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CLARIFICATION ON THE LEVEL OF SULFIDE FOR DETERMINING IF A WASTE IS HAZARDOUS UNDER REACTIVITY

United States Environmental Protection Agency
Washington, D.C. 20460
Office of Solid Waste and Emergency Response

November 8, 1993

SUBJECT: Reactive Sulfides in Papermill Waste

I am writing in response to your (October 6, 1993, memorandum asking for clarification on the level of sulfide for determining if a waste is hazardous under the reactivity characteristic.

The regulation in 40 CFR 261.23 defines reactive wastes to include "cyanide or sulfide bearing waste" which, when exposed to Ph conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment". This definition is intended to identify wastes that, because of their extreme instability and tendency to react violently or explode, pose a problem at all stages of the waste management process. The definition is to a large extent a paraphrase of the narrative definition employed by the National Fire Protection Association. The Agency chose to rely almost entirely on a descriptive, prose definition of reactivity because most of the available tests for measuring the variegated class of effects embraced by the reactivity definition suffer from a number of deficiencies. For determining reactive sulfide content in particular, one of the deficiencies is poor recovery.

Chapter 7 of SW-846 contains the method for determining total releasable sulfide. It should be noted that different versions of the test method have existed that yield substantially different results. In September of 1990, EPA proposed increasing the strength of the sulfuric acid used in the test from 0.01N to 0.1N. The Agency reevaluated the stronger acid digestion and concluded that the original acid concentration of 0.01N more accurately represented the mismanagement scenario the method is designed to emulate (see attachment 1). In 1992, EPA revised the method to include the original sulfuric acid concentration of 0.01N. This version was finalized on August 31, 1993 (58 FR 46040, attachment

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2). The current EPA guidance level is 500 mg/kg for total releasable sulfide. If a waste contains greater than 500 mg/kg total releasable sulfide, then the waste is usually considered to meet the narrative definition of a characteristically reactive waste under 40 CFR 261.23. Since recovery can be as low as 10% under certain circumstances, any test result greater than 500 mg/kg would be deemed a characteristic hazardous waste.

In your letter you included data on slaker grit and green liquor dregs wastestreams from an International Paper facility. It is unclear which version of the test method was used to measure total releasable sulfide. If the most recent method (attachment 3) was used, then the wastestreams have concentrations in excess of 500 mg/kg (684 mg/kg and 1004 mg/kg respectively), and would therefore be considered a hazardous waste. If there is any question as to which version of the method was used I recommend having the analysis repeated using the most recent method. The older proposed method employing 0.1N sulfuric acid would yield higher levels of releasable sulfide and inaccurately classify the waste as hazardous. If you have any further questions on the reactivity characteristic, please contact William Morrow of my staff at 202-260-3657.

Attachments