

FS No. 032-0324

Characterization of Spent Xylene Used in Tissue Processing

Background: Histology and Cytology laboratories convert human tissue specimens into diagnostic slides for microscopic medical examinations and diagnoses. During slide production, the process applies a thin microscopic section of tissue specimens to slides for medical diagnoses. The slide production process involves multiple procedures and numerous chemicals that include formalin, ethanol (various concentrations), xylene, various stains, and paraffin. Xylene is used to displace ethanol from the tissue, then paraffin wax displaces the xylene and fixes the tissue.

Applicability of Hazardous Waste Codes: The U.S. Environmental Protection Agency (EPA) categorizes hazardous wastes (HW) as either characteristic or listed. A characteristic HW is not identified in the Federal regulations specifically by name, use, or generating process, but rather exhibits any of the four general hazardous characteristic properties described in 40 Code of Federal Regulations (CFR) Part 261, *Identification and Listing Of Hazardous Waste*. These properties include ignitability, corrosivity, reactivity, and toxicity. Spent xylene possesses a flash point below 140 degrees Fahrenheit and, therefore, exhibits the characteristic of ignitability. The EPA HW code for ignitability is D001.

A listed HW is a waste specifically on one of the four lists (the F, K, P, and U lists) found in Subpart D of 40 CFR 261. These chemicals have been designated as HW by the EPA because they present potential hazards to human health or the environment. Spent xylene is listed in the EPA's non-specific source F-List; however, this listing is only applicable to spent solvents.

The EPA has issued clarification regarding what constitutes a spent solvent for the purpose of this listing. In the November 17, 1981 Federal Register (46 FR 56584), the EPA stated, "The same substances may also be used in a manufacturing process as chemical reactants or process intermediates, and when so used, are not considered to be spent solvents." Additionally, the December 31, 1985, FR (53 FR 53316) specifies that, "the spent solvent listings apply only to those solvents that are used for their solvent properties, that is to solubilize (dissolve) or mobilize other constituents." This FR further states that "process wastes in which solvents were used as reactants or ingredients in the formulation of a commercial, chemical product are not covered by the F001-F005 listings."

Based on this information, spent xylene generated from tissue processing would be classified as a process intermediate rather than a spent solvent, and the F-listing would not be applicable. Therefore, the only applicable HW waste code for spent xylene used in tissue processing is D001 (ignitability).

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