

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEPTEMBER 4, 1991

MEMORANDUM

SUBJECT: RCRA ARAR Determination at Maxey Flats Superfund Site

FROM: Sylvia K. Lowrance, Director
Office of Solid Waste

TO: Donald J. Guinyard, Director
Waste Management Division
Region IV

John R. Barker
Regional Counsel
Region IV

This letter is written in response to your request of July 1, 1991 regarding whether disposed liquid scintillation vials would cause RCRA to be an Applicable and Relevant or Appropriate Requirement (ARAR) at the Maxey Flats Superfund site. Specifically, you seek written confirmation that scintillation fluids may be classified as spent solvent (F001 - F005) hazardous wastes.

The principal hazardous organic constituents associated with liquid scintillation fluids or cocktails are toluene and xylene and the principal radioactive constituents are tritium and carbon-14. Scintillation fluids or cocktails are used in the laboratory to count the amount of radioactivity in laboratory samples for diagnostic tests, environmental monitoring and in other industrial and medical applications. From the information you have supplied us, we have learned that the scintillation fluid is prepared using p-terphenyl dissolved in one of the organic constituents.

Xylene and toluene in the scintillation fluid serve as suspension media or carriers to suspend the radioactive sample and a photon emitting chemical (e.g., p-terphenyl) in the fluid so that counting can occur. In addition, the toluene and xylene dissolve the radionuclide and act as a medium for a reaction to take place between p-terphenyl and the radionuclide (in the laboratory sample).

Thus, scintillation fluids containing xylene and toluene, when spent, would be classified as hazardous spent solvents when they satisfy the specific listings (i.e., F003 for xylene or F005 for toluene) because they are used for their "solvent" properties by mobilizing other constituents in solution and acting as a reaction medium (See definition of "solvent" properties at 50 FR 53316, December 31,

1985.) Spent scintillation fluids containing listed solvents and/or exhibiting hazardous waste characteristics (e.g., ignitability), cause RCRA to be a potential ARAR at the Maxey Flats site where you indicate liquid scintillation vials have been disposed.

I hope this response provides the information that you seek. If you need further assistance, please contact Ed Abrams of my staff at FTS 260-4770.

cc: Ken Gigliello, OWPE (OS-520)
Waste Management Division Directors, Regions I - III, V - X