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VISTA

January 15, 1991

Mr. John Byrne
Whitaker Oil Company
P. O. Box 93487
Atlanta, GA 30318

Dear Mr. Byrne:

Pete Douvry asked that I provide you information regarding the new EPA definition of hazardous waste, commonly known as the Toxicity Characteristic (TC). This rule, finalized September 25, 1990, essentially expands the list of ways a substance can be classed a hazardous waste. Benzene is on the expanded list of substances, that if present above the established threshold limit, causes a material to be a hazardous waste for disposal purposes. The threshold for benzene is 5 mg/l.

I've attached a succinct summary article on the regulation.

For your information, our LPA solvents do not contain benzene, or other listed chemicals, above regulatory thresholds. This fact could certainly be an advantage in some "substitute" markets.

The cost to have a TC analysis run can range from \$300 - \$1,000 dependent on the number of chemicals you're looking for and the physical state of the product.

Sincerely,



Thomas G. Grumbles, C.I.H.
Manager Environmental Affairs

dlj

cc: P. Douvry

Attachment

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Is it Hazardous or Is It Not?

Is your Product Waste hazardous under recently revised federal regulations? How do you make this determination?

Under the current Resource Conservation and Recovery Act (RCRA), Subtitle C, EPA uses two procedures to define wastes as hazardous:

1. A product waste is specifically listed by chemical name;
2. The waste possesses certain hazardous characteristics above an EPA defined level.

Chances are if your product waste has been listed in the regulation as hazardous, you already know this, since this listing has been in effect for many years. This article discusses a recent rule by EPA called the Toxicity Characteristic (TC) rule that requires a test called a Toxicity Characteristic Leaching Procedure (TCLP)

to be performed on product waste to determine if it contains certain chemicals above a regulated level. This TC rule establishes regulatory limits for 25 new chemicals and 14 chemicals from a previous RCRA rule. If the waste contains any of these chemicals above the regulated levels, then the waste is RCRA Hazardous. (See Table 1)

The TC rule went into effect on September 25, 1990 for large hazardous waste generators (2,200 lbs/month) and on March 29, 1991 for small hazardous waste generators (220 to 2,200 lbs/month). A waste's toxicity is only one of four characteristics that must be considered when identifying a waste as hazardous. The other three are IGNITABILITY, REACTIVITY, and CORROSIVITY. These three have also been in effect for many years.

The quantity to distinguish large from small generators is the total amount of hazardous waste generated on a site basis. It is important to note that if new TC wastes are generated, then generators may be required to apply for new RCRA handling permits.

All businesses should make a determination whether their product waste is or is not, a "TC waste." This can be accomplished in two ways:

1. Through use of the TCLP to determine whether leachate resulting from this test exceeds the regulatory levels for the 40 specified chemicals.
2. Through calculation, show that it is impossible to exceed the TC regulatory levels even if all of the regulated chemical contained in the product waste is extracted. A recom-

Table 1
Calculations May Avoid Necessity of Running TCLP Test

If one can show by calculation that it is impossible to exceed the TCLP regulatory limit even if all of the regulated substance is extracted, then it is not necessary to run the test. Two examples follow:

1. General TCLP Calculation

100 g sample

20X water = 2000g = 2L water

If regulatory level is R mg/L = 2R mg/2L, then

$$\frac{2R \text{ mg}}{100\text{g sample}} = \frac{2 \times 10^{-3} \text{ R g}}{100\text{g sample}} = 0.002R \text{ wt\% or } 20R \text{ ppm}$$

Anything less than 0.002R wt% or 20R ppm will pass the TCLP test even if all of the substance is extracted.

Substance	R (mg/L)	Any concentration lower than this will pass TCLP test
Cd, Se	1.0	20 ppm
As, Cr, Pb, Ag	5.0	100 ppm
Hg	0.2	4 ppm
Ba	100.0	2000 ppm (0.2%)

$$\begin{array}{r} \text{Ba } 137 \times 1 = 137 \\ \text{S } 32 \times 1 = 32 \\ \text{O } 16 \times 4 = 64 \\ \hline 233 \end{array}$$

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2. Barium Sulfate Calculation

BaSO₄ cannot exceed the TCLP regulatory limit for Ba, as shown by the following calculations:

BaSO₄ solubility in water at 25°C is 0.000246 g/100cc = 2.46 mg/L.

BaSO₄ solubility in 3% HCl is 0.006 g/100cc = 60 mg/L.

$$\text{Ba} = 60(137/233) = 35$$

In both water and 3% HCl, the concentration of Ba would be less than the 100 mg/L regulatory limit. Since 3% HCl is much more acid than the 4.93 pH specified for TCLP, BaSO₄ cannot be considered a hazardous waste by the TCLP test.

ended procedure to make this determination is shown in Table 1.

Chemical constituents and their regulatory levels are shown in Table 2.

This is a relatively new test for hazardous waste determination, therefore not all laboratories are capable of performing it. For more information, consult your Environmental Coordinator. Conoco Laboratory in Ponca City and most of the major commercial laboratories are capable of performing this test. Cost can range from \$300 per sample for heavy metals analysis only, to \$1500 for the full range of the 40 chemicals.

If the TCLP determines that any of the chemicals are present above the regulated levels in waste, then the waste is a "TC Waste" and subject to all RCRA hazardous waste requirements, and all customers should be so advised! A statement as to whether or not a product's waste is an RCRA hazardous waste should be included in the product's SDS to enhance sales (if non-hazardous) or to ensure proper handling and disposal of the waste (if hazardous).

This RCRA hazardous waste determination applies to all waste, whether it is considered hazardous because of its toxicity or any of the other above mentioned hazardous characteristics. Your Environmental Coordinator, Environmental Legal, or one of the consultants in the ESD Solid Waste section should be contacted to assist in this assessment and requirements, if now covered.

Generators are legally responsible for determining whether they produce hazardous waste. The penalties for noncompliance can be very severe, and may even include criminal liability. Hopefully, you have already made this determination, but if not you should do so as soon as possible. Your product liability and expensive litigation could be at risk along with the potential adverse impact on the environment.

For more information contact: Tom Lukish, Environmental Affairs - Fibers, 999-5576 or Wayne Martin, Regulatory Affairs - Polymer Products, 773-6587.

Table 2
Maximum Concentration of Contaminants for the
Toxicity Characteristic (TCLP)

EPA HW Number	Contaminant	CAS Number	Regulatory Level (mg/l)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon Tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0
D023	o-Cresol	95-48-7	200.0
D024	m-Cresol	108-39-4	200.0
D025	p-Cresol	106-44-5	200.0
D026	Cresol		200.0
D016	2,4-D	94-75-7	10.0
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethylene	75-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	0.13
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its hydroxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	0.13
D033	Hexachlorobutadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	5.0
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichlorethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

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