A178 Hazardous Materials and Environmental Crimes

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After attending this presentation, attendees will be informed about environmental forensic laboratory activities that support the U.S. EPA's criminal enforcement program.

This presentation will impact the forensic community by demonstrating the commonalities between environmental forensic laboratory operations and conventional forensic laboratory operations, and by identifying unique challenges in environmental forensics. It will also demonstrate that the U.S. EPA rigorously pursues knowing and willing violations of environmental laws that may have a substantial impact on human health, the environment, and the economy.

Three criminal cases will be reviewed to illustrate the selection and collection of physical evidence, laboratory examinations, criminal charges, and outcomes. These cases involve the improper removal of asbestos-containing materials from a school, the illegal disposal of 300 tons of chemicals, and the discharge of hazardous waste into a public sewer system which resulted in serious injury to a city employee. Legal challenges associated with environmental crime cases will also be presented.

Case #1 involves the use of dangerous practices to remove asbestos- containing materials (ACM) from a school. During and after the ACM removal, several hundred people were exposed to asbestos fibers. Evidence was collected from nearly 20 locations, and polarized light microscopy was used to identify and quantify asbestos fibers. Chrysotile asbestos was identified in most samples and was present at relatively high levels. Four individuals were charged with numerous violations of the Clean Air Act, Clean Water Act, Toxic Substances Control Act, and other charges including conspiracy, making false statements, and fraud.

Case #2 involves the mishandling of hazardous waste on an international level. In an attempt to dispose of surplus chemicals, a chemical brokerage business in the United States shipped numerous chemicals to an alleged buyer in Nigeria via Rotterdam. Upon arrival in Rotterdam, the Dutch government discovered that some of the containers were leaking. The purported Nigerian buyer could not be located, and in accordance with international law, the authorities did not permit the cargo to proceed to Nigeria. A team of investigators from the U.S. and the Netherlands collected evidence for two days. Materials sampled from drums were screened on site using portable X-ray fluorescence spectroscopy, acid/base indicators, and chemical spill classifiers. Laboratory examinations were pursued to evaluate the materials for hazardous waste characteristics as defined by the U.S. hazardous waste regulations. These characteristics included ignitability, corrosivity, and toxicity. The laboratory tests revealed that several samples exhibited the ignitability or toxicity characteristics. The owner of the chemical brokerage company was charged with storing hazardous waste in the US without a permit, exporting hazardous waste outside the US without the consent of the receiving country, and transporting hazardous waste without manifests to un-permitted facilities.

Case #3 involves hazardous materials that were discharged into a public sewer system. An electroplating company used acids, bases, metal-containing solutions, and other hazardous chemicals in their production processes. The company attempted to treat their waste in a manner that overburdened their in-house treatment system which rendered the system ineffective. They diluted waste before discharging in an attempt to keep pollutants below permit limits and hired a company to flush their sewage lines to remove chemical sludge blockages resulting from dumping waste into the sewer system. Investigators collected evidence from the sewer and drain lines, pretreatment units, and process tanks to determine if the company violated its pretreatment permit. Several months after the investigation began, there was an incident involving a city employee who was seriously injured from exposure to hazardous vapors while monitoring the wastewater effluent from the company. After this incident, additional evidence was submitted to the environmental forensics laboratory. Other evidence collected during the search warrant execution provided chemical data used during case development. The company and the operations manager were charged with conspiracy to violate the Clean Water Act, making false statements, and negligent violation of the Clean Water Act.

These criminal cases are typical examples of environmental crimes pursued by the U.S. EPA. The Agency also pursues criminal enforcement of environmental laws involving drinking water, pesticides, importation and exportation of chemicals such as freons, and the release of hazardous chemicals on land and into the atmosphere.

Environmental Forensics, Environmental Crimes, Hazardous Materials

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