9442.1991(11)

OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE

JUL - 9 1991

Mr. Craig S. Campbell
Regulatory Analyst
Health and Environmental Affairs Department
American Petroleum Institute
1220 L Street, N.W.
Washington, D.C. 20005

Dear Mr. Campbell:

In response to a request made during a recent meeting with Mr. Jim Greene of Mobil Corporation, we are providing you with the following information on the methodologies employed in our 1989-1990 used oil sampling activities.

To fill data gaps in the pre-1985 generated used oil characterization data and to provide source-specific waste characterizations using improved analytical techniques, EPA initiated a sampling and analysis program in 1989. To accomplish this, the Agency stratified the used oil universe into limited categories based on the source and application of the used oil. Seven used oil categories identified include: automotive crankcase oils; diesel engine crankcase oils from trucks and buses, heavy equipment, and railroads; hydraulic oils and fluids; metalworking oils and fluids; electrical insulating oil; natural gas-fired engine oil; and aircraft and marine engine oils.

The Agency developed sampling strategy by conducting literature research, data base searches, and telephone interviews with industry, State, and local officials, as well as telephone book listings. Each facility identified as a used oil generator was defined as a unit selected on a random basis in one of the used oil categories noted above.

To use available funds effectively by focusing on the analysis rather than the national representation of used oil sample, the sampling activities were undertaken in the Washington, D.C. area, unless samples of used oil from a specific segment could not be obtained there. The sampling program was not intended to characterize variations in used oil based on geographical location, since it is assumed that no significant differences in constituent concentrations are attributable to geographic area.

When possible, samples of "as generated" used oil and facility storage tanks or containers were taken. This allowed EPA to determine "as-generated" constituent concentrations and the extent of adulteration endemic to the generator.

The Agency developed field procedures to sample numbering and labeling, equipment use and decontamination, sample protocols, and sample containerization and preservation, as well as documentation of sampling activities. Chain of custody forms accompanied each shipment of samples from the field to the laboratory.

The analytical program was designed to characterize used oils with respect to the compositional concentration of the constituents of concern and with respect to the Toxicity Characteristic (TC). In order to do this, the Toxicity Characteristic Leaching Procedure (TCLP) was applied to used oil samples, and after filtration, the liquid phase (filtrate) of the samples were analyzed for selected constituents of concern using analytical methods from SW-846, "Test Methods for Evaluating Solid Waste (Physical/Chemical Methods) , Third Edition," as noted in the table on the next page.

For volatile organic contaminants, the Agency found that the traditional purge and trap GC/MS method (Method 8240) did not provide detection limits that were sufficiently low. As an alternative, the Agency has modified an existing headspace screening method (Method 3810) to include isotope dilution. This modified method includes the addition of several standard isotopes that correspond to each of the target analytes. For semi-volatile organics analyses, the Agency had similar difficulties. The existing SW-846 methods were adequate for analyzing most samples, but the used oil matrix required dilutions that yielded unacceptable detection limits. To improve the detection levels, the Agency utilized a specific ion monitoring (SIM) option on the GC/MS. Instead of scanning the sample for a full spectrum of semivolatile compounds, the Agency found that analytes with lower concentration could be easily detected using SIM.

Attachment 1 is a copy of the Sampling and Analysis Plan for the Characterization of Used Oil, and Attachment 2 is the table of SW-846 Methods employed to characterize used oil. The results of the sampling and analysis effort will be publicly available at the time of publication of the used oil proposed rule. Thank you for your interest in EPA's used oil program.

Sincerely yours,

David Bussard, Director,
Characterization and Assessment Division

Attachments