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RE: Request for Response Regarding the Necessity of Federal Regulation of Vanadium-Containing Waste (Spent Stretford Solution)

Dear Mr. Drayton:

Thank you for your letter dated October 23, 2001, in regard to the regulation of vanadium-containing wastes generated in the petroleum refining industry. I appreciate your concern regarding the proper management and regulation of these wastes.

Your letter provides background information and factual justification indicating that the spent Stretford solution generated in petroleum refineries is being mismanaged, primarily because of the lack of EPA regulations for vanadium. Your letter also requests a response to several specific questions. Our reply, detailed below, is formatted based on your specific questions and also addresses the background information and factual justifications you provided:

1. Is EPA in compliance with the Consent Decree (court order) in the *EDF v. Browner* case?

Yes, EPA is currently in compliance with the consent decree in *EDF v. Browner*, Civ. No. 89-0598 (D.D.C.).

2. What has been done by EPA to comply with the Consent Decree in the *EDF v. Browner* case with respect to “process sludge from sulfur complex and H₂S removal facilities” and “catalyst from sulfur complex and H₂S removal facilities”?

The Consent Decree (Decree) required EPA to decide whether or not to list several categories of wastes from petroleum refining. The Decree also required EPA to prepare a report on several other waste categories. The Decree requires a listing determination for sludges and catalysts from sulfur complex and H₂S facilities. The Decree requires EPA to address “off-spec” treating solutions from sulfur complex and H₂S facilities in the Report.

In the listing determination, EPA determined that sludges from the Stretford process (which are expected to contain vanadium salts) were generated by very few facilities and in much smaller quantities than sludges generated by the non-Stretford process. Given the rare generation of such sludges, EPA did not consider that these sludges warranted further consideration. See the discussion in Section 3.9.2.2 of EPA's *"Listing Background Document for the 1992-1996 Petroleum Refining Listing Determination,"* October 31, 1995 (hereafter called the Listing Background Document). The Listing Background Document can be obtained by contacting the RCRA Information Center (RIC) located at Crystal Gateway I, First Floor, 1235 Jefferson Davis Highway, Arlington, VA, at (703) 603-9230. The docket number for the document is F-1995-PRLP-S003.

EPA also determined that the majority of the catalysts used in sulfur complex and H₂S removal facilities are solid, alumina-based catalysts that do not contain vanadium. EPA evaluated these catalysts for listing and found that they did not pose a significant potential for risks to human health and the environment. EPA, however, decided not to evaluate for listing the liquid, vanadium-containing solutions used in either the Stretford process or the combined Beavon-Stretford process. EPA found that, although the vanadium in these solutions functioned as a catalyst, these wastes were sufficiently different and sufficiently uncommon to constitute a different waste category. EPA determined that the Decree did not require a listing determination for this category. See Section 3.9.3 of EPA's *Listing Background Document*.

EPA addressed the vanadium-containing Stretford solutions or Beavon-Stretford solutions, in its separate Report on petroleum wastes, under the category of "off-specification treating solution from sulfur complex and H₂S removal facilities." See Section 3.10.3 of EPA's *"Study of Selected Petroleum Refining Residuals—Industry Study, August, 1996."* The study can be found in EPA's website at <http://www.epa.gov/epaoswer/hazwaste/id/studies.htm>. EPA found that a very small percentage of the solutions are sent to land disposal units. At this time, EPA is not pursuing a listing determination for this waste or any of the other wastes addressed in the 1996 Report.

3. Has EPA proposed for public comment a listing determination for petroleum refining wastes, including "process sludge from sulfur complex and H₂S removal facilities" and "catalyst from sulfur complex and H₂S removal facilities"?

EPA proposed a listing determination for both "process sludge from sulfur complex and H₂S removal facilities and "catalyst from sulfur complex and H₂S removal facilities" on November 30, 1995 (60 FR 57747). As described above, the Listing Background document set out EPA's proposed determination not to list sludges from the Stretford process and its decision to address vanadium catalyst solutions from the Stretford process in the Report rather than the listing determination.

4. Has EPA signed a Notice of Data Availability with respect to the listing determination for petroleum refining wastes?

EPA published a Notice of Data Availability for petroleum refining wastes on April 8, 1997 (62 FR 16747). The scope of the notice was identical to the scope of the proposal. The notice did make available additional data concerning sludges and catalysts from the sulfur complex and H₂S removal facilities which EPA considered to be subject to the listing.

5. Has EPA promulgated a final listing determination for petroleum refining wastes?

EPA promulgated a final listing determination for petroleum refining wastes on August 6, 1998 (63 FR 42110). EPA concluded that the process sludges and the catalysts from sulfur complex and H₂S removal facilities which it considered in the rulemaking did not pose risks warranting a hazardous waste listing.

The final listings are in effect. Challenges to the rule were resolved by the U.S. Court of Appeals for the District of Columbia Circuit in American Petroleum Institute vs. EPA, 216 F. 3d 50 (D.C. Cir. 2000). The Court vacated one unrelated portion of the rule concerning oil-bearing wastewaters.

6. What is EPA's position with respect to industrial discharges of vanadium into waters of the United States?

Vanadium is not a "priority pollutant" as defined under the Clean Water Act. Therefore, vanadium is not a chemical that we expect to be included in permits limiting discharges to surface waters. There are, however, effluent guidelines in place for the petroleum refining industry (see 40 CFR 419), and it is possible that treatment technologies in place to meet the existing standards may also remove some vanadium from the subject wastewater discharges. However, under Federal rules there are no specific limitations on the amount of vanadium that may be discharged.

7. What is EPA's position with respect to the listing of vanadium as a hazardous waste?

EPA's hazardous waste listing determinations are wastestream-specific and not constituent-specific. Under RCRA, EPA regulates wastes or spent materials from industrial manufacturing processes that may contain the chemical or metal constituents of concern. Vanadium pentoxide is regulated as a discarded commercial chemical product (waste P120; see 40 CFR Part 261.33).

EPA has evaluated the potential impacts of vanadium in wastes in various listing determinations. For example, the Agency examined risks from vanadium present in other petroleum wastes subject to the Decree's listing requirements. See data for hydroprocessing catalysts in Sections 3.3 of the Listing Background Document. In EPA's recent listing determinations for wastes from Inorganic Chemical Manufacturing (see proposed rule, 65 FR 55684; September 14, 2000), we also examined potential risks

from the presence of vanadium in wastes from the production of antimony oxide and titanium dioxide. In both the petroleum and the inorganic chemicals rules, EPA found that vanadium did not present sufficient risk to provide a basis for listing. In addition, EPA has established treatment standards under the Land Disposal Restriction regulations for vanadium in spent hydrotreating and hydrorefining catalysts (see 40 CFR 268.40 for K171 and K172).

8. What have been EPA's initiatives over the last five years with respect to the potential listing of vanadium as a hazardous waste and current status of those initiatives?

See reply to 7. above.

9. What is EPA's position with respect to the listing of spent Stretford solution as a hazardous waste?

As mentioned above, the Decree required EPA to include spent Stretford solution in its Report. It did not require EPA to make a listing determination.

EPA's 1996 "*Study of Selected Petroleum Refining Residuals*" indicates that only a small percentage (4 %) of the total spent Stretford solution generation is land disposed. The remainder (96 %) of the waste is managed via reclamation or regeneration, or is managed in on-site or off-site wastewater treatment facilities. Note also that vanadium-containing solids or sludges from the wastewater treatment system are regulated as hazardous wastes (K048, K051, F037, F038). As noted above, EPA is not currently evaluating any of the wastes addressed in the Report.

10. What is the current status of proposed regulation pertaining to vanadium, including, but not limited to, those indicated in the following Federal Register announcements and EPA reports?

- A. The USEPA "Candidate Contaminant List" published in the Federal Register, February 2, 1998;

EPA is currently planning to publish a preliminary notice in the Federal Register regarding the "Candidate Contaminant List" in the next few months. The notice will seek comment on a regulatory determination on whether or not EPA should go forward with regulations on a subset of the original 60 contaminants (which included vanadium).

- B. The USEPA report on the ranking of chemicals for eventual regulation, "Prioritized Chemical List" (EPA #530-D-97-002, dated April 1997);

In 1997, EPA released a beta-test version of its "Waste Minimization Prioritization Tool" for public comment. The purpose of this tool was to relatively rank chemicals based on their persistence, bioaccumulation potential, and toxic properties. The "Prioritized Chemical List" was a table contained within the WMPT's documentation that presented the results, in rank and

alphabetical order, of those chemicals that could be scored on all three properties. The WMPT was developed for use under EPA's voluntary waste minimization program, and to aid businesses in making voluntary decisions about waste minimization. Due to public comments received on vanadium, the bioaccumulation potential information was removed from the WMPT. The version of the WMPT dated September, 1998 reflected this change. Currently, the Agency is deferring the use of the PBT criteria for metals in its voluntary waste minimization program, because it has recently decided it will be working with its Science Advisory Board to develop a consistent, Agency-wide approach for the evaluation of metals.

- C. The USEPA proposed HWIR II rule as proposed in the November 19, 1999 Federal Register.

The Hazardous Waste Identification Rule (HWIR), re-proposed in the November 19, 1999 Federal Register, relies on the 3MRA model to estimate the chemical release, fate, exposure and resulting risks to human health and the environment. While this model has undergone extensive public and peer review, it must be reviewed by EPA's Science Advisory Board (SAB) before we can complete the HWIR rulemaking. SAB review is scheduled to begin this calendar year. Because the proposed rule depends so heavily on the 3MRA model to determine chemical specific exemption levels, at this time we cannot project when this rulemaking will be finalized.

I hope that this response is helpful to you in understanding the EPA's activities related to these wastes. Should you have any questions regarding the reply or need additional information, please contact Max Diaz of the Waste Identification Branch (703-308-0439).

Sincerely,

Elizabeth A. Cotsworth, Director
Office of Solid Waste

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