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Characterization of "Hydrocarbon" Dry Cleaning in King County, Washington

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Abstract

In King County, Washington, the most frequently used alternative solvent to perchloroethylene is a hydrotreated petroleum hydrocarbon. The objectives of the authors' study were to 1) determine the frequency of use of process chemicals used in "hydrocarbon" dry cleaning and gather other operational information; 2) chemically characterize the process chemicals; 3) characterize the still bottoms and separator water wastes according to dangerous waste and wastewater discharge regulations; 4) identify linkages between work practices, process chemicals, and the chemical composition of the waste streams; and 5) evaluate the aquatic toxicity of the hydrocarbon solvent and detergent. Many hydrocarbon dry cleaners are using process chemicals that contain hazardous substances, including trichloroethylene. One sample of separator water contained 13,000 µg/L trichloroethylene. This sample was determined to be federal hazardous waste, state-only dangerous waste (i.e., according to Washington state-specific regulations), and failed wastewater discharge thresholds. All still bottoms were determined to be state-only dangerous wastes. Efforts should be directed towards replacing hazardous spot cleaning chemicals with safer alternatives and ensuring that wastes are disposed of appropriately.