Last month, this column provided insight on the Resource Conservation and Recovery Act (RCRA) rules that cause solid waste to be defined as “hazardous” because it exhibits a particular characteristic. As a brief review, RCRA identifies four characteristics of hazardous waste: ignitability, corrosivity, reactivity, and toxicity. This month, we examine more closely the “ignitability” characteristic.

**THE IGNITABILITY CHARACTERISTIC**

A solid waste exhibits the ignitability characteristic of hazardous waste—and is assigned U.S. Environmental Protection Agency (EPA) Hazardous Waste Number D001, as defined in 40 CFR 261.21—if it meets any of the following criteria:

- Liquid (other than an aqueous solution containing less than 24% alcohol by volume; more on this below) with a flash point of less than 60 °C (140 °F).
- Solid and capable of causing fire, under standard temperature and pressure, through friction, absorption of moisture, or spontaneous chemical changes, and when ignited, burns so vigorously and persistently that it creates a hazard.
- Ignitable compressed gas (as defined in 49 CFR 173.300 and as determined by approved test methods).
- Oxidizer (as defined in 49 CFR 173.151).

The exclusion of aqueous solutions containing less than 24% alcohol by volume is intended to exempt alcoholic beverages and certain latex paints that exhibit low flash points due to their alcohol content, but do not sustain combustion because of their high water content. The exclusion is not limited to mixtures of water and alcohol. For example, if a liquid contains 77% water, 13% alcohol, 10% of another nonalcoholic liquid component, and has a flash point of less than 60 °C, it is not considered “ignitable.”

Examples of potentially ignitable wastes include

- glues, resins, and epoxies;
- solvents (nonlisted);
- paints, stains, and varnishes (see exclusion above);
- pharmaceuticals (the exclusion above can factor here as well);
- shop rags;
- empty propane cylinders (nonvented); and
- calcium hypochlorate (70% chlorine substance).

**TEST METHODS**

When it comes to performing analytical tests, the test methods are specified in RCRA with the following caveat: “...or equivalent test methods approved by the [EPA] Administrator.”

**Tip:** An aqueous solution, as defined by EPA, contains at least 50% water. This is consistent with U.S. Department of Transportation regulations.
The test methods pertain not only to the analytical tests themselves, but also to the sample collection methods. It is very important that a “representative sample” be used for a waste determination. If the material is not homogeneous (and in the real world, rarely is a waste stream homogeneous), then a sample should be collected from multiple locations to accurately depict the variability of the material. However, obtaining a representative sample of a liquid, for example, can be a real issue, since the ignitable portion of a liquid often floats. Also, consider the large amount of waste that does not constitute a consistent mixture of hazardous and nonhazardous components. It is critical, therefore, to use sampling techniques that collect a representative sample of the waste to be tested, so that any “hot spots” in the waste don’t inadvertently cause an erroneous classification. From an analytical standpoint, the ignitability test is fairly straightforward and is detailed in *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods* (EPA-SW-846). However, false positives can and do occur. One potential problem relates to the high sulfur content in some waste samples that results in a lower-than-expected flash point. If high sulfur content is suspected—or unknown, as is sometimes the case when handling old waste drums—it is advisable to run additional analyses to properly characterize the waste material. To find the best solutions to these problems, look to good environmental practices.

**Tip:** Avoid mixing potentially hazardous and nonhazardous waste. If the hazardous component causes the entire waste mixture to be classified as “hazardous,” then handling, transportation, and disposal costs increase significantly.

**A WORD OF WARNING**

RCRA is a large and encompassing regulation and the classification and determination of waste materials entails a large number of factors including whether or not the waste is a listed waste, mixed with other potentially regulated waste, and if there is a possibility of “delisting” the waste from regulation. Meeting or not meeting the ignitability test—or, for that matter, any regulatory trigger—will involve determining the source of the waste material (including if it has been mixed with other waste material) and the waste material’s chemical makeup and physical properties.

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