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2. "Aqueous" as Applied to the Corrosivity Characteristic

According to 40 CFR §261.22, a solid waste exhibits the characteristic of corrosivity if it has either of the following properties:

- It is aqueous and has a pH less than or equal to 2.0 or greater than or equal to 12.5 (§261.22(a)(1))
- It is a liquid which corrodes steel at a rate greater than 6.5 mm (0.250 inch) per year (§261.22(a)(2)).

Many aqueous wastes are liquids. Must aqueous liquid wastes be evaluated for both pH and rate of steel corrosion?

While nonaqueous liquids need only be tested using the steel corrosion test, aqueous liquids must be evaluated for both pH and rate of steel corrosion. If an aqueous liquid has a pH less than or equal to 2.0 or greater than or equal to 12.5, or corrodes steel at a rate greater than 6.35 mm per year, it is regulated as a corrosive waste (D002). Therefore even if an aqueous liquid passes the §261.22(a)(1) pH test (pH greater than 2.0 and less than 12.5), if it corrodes steel at a rate greater than 6.35 mm per year, it exhibits the characteristic of corrosivity.

According to the background document for this characteristic, Corrosivity Characteristic: Identification and Listing of Hazardous Waste Under RCRA Subtitle C, Section 3001, an aqueous waste with a pH between 2.0 and 12.5 may, under certain conditions, corrode steel at a rate greater than 6.35 mm per year. Several factors influence the rate of metal corrosion. In addition to pH, other important factors include temperature, metal(s) involved, and aeration and composition of the corrosive medium. The background document indicates that although alkaline solutions, in practice, do not severely damage steel, " . . . a corrosive material with a pH

less than 4.0 will cause iron to dissolve rapidly." In other words, although an aqueous waste in liquid form that has a pH between 2.0 and 4.0 (i.e., an acidic solution) passes the pH test, the waste may nonetheless fail the steel corrosion test and be regulated as a corrosive (D002) hazardous waste.

Although there is no regulatory definition of the term "aqueous," for purposes of the corrosivity characteristic an aqueous waste is defined as a waste for which pH is measurable. Since not all liquid wastes are in a form amenable to pH measurement, this operational definition of aqueous implies that the presence or absence of measurable dissociated hydrogen ions divides the universe of liquid wastes into two mutually exclusive categories: aqueous and nonaqueous. While all liquid wastes must be evaluated for rate of steel corrosion, those liquid wastes classified as aqueous are subject to both the pH and steel corrosion tests. The background document explains that those who generate or manage a waste can best determine whether it is in a form suitable for pH measurement, and therefore an aqueous waste requiring the pH test.

This working definition of aqueous means that aqueous wastes can be in nonliquid form. Suspensions, soils, or gels for which pH is measurable are examples of aqueous nonliquids. The background document for the corrosivity characteristic states that during a pH determination, the form of the waste should be taken into account. As nonaqueous liquids are subject to the steel corrosion test only, aqueous nonliquids only require evaluation for pH. Therefore, by definition, an aqueous nonliquid with a pH greater than 2.0 and less than 12.5 cannot be regulated as D002, since §261.22(a)(2) applies only to liquids that corrode steel.

The operational definition of aqueous for the characteristic of corrosivity differs from the meaning of aqueous as the term applies to the ignitability characteristic. Under §261.21(a)(1), aqueous solutions containing less than 24 percent alcohol by volume are excluded from regulation as ignitable liquids. In an Internal Agency memorandum clarifying this exclusion, an aqueous solution is defined as a solution which contains at least 50 percent water by weight. Applying this 50 percent water stipulation to define "aqueous" in the context of §261.22(a)(1) is inappropriate. Instead, for purposes of the corrosivity characteristic, aqueous means in a form amenable to pH measurement.