

hazardous characteristic. This is because the Agency believed that high temperature thermal treatment would be used to treat for the organic chemicals found in this waste, and that this treatment would also appropriately treat for the ignitability characteristic of the waste (by oxidizing the metal sulfides in the waste; November 20, 1995 **Federal Register**, 60 FR at 57785). However, the petitioner asserts that lower temperature thermal desorption, which does not oxidize the metal sulfides, is the primary mode of organics treatment for K171, and that K172 receives no thermal treatment before landfilling (only solidification/stabilization for metals), because the LDR does not include a requirement to treat for PAHs. Thus, VPRA argues that this results in significant volumes of spent catalyst being land disposed without adequate treatment for ignitability.

VPRA also asserts that changes in industry waste coding practices for these wastes contribute to inadequate identification and decharacterization before disposal. These spent catalysts are currently identified (by the generator) only by their K waste codes, according to the petitioner, and are no longer identified as D001 or D003, as was the previous practice (9 percent of these spent catalysts were being classified as D001 before rule promulgation).² VPRA believes that by using only the K codes for waste identification, waste generators are facilitating disposal of spent catalyst without adequate treatment for reactive sulfides (D003) that may be present (as required by the LDR treatment standards for these wastes), or ignitability (D001). (The Agency notes, however, that a review of EPA's 1999 Biennial Reporting System database indicates eighteen refineries reported generating a total of 6,800 tons (20 percent of the total) of hazardous waste coded as D001/D003 in 1999, in addition to the

codes reported in the table as K171 or K172.)

The petitioner also asserts via the Scherger Report (p. 7) that spent catalyst receives special handling at petroleum refineries. Specifically, petroleum refineries are reported to routinely have special safety programs for handling spent catalyst and for addressing potential fires or hydrogen sulfide generation, ship spent catalyst in special bins to reduce air contact, and frequently designate spent catalyst under DOT (Department of Transportation) pyrophoric or self-heating designations for hazardous materials. The Scherger Report asserts that landfills treat spent catalyst (by solidification/stabilization treatment) and landfill it soon after its arrival, and if it must be stored before treatment, store it in bins to reduce its air exposure or wet it with water (p. 14). The petitioner asserts that this special handling of the spent catalyst, and DOT designation as pyrophoric, support a conclusion that the spent catalyst is an ignitable hazardous waste being landfilled without proper deactivation treatment.

B. How Can Waste Generators and Treaters Determine Whether Their K171/172 Is Ignitable or Reactive Hazardous Waste?

As discussed in both the proposed and final Petroleum Refinery Rules, a significant finding of the Agency in listing K171/172 was the self-heating potential of these spent catalysts, which would make them ignitable hazardous waste, and their potential to react and emit hydrogen sulfide, which would make them reactive hazardous wastes. 60 FR at 57767; 63 FR at 42154 and 42157. The petitioner has asserted that generators and treaters are having difficulty properly characterizing spent catalyst because EPA has not established a test(s) with numerical criteria for determining whether a waste is ignitable and/or reactive hazardous waste.

The Agency believes that the K171/172 Petroleum Refinery Rule, as well as the original 1980 **Federal Register** discussion promulgating the hazardous characteristics regulations, provide considerable guidance to generators and others for applying the narrative regulatory criteria to this waste in the absence of specific tests. Testing was also an issue in 1980, and the Agency provided generators with the following guidance for identifying reactive hazardous waste:

"The unavailability of suitable test methods for measuring reactivity should not cause problems. Most generators of reactive

wastes are aware that their wastes possess this property and require special handling. This is because such wastes are dangerous to the generators' own operations, and are rarely generated from unreactive feedstocks." (May 19, 1980 **Federal Register**; 45 FR at 33110)."

While this passage specifically refers to the reactivity characteristic, the Agency believes its logic is equally applicable to classifying non-liquid wastes which may be ignitable under 40 CFR 261.21(a)(2), as discussed in the *Background Document for the Characteristic of Ignitability* (May 2, 1980, p. 42).

In the preamble to the Petroleum Refinery Rule, the Agency documented and described the potential hazards of spent catalyst, as well as several types of special handling precautions for managing spent catalyst. EPA staff studying these wastes observed that some spent catalyst is removed from process units and is immediately placed in air-tight containers (sometimes under an inert gas atmosphere) to prevent self-heating. In collecting catalyst samples to support waste characterization for the listing determination, EPA samplers were twice denied access to inert gas catalyst storage bins, in favor of specially trained refinery sampling personnel, who collected samples under EPA observation. 60 FR at 57767. Spent catalyst being staged for recycling has also been found to be smoking, and occasional fires have been reported. 63 FR at 42154.

The Agency also clarified the role of testing and other information in applying the narrative hazardous characteristic criteria to waste in the absence of a specific test, in a 1997 letter from David Bussard, Director, Hazardous Waste Identification Division to Paul Wallach, Hale and Dorr, LLP, dated August 14, 1997. The letter said, in part:

With regard to the hazardous waste determination, it is the generator's obligation to make a determination. For the hazardous characteristics, this determination is made by evaluating the waste using a required test or by comparing the properties of the waste with the narrative standards. The narrative standard is what is enforced if there is no applicable test that is required by the regulations. For the characteristics of ignitability of solids and reactivity, there is no test method specified as to the operational definition of the characteristic, and we have therefore given reasonable deference to the operational experience of the waste generator or facility. However, we agree with the Region that this is not a blanket shield from consideration of information or test data in the case where there is reason to question the generator's RCRA determination. In fact, in this case, we believe the Region has a reasonable position in that the manufacturers of the catalyst routinely inform users of the

² In the 1995 *Notice of Proposed Rulemaking for Petroleum Refining Process Wastes*, EPA documented the petroleum refining industry's responses to the RCRA 3007 survey indicating that hydrotreating and hydrotreating spent catalyst wastes exhibit D001 (ignitability), D003 (reactivity), and other hazardous constituent characteristics (primarily D004-arsenic and D018-benzene). See 60 FR at 57785. The survey data showed approximately 9 percent of hydrotreating and hydrotreating residuals as ignitable [513 metric tons (mt) of 5,640 mt total hydrotreating residuals; 1,671 mt of 18,634 mt total hydrotreating residuals]. See *Listing Background Document for the 1992-1996 Petroleum Refining Listing Determination*, October 31, 1995, pages 75 and 88. EPA found that: "These wastes are routinely managed in thermal processes that destroy organics and thus, leave behind residues free of the ignitable characteristic and other corrosive causing constituents." 60 FR at 57785.