial process or are used directly as ingredients.<sup>86</sup> Such materials, even if they were derived from the treatment of hazardous waste, might not themselves be hazardous waste.

### *The Material Subject to Treatment Must Be a Waste: Reclamation and the Indigenous Rule*

The rule also requires that the resulting waste be derived from a waste. Again, in most cases this will not be an issue. Materials subject to treatment, storage, or disposal are normally wastes. However, in some cases treatment through reclamation raises questions as to whether the material being reclaimed is a waste. Under EPA's definition of solid waste, many hazardous secondary materials (e.g., sludges, spent materials, or by-products) are solid wastes if reclaimed.<sup>87</sup> Under the derived-from rule, wastes derived from the reclamation of these hazardous wastes would themselves be hazardous.

Since *American Mining Congress v. U.S. EPA*<sup>88</sup> (AMC), however, EPA has been concerned about the extent of its authority to regulate materials that are used in an ongoing manufacturing or industrial process. In AMC, the D.C. Circuit invalidated EPA's regulatory definition of "solid waste" in part based on the court's conclusion that the

83. See *supra* note 40 and accompanying text.

84. See *supra* notes 46-49 and accompanying text.

85. See *infra* notes 115-18 and accompanying text.

86. 40 C.F.R. §261.2(e).

87. Hazardous secondary materials that are solid wastes if reclaimed include listed and unlisted spent materials, listed sludges, and listed by-products. See §261.2(c) (Table 1).

88. 824 F.2d 1177, 17 ELR 21064 (D.C. Cir. 1987).



Agency's complex definition did not comport with the plain meaning of "discarded." Although the logic of the court was less than compelling and the scope of the opinion unclear,<sup>89</sup> EPA, as a result of *AMC*, concluded that materials sent for reclamation in an industrial furnace generally cease to be wastes once inserted in the furnace. However, EPA proposed to limit this rule by stating that the reclaimed wastes must be "indigenous" to that furnace for them to cease being wastes.<sup>90</sup> EPA proposed a rather broad definition of "indigenous" by stating that a waste is indigenous if it is reclaimed in "the same type of furnace" from which it was generated.<sup>91</sup>

One consequence of the "indigenous" rule is that wastes produced by materials reclaimed in an indigenous furnace are not subject to the derived-from rule. Under the indigenous rule, the original materials cease to be wastes when reclaimed, and thus wastes generated in reclamation are not derived-from wastes.

In *American Petroleum Institute v. U.S. EPA*,<sup>92</sup> environmentalists challenged this position. In its regulation defining "best demonstrated available treatment" for the first-third wastes subject to the RCRA land ban, EPA required that a listed waste, K061, be subject to metal reclamation through high temperature metals recovery.<sup>93</sup> Applying the proposed indigenous rule, EPA claimed that the slag resulting from the reclamation process was not itself a hazardous waste pursuant to the derived-from rule because it was not derived from a waste.<sup>94</sup>

The court rejected EPA's conclusion that the listed wastes at issue ceased to be wastes when reclaimed. The court narrowly construed *AMC* and held that materials could be a solid waste if they had "become part of the waste disposal problem" and were not part of an "ongoing manufacturing or industrial process" within the generating industry. The court strongly implied that the derived-from rule would mandate treatment of the slag as a hazardous waste.

In light of the recent decisions it is unclear what the future of the indigenous rule might be. It is likely that only materials reclaimed on site as part of a closed process that is part of an ongoing manufacturing or industrial process will be excluded from the definition of solid waste. Wastes generated from the reclamation of all other reclaimed wastes will likely be subject to the derived-from rule.

### Exclusions From the Derived-From Rule

The normal process for excluding derived-from wastes from classification as hazardous wastes is through the

delisting procedure.<sup>95</sup> In the delisting process, facilities petition to have specific wastes at their sites reclassified as nonhazardous. In addition to this case-by-case approach, however, EPA has adopted two generic exclusions for wastes derived from hazardous wastes. The rule itself also excludes "precipitation run-off" from application of the derived-from rule.

□ *Lime Stabilized Waste Pickle Liquor Sludge From the Iron and Steel Industry.* Section 261.3(c)(2)(ii)(A) excludes "waste pickle liquor sludge generated by lime stabilization of spent pickle liquor from the iron and steel industry (SIC Codes 331 and 332)."<sup>96</sup> Since spent pickle liquor is a listed waste, sludge generated by treatment of the spent pickle liquor would be hazardous under the derived-from rule. The exemption operates to eliminate this automatic classification of the sludge as hazardous.

The exemption is narrow. It applies only to pickle liquor waste sludge in the iron and steel industry, and it applies only to the residues of wastes treated by lime stabilization. Additionally, although the exclusion exempts the treatment sludge from automatic classification as a hazardous waste under the derived-from rule, the sludge is still hazardous if it exhibits a hazard characteristic.<sup>97</sup>

Nonetheless, the exclusion has significance beyond its limited terms. Through this exclusion, EPA has indicated its willingness to consider petitions to exempt wastes from the derived-from rule on an industrywide, rather than case-by-case, basis. Thus, the criteria on which EPA relied to justify this exclusion are of some interest.<sup>98</sup>

Lime stabilized waste pickle liquor sludge (LSWPLS) was originally a listed waste. In 1980, EPA delisted the sludge but expressly stated that since the sludge was generated from treatment of a listed waste, it would still be classified as hazardous pursuant to the derived-from rule.<sup>99</sup> EPA indicated that it was concerned about the presence of chromium and lead in the sludge, but stated that it was willing to consider either case-by-case delisting or an industrywide exclusion of LSWPLS based solely on data that the chromium and lead were present at concentrations "significantly less" than EP toxic.<sup>100</sup>

In 1981, the American Iron and Steel Institute (AISI) responded by submitting a rulemaking petition requesting an industrywide exclusion of LSWPLS.<sup>101</sup> AISI submitted

89. See Gaba, *supra* note 4, at 646-54. Since *AMC*, the D.C. Circuit has issued two opinions that call into question the significance of the opinion. In *American Petroleum Institute v. U.S. EPA*, 906 F.2d 729, 20 ELR 21091 (D.C. Cir. 1990), discussed below, and *American Mining Congress v. U.S. EPA*, 907 F.2d 1179, 20 ELR 21415 (D.C. Cir. 1990), the D.C. Circuit construed *AMC* as holding that a material may be classified as a waste if (1) it had become part of the waste management problem and (2) was not part of an ongoing industrial or manufacturing process.

90. 52 Fed. Reg. 17034 (1987) (proposed §266.30(a)); see 52 Fed. Reg. at 1689-90.

91. 53 Fed. Reg. 31162 (1988).

92. 906 F.2d 729, 20 ELR 21091 (D.C. Cir. 1990).

93. 53 Fed. Reg. 31162-64 (1988).

94. *Id.* at 31162.

95. See *supra* notes 19-21 and accompanying text.

96. 40 C.F.R. §261.3(c)(2)(ii)(A).

97. *Id.* at §261.3(c)(2)(ii).

98. For a discussion of the background to the adoption of this exclusion, see Compton & Patterson, *supra* note 21.

99. See 45 Fed. Reg. 74888 (1980).

100. The Agency stated:

[s]ince our chief concern with these lime treatment sludges is whether they will leach significant concentrations of lead and chromium, we will consider delisting petitions for these wastes to be adequate if petitioners show that concentrations of lead and chromium in EP [extraction procedure] waste extracts are significantly less than the maximum concentration levels for lead and chromium contained in §262.24, without requiring consideration of other delisting factors. We will also consider an industry-wide rulemaking petition to exclude these wastes from RCRA Subtitle C jurisdiction if industry presents representative data showing the wastes are not hazardous.

*Id.* (emphasis added).

101. See 49 Fed. Reg. 23284 (1984).

data from a number of steel-finishing operations to support its claim that hexavalent chromium and lead were present in LSWPLS at low levels and in essentially an immobile form. Based on these data and data derived from its original listing documents and other specific facility delisting petitions, EPA decided to promulgate the exclusion.<sup>102</sup>

EPA based its decision on data showing that hexavalent chromium and lead, the constituents for which EPA had expressed concern, were present at levels "well below the maximum permissible EP toxicity limits."<sup>103</sup> EPA also considered the presence of pollutants other than chromium and lead, the pollutants that formed the basis for its listing. EPA was concerned that nickel might be present in LSWPLS from the stainless steel industry, and although the industry submitted additional data on nickel toxicity, the Agency delayed acting on the petition. Finally, EPA, under threat of suit from the Specialty Steel Institute, granted the exclusion.<sup>104</sup> It merely stated that it was "continuing to evaluate whether the nickel levels in the extract are of regulatory concern."<sup>105</sup> Finally, and significantly, EPA refused to exclude LSWPLS generated from industries other than iron and steel, since it lacked "comprehensive, industry-wide data on these other sludges and also does not have data on whether wastes with interfering properties might be commingled with these sludges."<sup>106</sup>

The lessons to be drawn from this exclusion are unclear. EPA ultimately relied on data showing that the concentrations of pollutants of concern were below the EP toxicity (now the TC or "toxicity characteristic"). EPA has elsewhere specifically rejected the position that the toxicity characteristic is an appropriate criterion for excluding derived-from or mixture rule hazardous wastes.<sup>107</sup> Additionally, EPA apparently rejected its normal position that the presence of constituents other than those on which the waste were listed are relevant in deciding whether to delist a waste.<sup>108</sup> EPA promulgated a generic delisting petition without concluding that other constituents were not of environmental concern. Perhaps the only lesson to be learned is that generic exclusions may be available if requested by a powerful industry and backed by the threat of litigation.

□ **Combustion Residuals.** In general, EPA has taken the position that burning listed hazardous wastes constitutes "treatment" and that, under the derived-from rule, residues from the burning of listed wastes are hazardous.<sup>109</sup> When, however, the combustion involves fossil fuels or hazardous-waste-derived fuels, the issue becomes more complex. Under RCRA, so-called Bevill wastes, including waste generated primarily from the combustion of coal or other fossil fuels, are subject to special requirements,<sup>110</sup>

and EPA has specifically exempted these wastes from classification as hazardous wastes.<sup>111</sup> EPA is struggling, however, to develop rules to determine when the residues from the combustion of mixtures of fuels including fossil fuels remain subject to this exclusion.<sup>112</sup>

EPA has also adopted a generic exclusion from the derived-from rule for combustion residues from certain fuels produced from petroleum industry wastes, petroleum coke, and iron and steel coke, and coal tar.<sup>113</sup>

□ **Precipitation Run-off.** In its original 1980 promulgation of the derived-from rule, EPA also excluded "precipitation run-off." The preamble states that the rule "does not cover run-off from hazardous waste facilities on the theory that the water in precipitation run-off in many cases may not have had sufficient contact with the waste to solubilize waste constituents."<sup>114</sup> This exclusion has no limitations on either the amount of run-off or the concentrations of toxic constituents within the run-off.<sup>115</sup>

### Products Derived From Wastes

In some cases hazardous wastes are used as materials in a commercial process or used directly as commercial "products." The mixture and derived-from rules, by their terms, apply only to classify certain "wastes" as hazardous. Nonetheless, resolution of the question of whether products produced from hazardous waste are themselves hazardous waste can be complicated.

In part the issue involves a determination as to whether the hazardous material used to make the product is in fact a waste. As discussed above, EPA's regulatory definition of solid waste excludes certain materials that are part of an ongoing production process or are being directly used as products.<sup>116</sup> If the material does not fall within the definition of solid waste, mixtures of the material or wastes derived from the material will not automatically be hazardous under these rules. As can be seen from the recent decisions and EPA's indigenous rule, determining whether a material is classified as a solid waste can be difficult.<sup>117</sup>

More directly, portions of the derived-from rule address the status of materials produced from the treatment of hazardous wastes. A parenthetical to §261.3(c)(2) states: "(However, materials that are reclaimed from solid wastes and that are used beneficially are not solid wastes and hence are not hazardous waste under this provision [the derived-"

102. *Id.*

103. *Id.* at 23285.

104. See Compton & Patterson, *supra* note 21, at 10378.

105. 49 Fed. Reg. 23286 (1984).

106. *Id.*

107. See 55 Fed. Reg. 11831-32 (1990) (discussing the significance of the new toxicity characteristic to the derived-from and mixture rules).

108. See *supra* note 20 and accompanying text.

109. See 54 Fed. Reg. 43733 (1989).

110. RCRA §3001(b)(3)(A)(i)-(ii), 42 U.S.C. §6921(b)(3)(A)(i)-(ii), ELR STAT. RCRA 010 (Bevill wastes also include wastes from the processing of ores and cement kiln dust).

111. 40 C.F.R. §261.4(b)(4).

112. See 54 Fed. Reg. 43733 (1989).

113. Specifically, the derived-from rule excludes "wastes from burning any of the materials exempt from regulation by §261.6(a)(3)(v)-(ix)." 40 C.F.R. §261.3(c)(2)(ii)(B). See 50 Fed. Reg. 49190-91 (1985). This exclusion applies only to waste derived from a particular class of materials for which substantive regulation has been suspended. EPA, however, has also suspended regulation of a number of other hazardous wastes, including industrial ethyl alcohol that is reclaimed, used batteries (or used battery cells) returned to a battery manufacturer for regeneration, used oil that exhibits a hazard characteristic, and scrap metal. 40 C.F.R. §261.6(a)(3). Since none of these other suspended wastes is listed wastes, an exclusion from the derived-from rule may not be necessary.

114. 45 Fed. Reg. 33096 (1980).

115. The Agency also noted parenthetically: "(Of course if collected, run-off would be a solid waste, and, if it exhibited any of the characteristics, would have to be managed as a hazardous waste.)" *Id.*

116. 40 C.F.R. §261.2(e).

117. See *supra* notes 88-94 and accompanying text.

from rule] unless the reclaimed material is burned for energy recovery or used in a manner constituting disposal.)<sup>118</sup> Thus, materials that are reclaimed from hazardous waste, such as solvents regenerated from spent solvents or metals reclaimed from spent acid, would not be hazardous wastes.

The regulation does, however, close one potentially significant loophole in the regulation of hazardous waste. "Products" that are derived from listed hazardous wastes and that are burned as fuel or directly applied to the land are classified as hazardous wastes. This rule attempts to minimize the problem of "sham" recycling, such as the use of dioxin containing waste oil as a dust suppressant or the burning of hazardous waste without complying with incineration requirements. Thus, the derived-from rule and the general definition of solid waste assert authority over certain environmentally threatening applications of wastes that might otherwise be subject to a claim that they involve the use of products and not wastes.<sup>119</sup>

### Contaminated Soil and Groundwater: The Contained-in Interpretation

One interesting application of EPA's "presumption of hazarousness" involves the status of environmental media, such as soil or groundwater, contaminated by the spill or other release of hazardous waste. Unless the contaminated media is itself a listed waste (such as residue or contaminated soil from spills of a commercial chemical product or manufacturing chemical intermediate)<sup>120</sup> or unless the contaminated media exhibit a hazard characteristic,<sup>121</sup> it is not obvious on what basis it would be classified as a hazardous waste.

Although the Agency has generally taken the position that contaminated media can be a hazardous waste, the basis for this position is not completely clear. In part, the Agency has relied on the mixture and derived-from rules to justify their classification as a hazardous waste.<sup>122</sup> A strict application of the mixture or derived-from rules would suggest that the contaminated soil is not hazardous waste. As discussed above, the mixture rule applies only to mixtures of wastes, and the derived-from rule applies only to wastes derived-from wastes. Soil, at least when it is in place, is not generally thought of as a waste. In light of these problems, EPA has also stated in a November 13, 1986 Memorandum from its Office of Solid Waste (OSW) that contaminated groundwater is hazardous waste because

it "contains" a hazardous waste.<sup>123</sup> EPA has referred to this as its "contained-in interpretation" in a Superfund guidance document.<sup>124</sup>

In *Chemical Waste Management, Inc. v. U.S. EPA*,<sup>125</sup> the D.C. Circuit considered industry claims that contaminated "environmental media" (i.e., soil and groundwater) were not hazardous waste subject to the RCRA land ban.<sup>126</sup> The court recognized the difficulty of applying either the mixture rule or derived-from rule to sustain the classification of contaminated soil as hazardous waste. The court wrote: "For either of these rules to apply directly, soil or groundwater would have to be considered a 'solid waste.' This does not match the statutory definition: 'The term "solid waste" means any garbage, refuse, sludge . . . or other discarded material.'"<sup>127</sup> Nonetheless, the court upheld EPA's conclusion that contaminated media could be hazardous waste. The court considered this an application of the general principle, embodied in both the mixture and derived-from rules, that "a hazardous waste does not lose its hazardous character simply because it changes form or is contained within other substances."<sup>128</sup> The court also noted that EPA had consistently held this position and had ruled on delisting petitions to exclude contaminated media from classification as hazardous waste. Finally, the court noted that provisions of RCRA, added in 1984, implied that some soils contaminated with hazardous waste were themselves hazardous waste.<sup>129</sup>

123. See November 13 Memorandum, *supra* note 122.

124. See, e.g., Superfund LDR Guide No. 5, "Determining When Land Disposal Restrictions (LDRs) Are Applicable to CERCLA Response Actions" (July 1989). This guidance document, referring specifically to the November 13, 1986 OSW memorandum, states:

The contained-in interpretation states that any mixture of a non-solid waste and a RCRA listed hazardous waste must be managed as long as the material contains (i.e., is above health-based levels) the listed hazardous waste. For example, if soil or ground water (i.e., both non-solid wastes) contain an F001 spent solvent, that soil or ground water must be managed as a RCRA hazardous waste, as long as it "contains" the F001 spent solvent.

(Emphasis in original.) This statement of the contained-in interpretation is remarkable. The November 13 Memorandum on which it purports to be based simply does not this support the breadth of this statement. The November 13 Memorandum simply states that "ground water contaminated with hazardous waste leachate is still subject to regulation since it contains a hazardous waste." November 13 Memorandum, *supra* note 122. It also states that "if the ground water is treated such that it no longer contains a hazardous waste, the ground water would no longer be subject to regulation under Subtitle C of RCRA." *Id.* The memorandum is not limited to listed wastes, it does not purport to define "contains" in terms of health-based levels, and it specifically applies only to groundwater and not to all "non-solid waste." A general position that any nonsolid waste, such as a product or commercial ingredient, that contains a hazardous waste is itself hazardous would be contrary to EPA's general position on recycling and the definition of solid waste. At a minimum, however, EPA is certainly claiming authority to regulate contaminated soil or groundwater on some theory.

125. 869 F.2d 1526, 19 ELR 20641 (D.C. Cir. 1989).

126. In the 1984 Hazardous and Solid Waste Amendments, Congress banned the disposal of certain hazardous wastes in land disposal facilities unless EPA made certain findings. See RCRA §3004(d)-(e), 42 U.S.C. §6924(d)-(e), ELR STAT. RCRA 013.

127. 869 F.2d at 1538 n.14, 19 ELR at 20647 n.14.

128. *Id.* at 1539, 19 ELR at 20648.

129. RCRA §3004(e) establishes a ban on land disposal for certain solvents and dioxin containing wastes. 42 U.S.C. §6924(e), ELR STAT. RCRA 013. RCRA §3004(e)(3) provides that for a limited period the ban will not apply "to any disposal of contaminated soil or debris

118. 40 C.F.R. §261.3(c)(2)(i).

119. See Gaba, *supra* note 4, at 656-61.

120. 40 C.F.R. §261.33(d).

121. In its regulation establishing the new "toxicity characteristic," EPA specifically suspended application of the rule to soil contaminated with petroleum from leaks of underground storage tanks. EPA was concerned that classification of these debris as hazardous through the toxicity characteristic was not warranted pending study of the impact of the classification. See 55 Fed. Reg. 11836-37 (1990).

122. See, e.g., 53 Fed. Reg. 31142 (1988) (contaminated soil is subject to RCRA land ban because of the mixture rule, the derived-from rule, or because it "contains" a hazardous waste). Elsewhere, EPA has specifically said that the mixture and derived-from rules would not apply to contaminated groundwater. See Memorandum from Marcia Williams, Director of EPA's Office of Solid Waste, to Patrick Tobin, Director of the Waste Management Division of Region VI, titled "RCRA Regulatory Status of Contaminated Ground Water" (Nov. 13, 1986) [hereinafter November 13 Memorandum].

## The Dilution Prohibition and the Land Ban

Under RCRA, the land disposal of hazardous wastes is prohibited unless, among other things, the wastes have been treated to the level or by a method of treatment that EPA has determined will substantially reduce toxicity or threat of migration of hazardous constituents of the waste.<sup>130</sup> In a series of rulemakings, EPA has implemented this RCRA "land ban."<sup>131</sup> Two important elements of these regulations have been the promulgation of specific technology-based "pretreatment requirements" for wastes subject to the land ban and a general "dilution prohibition" that prohibits attainment of pretreatment requirements through dilution of the wastes.<sup>132</sup> When applied to listed wastes, these regulations have been fully consistent with the mixture and derived-from rules. Mixtures of listed wastes and nonhazardous wastes remain hazardous; treatment residues of listed wastes are themselves hazardous.

In its recent "third third" rule, EPA has promulgated land ban requirements for characteristic wastes,<sup>133</sup> and, although not purporting to alter the mixture and derived-from rules, this new regulation places a significant twist on the normal conclusions that stem from application of the mixture and derived-from rules. As discussed above, characteristic wastes that cease to exhibit a hazard characteristic by whatever means, either through mixture or treatment, are no longer hazardous,<sup>134</sup> and, as non-hazardous wastes, they may be disposed of in Subtitle D facilities. Under the third-third rule, however, characteristic wastes that no longer exhibit a characteristic, but that have been improperly diluted or treated, may violate the land ban if land disposed *even though the wastes themselves are, at that point, not hazardous*.

This confusing, and rather bizarre, outcome is the result of three elements of EPA's third-third" rule. First, EPA has concluded that the land ban requirements are applicable to wastes that are hazardous at the point of generation, not the point of land disposal.<sup>135</sup> Thus, wastes that exhibit a characteristic when they are generated are subject to the land ban requirements even though they no longer exhibit the characteristic at time of disposal. Second, EPA has determined that it may require treatment of some

characteristic wastes to levels *below the toxicity characteristic level itself*.<sup>136</sup> Thus, EPA has required some characteristic wastes to be treated such that the hazardous constituents are below the level that would cause the waste to be classified as hazardous.<sup>137</sup> Third, EPA has extended, in most cases, the dilution prohibition to treatment of characteristic wastes.<sup>138</sup> Thus, dilution of wastes to reach treatment levels, even if those are the same as characteristic levels, will constitute a violation of the land ban rules.

EPA has attempted to minimize some of the implications, if not the confusion, of this rule by promulgating a treatment standard for most corrosive, ignitable, and reactive wastes of "deactivation," which simply means removal of the hazard characteristic.<sup>139</sup> Thus, if these types of characteristic wastes do not exhibit a characteristic, they satisfy the land ban requirements.<sup>140</sup> Additionally, EPA has not applied the "dilution prohibition" to characteristic wastes that either are added to a waste stream regulated under the Clean Water Act (either subject to an NPDES permit or pretreatment requirements) unless a method of treatment is specified, or are disposed of in a Class I underground injection well regulated under the Safe Drinking Water Act.<sup>141</sup>

The relationship between the mixture and derived-from rules and the land ban requirements is likely to cause confusion. What is clear is that one cannot safely conclude that wastes, otherwise not hazardous under EPA rules, may be treated and disposed of as nonhazardous wastes. In addition to assessing a waste's classification as a hazardous waste, generators must also consider whether the method of treatment of characteristic wastes also complies with the land ban rules.

## The Prospects for Altering the Mixture and Derived-From Rules

Ever since the mixture and derived-from rules were adopted, EPA has acknowledged their "inequities" but claimed that it was unable to develop better approaches. Although EPA recently reaffirmed the applicability of the rules, it also indicated that it was considering proposing an amendment to the definition of hazardous waste that would "establish a de minimis exemption levels for hazardous constituents found in listed wastes."<sup>142</sup> It appears likely that the Agency may soon propose such an exemption, which could significantly alter the impact of the mixture and derived-from rules.

In developing some relief from the rules, EPA will be faced with several significant problems. First, the concerns

resulting from a response action taken under section 9604 or 9606 of this title or a corrective action required under this subchapter." 42 U.S.C. §6924(e)(3), ELR STAT. RCRA 013.

130. See RCRA §3004(d),(e),(f),(g), and (m), 42 U.S.C. §6924(d),(e),(f),(g), and (m), ELR STAT. RCRA 013-014. Land disposal may also be authorized on other grounds, including through a no-migration petition, RCRA §3004(d)(1), (e)(1), and (g)(5), §6924(d)(1), (e)(1), and (g)(5), ELR STAT. RCRA 013-14, a case-by-case variance, RCRA §3004(h)(3), §6924(h)(3), ELR STAT. RCRA 014, or based on a finding by EPA of inadequate disposal capacity, RCRA §3004(h)(2), §6924(h)(2), ELR STAT. RCRA 014.

131. See, e.g., 51 Fed. Reg. 40572 (1986) (general framework for the land disposal restriction program and standards for certain solvent and dioxin wastes); 52 Fed. Reg. 25760 (1987) (certain California List wastes); 53 Fed. Reg. 31138 (1988) (first-third rule) 54 Fed. Reg. 26594 (1989) (second-third rule); 55 Fed. Reg. 22520 (1990) (third-third rule).

132. See 51 Fed. Reg. 40572 (1986). The validity of EPA's technology-based pretreatment program under the land ban was generally upheld in *Hazardous Waste Treatment Council v. U.S. EPA*, 886 F.2d 355, 19 ELR 21398 (D.C. Cir. 1989).

133. 55 Fed. Reg. 22520 (1990).

134. See *supra* notes 15-21 and accompanying text.

135. See 55 Fed. Reg. at 22652.

136. *Id.* at 22652-56.

137. Most of the treatment levels for EP toxic wastes have been set at EP levels. See *id.* at 22654-55. EPA has, however, established methods of treatment levels for certain EP toxic pesticide "non-wastewaters" that result in treatment to below characteristic levels. *Id.* Wastes containing toxic constituents below the characteristic levels may still violate the land ban if land disposed.

138. *Id.* at 22656-57.

139. *Id.* at 22693-94.

140. See *id.* at 22542-54. Presumably this is not the case, however, if EPA has specified a specific method of treatment. EPA has set a specified method of treatment for high TC ignitable liquids. *Id.* at 22694. In this case, the land ban rules require that the method be used, rather than a characteristic level be achieved.

141. See *id.* at 22530.

142. 55 Fed. Reg. 11832 (1990).

that warranted adoption of the rules remain—hazardous waste mixtures and wastes derived from hazardous wastes may contain significant amounts of toxic constituents. Second, any regulation that grants an exemption based on the concentration of hazardous constituents will encourage the dilution of wastes through mixture. This is precisely the problem that gave rise to the mixture rule itself. Third, any such exemption will remove the incentive to segregate and separately treat or simply eliminate hazardous wastes in the waste stream. Thus, the exemption would be counter to growing efforts to encourage waste minimization. Finally, such an exemption would also act as an exemption from the delisting process. Given that EPA's listing and delisting processes are not based simply on numerical concentration criteria, it is unlikely that EPA would propose an exemption that would essentially turn the delisting process into a self-executing numerical test.

Nonetheless, the mixture and derived-from rules create potentially absurd and overly burdensome results, and the delisting process is inadequate to provide appropriate relief. Some amendment to the rules or their application should be adopted.

The Agency is apparently considering a rule that would generally exempt from the definition of hazardous waste any waste that contains only specified "de minimis" concentrations of toxic constituents. EPA could, of course, simply use the toxicity characteristic rule, at least for purposes of the mixture and derived-from rules, by generally excluding wastes that do not exhibit the characteristic. EPA recently rejected this approach, claiming that the TC rule was inadequate to deal with the varying bases by which wastes have been listed. Adoption of such an approach would reject a position that EPA has strongly held for over a decade.

Alternatively, EPA could propose different and much lower de minimis levels of hazardous constituents to exclude wastes that were, in fact, not hazardous. Although such an approach seems logical, there are problems. Any widely applicable generic exclusion will create an incentive to dilute wastes. Avoiding such a result has been one of the main purposes of the mixture rules. Further, the scope of constituents covered would have to be broad to address EPA's and Congress' concern that listed wastes not be excluded if they possess a hazard to the environment based on factors other than the original basis for

listing.<sup>143</sup> Finally, any de minimis exclusion that was not set at an extremely low level could essentially eliminate EPA's case-by-case control through the delisting process. If EPA does propose a de minimis exclusion, it is likely to be set at such low levels and require assessment of such a broad number of constituents that it would provide only limited relief to the regulated community. It is possible that any de minimis exclusion will be lip service and not a substantive response to the inequities of the mixture and derived-from rules.

There is one other approach the Agency might consider. EPA has adopted industry or listed waste category exclusions from both the mixture and derived-from rules. In general, these exemptions have been based on determinations that the mixed or derived-from wastes were not unduly hazardous, that they constituted relatively small percentages of a facility's waste, and that the exclusion would not produce a significant regulatory loophole. If the Agency promulgated specific criteria, and responded in a more timely fashion, to petitions for industrywide exclusions, this approach would allow the Agency to provide some measure of relief while limiting the problems of a generic exemption. The Agency could grant a petition, for example, if the typical industry mixed or derived-from waste contained constituents at levels "significantly below" the TC rule and the mixture or derived-from waste was produced as part of normal industry practice and not for purposes of avoiding hazardous waste rules. This might balance some measure of regulatory relief with a measure of regulatory control.

## Conclusion

The mixture and derived-from rules are among the most important of EPA regulations for defining the scope of materials subject to hazardous waste rules. Although the Agency has adopted a number of limited, piecemeal exclusions, the basic rules have remained unchanged in part because the need for some rules remain. Pressure for change, stemming from the overbreadth of the rules and the perceived inadequacies of the delisting process, has also remained. EPA has indicated that it may finally address some of these problems. It remains to be seen how much relief will be provided.

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143. See *supra* note 20 and accompanying text.