



Measuring pH of a Hazardous Waste Spill

Description

In 1976, the United States Congress passed the Resource Conservation and Recovery Act (RCRA). The purpose of the program is to protect human health and the environment from inadequate hazardous waste management practices. Hazardous waste consists of solid or liquid materials that demonstrate a characteristic of either ignitability, corrosivity, reactivity, or toxicity, and is listed by the U.S. Environmental Protection Agency (USEPA) in the Code of Federal Regulations, Title 40, Part 261 (40 CFR 261). Such materials deemed hazardous to public health are common byproducts of a variety of industries, such as laboratories, dry cleaners, manufacturing, and photographic and x-ray processors.

Federal and State laws require all generators of hazardous waste to properly handle, store, and dispose of waste to protect handlers and the environment. If a hazardous waste spill is no longer contained, the generator must contact and report it to local authorities and, if required, request assistance in clean up. Whether generator personnel or a professional company deals with the spill, pH is a chemical test that plays a vital role in the clean up procedure. If the spill is acidic or caustic, a neutralization reaction is employed to extinguish the immediate threat. Prior to and after neutralization, pH is measured to determine the required chemical additive and whether the neutralization was successful. A pH of 0 to 6 requires an alkaline addition while a pH of 9 to 14, an acidic one. Based on the discharge permit for the area, a waste with a pH between 6 and 9 is safe to dispose of conventionally, but as a general rule of thumb, the target pH is around 7, or neutral.

Application

A hazardous waste cleanup company visited a Hanna Instruments office in need of a pH meter. As part of their standard cleanup procedure, they were required to measure pH. They were currently using litmus paper, but were interested in upgrading to a more accurate system. The Inside Sales Consultant with the help of an Applications Engineer happily assisted the customer, and upon further inquiry into their application, recommended the HI98191 Professional Portable pH Meter in combination with either the supplied HI72911B Titanium Body pH Electrode or the HI1413B Flat Tip pH Electrode.

The **HI98191** pH meter provided them with incomparable accuracy to the litmus paper. The logging capability permitted the user to record data during a cleanup that could later be used for recording and litigation purposes. The HI98191 can hold up to 100 data points for log-on-demand that, when used with the included HI92000 software and micro USB cable, can be transferred to a PC. Furthermore, due to the nature of the materials the cleanup crew is exposed to, they are outfitted with safety gear that reduces dexterity and therefore, makes operating and navigating a typical meter difficult. The large, easy-to-press button design on the HI98191 stood up to the test, and was operable even in their safety gear.

The titanium body and flat tip bulb on the **HI72911B** pH electrode were ideal for the application due to the chemically resistant properties of the titanium and shallow testing sample needed for the flat tip bulb. However, in rare but often enough instances,

the depth of the spill was too shallow for even the HI72911B pH electrode, so in those circumstances, Hanna recommended using the **HI1413B** Flat Tip pH Electrode. The HI1413B electrode is more advantageous in those instances because of the open junction surrounding the flat tip. This type of junction, in combination with the flat tip, requires that the testing surface is only wetted and moist. In the end, the cleanup crew was more than satisfied with the newly updated technology, and was grateful for the efficient and friendly one-on-one service from Hanna Instruments.

