



“Hazardous” Terminology

BACKGROUND: A number of terms (e.g., “hazardous chemicals,” “hazardous materials,” “hazardous waste,” and similar nomenclature) refer to substances that are subject to regulation under one or more federal environmental laws. State laws and regulations also provide additional, similar, or identical terminology that may be confused with the federally defined terms. Many of these terms appear synonymous, and it is easy to use them interchangeably. However, in a regulatory context, inappropriate use of narrowly defined terms can lead to confusion about the substances referred to, the statutory provisions that apply, and the regulatory requirements for compliance under the applicable federal statutes. This Information Brief provides regulatory definitions, a brief discussion of compliance requirements, and references for the precise terminology that should be used when referring to “hazardous” substances regulated under federal environmental laws. A companion CERCLA Information Brief (EH-231-004/0191) addresses “toxic” nomenclature.

STATUTES: Occupational Safety and Health Act (OSHA); Hazardous Materials Transportation Act (HMTA), Sect. 1802; Clean Water Act (CWA), Sect. 311; Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Sect. 103; Title III, Superfund Amendments and Reauthorization Act (SARA), Sect. 304; Resource Conservation and Recovery Act (RCRA), Sect. 1004; Clean Air Act (CAA), Sect. 112; and Toxic Substances Control Act (TSCA), Sect. 7.

REGULATIONS: 29 CFR 1910, Subpart Z; 49 CFR 172.101; 40 CFR 117.3; 40 CFR 302.4; 40 CFR 355, Appendices A & B; 40 CFR 261; and 40 CFR 61.01(a).

REFERENCE DOE Environmental Guidance Program Reference Books on RCRA, CERCLA, HMTA, CWA, CAA, and TSCA.

What is a “hazardous chemical”?

Hazardous chemicals are found in the workplace, and under OSHA their use may be regulated, or worker protection standards may apply.

Under 29 CFR 1910, Subpart Z, “hazardous chemicals” are defined as “any chemical which is a physical hazard or a health hazard.” Physical hazards include combustible liquids, compressed gases, explosives, flammables, organic peroxides, oxidizers, pyrophorics, and reactives. A health hazard is any chemical for which there is good evidence that acute or chronic health effects occurs in exposed employees. Hazardous chemicals include carcinogens; toxic or highly toxic agents; reproductive toxins; irritants; corrosives; sensitizers; hepatotoxins; nephrotoxins; neurotoxins; agents that act on the hematopoietic system; and agents that damage the lungs, skin, eyes, or mucous membranes.

The Occupational Safety and Health Administration’s Hazard Communication Standard requires manufacturers and importers to evaluate the hazards associated with chemicals and communicate this information to users of these chemicals. This communication takes two forms. First, a material safety data sheet (MSDS) is supplied with each chemical manufactured or imported. Second, the familiar four-color diamond label with special warnings for health (blue), fire (red), reactivity (yellow), and cancer (white) hazards is placed on the hazardous chemical container. Under the OSHA regulations, hazardous chemicals are regulated in the workplace either through the setting of permissible exposure limits (PELs); threshold limit values (TLVs); or through requirements for worker training, safe work practices, labeling, ventilation, proper storage, or worker protective equipment.

What is a “hazardous material”?

Hazardous materials are transported intrastate, interstate, and internationally through commerce.

The term “hazardous material” has been defined under Sect. 1802 of HMTA as “a substance or material in a quantity and form which may pose an unreasonable risk to health and safety or property when transported in commerce.” Transport of hazardous materials requires shipping papers, descriptions of the materials,

manifests for hazardous materials that are also RCRA hazardous wastes (*see below*), shipper’s certification, marking, placarding, and proper packaging. Special requirements apply for transportation by rail (49 CFR 174), aircraft (49 CFR 175), vessel (49 CFR 176), and public highway (49 CFR 177). There are also specifications for shipping containers (49 CFR 178), tank cars (49 CFR 179), and maintenance of shipping packaging (49 CFR 180). OSHA regulations in 29 CFR 1910, Subpart H, detail how hazardous materials should be stored after they are transported.

A Hazardous Materials Table that has more than 16,000 entries is found at 49 CFR 172.101. The Table includes explosives, oxidizing materials, corrosives, flammables, gases, poisons, radioactive substances, and agents capable of causing disease. Requirements for labeling, packaging, and shipping are given in the Table. An Appendix to 49 CFR 172.101 lists reportable quantities (RQs) for those hazardous materials that are also CERCLA hazardous substances (*see below*) [Due to revisions to HMTA, DOT will promulgate revised regulations in 1991, this Information Brief will then be updated].

What is a “hazardous substance”?

A hazardous substance is any substance that when released to the environment in an uncontrolled or unpermitted fashion becomes subject to the reporting and possibly response provisions of the CWA and CERCLA.

Section 311(b)(2)(A) of the CWA requires the designation of “hazardous substances” that when discharged into or upon navigable waters of the United States are subject to certain reporting and response requirements (*see CERCLA Information Brief EH-231-001/0490*). These hazardous substances and their corresponding RQs are listed at 40 CFR 117.3. An RQ is a threshold quantity such that when a release of a hazardous substance equals or exceeds the RQ, the release must be reported to the National Response Center in Washington, DC.

Section 101(4) of CERCLA expands the universe of hazardous substances and has its own reporting and response requirements when a release to any environmental medium exceeds an RQ. CERCLA defines a hazardous substance as:

- any substance designated under Sect. 311(b)(2)(A) of the CWA;
- any element, compound, mixture, solution, or substance designated as hazardous pursuant to Sect. 102 of CERCLA;
- any listed or characteristic RCRA hazardous waste;
- any toxic pollutant listed under Sect. 307(a) of the CWA;
- any hazardous air pollutant listed under Sect. 112 of the CAA; and
- any imminently hazardous chemical substance or mixture subject to Sect. 7 of TSCA.

A list of CERCLA hazardous substances and corresponding RQs is found in 40 CFR 302.4. All CWA Sect. 311 hazardous substances are also CERCLA hazardous substances, but not vice versa (the 40 CFR 302.4 list is larger than the 40 CFR 117.3 list). RQs under the two lists are supposed to be equivalent.

What is an “extremely hazardous substance”?

Extremely hazardous substances are certain CERCLA hazardous substances that when released at levels above RQs require emergency notification of local and state emergency response authorities because of the potential for serious irreversible health effects.

The term “extremely hazardous substance” is found in Sect. 302 of Title III of SARA, and over 300 substances are listed in Appendix A (alphabetical order) or Appendix B (CAS number order) to 40 CFR 355. EPA defines extremely hazardous substances as “substances which could cause serious irreversible health effects from accidental releases” and are “most likely to induce serious acute reactions following short term exposure” (51 FR 41570 & 41573, November 17, 1986). These substances have a median lethal concentration (LC₅₀) value ≤ 50 mg/kg of body weight, or an oral median lethal dose (LD₅₀) value ≤ 25 mg/kg of body weight. All SARA Title III extremely hazardous substances are also CERCLA hazardous substances, but RQs for a substance may be different under the two lists.

What is a “hazardous waste”?

A hazardous waste is a solid waste that must be treated, stored, transported, and disposed of in accordance with applicable requirements under Subtitle C of RCRA.

Section 1004(5) of RCRA defines “hazardous waste” as “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.” “Solid wastes” include garbage, refuse, sludge from waste or water treatment plants or air pollution control facilities, and other discarded material, including solid, liquid, semisolid, or gaseous material from industrial, commercial, mining, agricultural operations, and community activities. Solid wastes **do not** include solid or dissolved material in domestic sewage; irrigation return flows; industrial discharges permitted under Sect. 402 of the CWA; or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 [AEA, Sect. 1004(5)]. In the implementing regulations for RCRA at 40 CFR 261, Subpart C, **characteristics** of hazardous wastes are identified as ignitable, corrosive, reactive, or toxic. Over 400 hazardous wastes are **listed** at 40 CFR 261, Subpart D. These wastes are divided into three categories: hazardous wastes from non-specific sources (40 CFR 261.31); hazardous wastes from specific sources (40 CFR 261.32); and discarded commercial chemical products, off-specification species, container residues, and spill residues (40 CFR 261.33).

All RCRA Subtitle C hazardous wastes are also CERCLA hazardous substances (see above).

What is an “acute hazardous waste”?

Acute hazardous wastes are certain RCRA hazardous wastes that are subject to stringent quantity standards for accumulation and generation.

In RCRA’s implementing regulations at 40 CFR 261, Subpart D, certain wastes are designated as “acute hazardous wastes” with a Hazard Code of “(H)” [40 CFR 261.30(b)]. These wastes include all “P” series listed wastes (Waste Codes beginning with the letter “P”) and F020, F021, F022, F023, F026, and F027 listed wastes. In general, acute hazardous wastes are subject to more stringent accumulation and generation requirements than other types of hazardous wastes. For example, a generator may accumulate as much as 55 gallons of a non-acute hazardous waste without a permit; however, only one quart of an acute hazardous waste is allowed this exemption [40 CFR 262.34(c)(1)].

What is a “hazardous waste constituent”?

A hazardous waste constituent is the specific substance in a hazardous waste that makes it hazardous and, therefore, subject to regulation under Subtitle C of RCRA.

The term “hazardous waste constituent” is defined at 40 CFR Part 260.10 as “a constituent that caused the [EPA] Administrator to list the hazardous waste in Part 261, Subpart D, of this chapter, or a constituent listed in Table 1 of Part 261.24 of this chapter.” However, the presence of a hazardous constituent in a waste does not automatically make it a “hazardous waste” subject to RCRA. Hazardous constituents are listed in Appendix VIII to 40 CFR 261. Under Part 264, Subpart F, groundwater monitoring is required for hazardous constituents listed in Appendix IX to 40 CFR 261 to detect releases from land-based units.

What is an “imminently hazardous chemical substance or mixture”?

An imminently hazardous chemical substance or mixture is subject to regulation under TSCA for its manufacture, distribution in commerce, and use.

Section 7 of TSCA authorizes EPA to commence civil actions regarding “imminently hazardous chemical substances or mixtures”. These are defined as “a chemical substance or mixture which presents an imminent and unreasonable risk of serious or widespread injury to health or the environment.” A risk is considered imminent if the unregulated manufacture, processing, distribution in commerce, use, or disposal of the substance or mixture is likely to result in injury to health or the environment.

There is no “list” of imminently hazardous chemical substances or mixtures. EPA currently regulates polychlorinated biphenyls (PCBs), fully halogenated chlorofluoroalkanes, asbestos, and hexavalent chromium under Sect. 6 of TSCA.

What is a “hazardous air pollutant”?

A hazardous air pollutant is a substance anticipated to cause either mortality or serious illness when released; therefore, its release to the air is regulated under the CAA.

Under the CAA, National Emission Standards for Hazardous Air Pollutants (NESHAPs) are established. Section 112(a) defines the term as “an air pollutant to which no ambient air quality standard is applicable and which in the judgment of the [EPA] Administrator causes, or contributes to, air pollution which may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness.” The eight hazardous air pollutants — asbestos, benzene, beryllium, coke oven emissions, inorganic arsenic, mercury, radionuclides, and vinyl chloride — are listed at 40 CFR 61.01(a). EPA is considering the addition of chromium from industrial cooling towers, cadmium, and hazardous organics and organic solvent cleaners. Bills currently in the House and Senate propose to add 191 additional hazardous air pollutants.

Questions of policy or questions requiring policy decisions will not be dealt with in EH-231 Information Briefs unless that policy has already been established through appropriate documentation. Please refer any questions concerning the subject material covered in this Information Brief to Jane Powers, RCRA/CERCLA Division, EH-231, 202-586-7301.