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How many different types of hazardous waste combustors are there?

40 CFR Part 63, Subpart EEE regulates six different types of hazardous waste combustors. As you can see from the definition below, it is often convoluted as to which category a particular unit falls into. These definitions are taken from 40 CFR 63.1201 and 40 CFR 260.10.

Hazardous waste solid fuel boiler means a boiler defined under § 260.10 of this chapter that burns a solid fuel and that burns hazardous waste at any time. 40 CFR 260.10 defines a boiler as an enclosed device using controlled flame combustion and having the following characteristics:

- (1)
 - (i) The unit must have physical provisions for recovering and exporting thermal energy in the form of steam, heated fluids, or heated gases; and
 - (ii) The unit's combustion chamber and primary energy recovery sections(s) must be of integral design. To be of integral design, the combustion chamber and the primary energy recovery section(s) (such as waterwalls and superheaters) must be physically formed into one manufactured or assembled unit. A unit in which the combustion chamber and the primary energy recovery section(s) are joined only by ducts or connections carrying flue gas is not integrally designed; however, secondary energy recovery equipment (such as economizers or air preheaters) need not be physically formed into the same unit as the combustion chamber and the primary energy recovery section. The following units are not precluded from being boilers solely because they are not of integral design: process heaters (units that transfer energy directly to a process stream), and fluidized bed combustion units; and
 - (iii) While in operation, the unit must maintain a thermal energy recovery efficiency of at least 60 percent, calculated in terms of the recovered energy compared with the thermal value of the fuel; and
 - (iv) The unit must export and utilize at least 75 percent of the recovered energy, calculated on an annual basis. In this calculation, no credit shall be given for recovered heat used internally in the same unit.

- (Examples of internal use are the preheating of fuel or combustion air, and the driving of induced or forced draft fans or feedwater pumps); or
- (2) The unit is one which the Regional Administrator has determined, on a case-by-case basis, to be a boiler, after considering the standards in §260.32.

Hazardous waste liquid fuel boiler means a boiler defined under § 260.10 of this chapter that does not burn solid fuels and that burns hazardous waste at any time. Liquid fuel boiler includes boilers that only burn gaseous fuel.

Hazardous waste hydrochloric acid production furnace mean a halogen acid furnace defined under § 260.10 of this chapter that produces aqueous hydrochloric acid (HCl) product and that burns hazardous waste at any time. 40 CFR 260.10 defines a halogen acid furnace as follows.

Industrial furnace means any of the following enclosed devices that are integral components of manufacturing processes and that use thermal treatment to accomplish recovery of materials or energy:

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- (12) Halogen acid furnaces (HAFs) for the production of acid from halogenated hazardous waste generated by chemical production facilities where the furnace is located on the site of a chemical production facility, the acid product has a halogen acid content of at least 3%, the acid product is used in a manufacturing process, and, except for hazardous waste burned as fuel, hazardous waste fed to the furnace has a minimum halogen content of 20% as-generated.

Hazardous waste incinerator means a device defined as an incinerator in § 260.10 of this chapter and that burns hazardous waste at any time. For purposes of this subpart, the hazardous waste incinerator includes all associated firing systems and air pollution control devices, as well as the combustion chamber equipment. 40 CFR 260.10 defines an incinerator as any enclosed device that:

- (1) Uses controlled flame combustion and neither meets the criteria for classification as a boiler, sludge dryer, or carbon regeneration unit, nor is listed as an industrial furnace; or
- (2) Meets the definition of infrared incinerator or plasma arc incinerator.

Hazardous waste burning cement kiln means a rotary kiln and any associated pre-heater or pre-calciner devices that produce clinker by heating limestone and other materials for subsequent production of cement for use in commerce, and that burns hazardous waste at any time.

Hazardous waste lightweight aggregate kiln means a rotary kiln that produces clinker by heating materials such as slate, shale and clay for subsequent production of lightweight aggregate used in commerce, and that burns hazardous waste at any time.

In addition to the types of hazardous waste combustors regulated under 40 CFR Part 63, Subpart EEE, there are still a few hazardous waste combustion units still regulated under the Resource Conservation and Recovery Act (RCRA).

Sulfuric acid regeneration facilities that burn spent sulfuric acid and sulfur bearing hazardous wastes or hazardous waste fuels to produce sulfuric acid continue to be regulated under 40 CFR Part 266, Subpart H. In addition, there are still a few hazardous waste incinerators that operate under 40 CFR Part 264, Subpart X (miscellaneous units). However, the vast majority of hazardous waste combustors operate under EEE.