

Technical Bulletin

USEPA Regulations for Industrial, Commercial, and Institutional Boilers

The U.S. Environmental Protection Agency (USEPA) established regulations under the National Emission Standards for Hazardous Air Pollutants (NESHAPs) affecting boilers and process heaters (Boiler NESHAP).

The goal of the Boiler NESHAP is to reduce hazardous air pollutants (HAPs) from fuel combustion, including mercury, hydrogen chloride, and particulate matter. Boilers burn fuels such as natural gas, coal, wood, and oil, among others, to produce steam or hot water. The steam or hot water is used to produce electricity or provide heat or process water. Process heaters heat raw or intermediate materials during an industrial process.

A wide range of industries, as well as commercial and institutional operations (e.g., malls, hospitals, local government), may have to meet the Boiler NESHAP. The rule has a range of applicability combinations, which depend on multiple variables. The first variable is whether or not a facility emits a high level of HAPs, which is called “major source” and means the facility emits over 10 tons per year of a single HAP or over 25 tons per year of cumulative HAPs. Many smaller entities like hospitals, churches and greenhouses generally do not emit significant HAPs, and so would not be considered a “major” source of HAPs. If facilities are not a major source, then they fall into the “area source” category.

The rule further breaks down categories by boiler design, size, and/or fuels. Boiler size is categorized into two groups: (1) those with at least 10 million BTU per hour (mmBTU/hr) heat input are called “large” boilers; and (2) those less than 10 mmBTU/hr

are called “small” boilers. Also, units less than 5 mmBTU/hr may have less stringent requirements for certain fuels. Fuels are generally grouped by solid (e.g., coal and biomass), oil, and gaseous fuels. For major sources, gaseous fuels are further separated into clean gas versus process gas that is ‘not clean’. Clean gas includes natural gas and other gaseous fuels that meet specifications for mercury content similar to natural gas.

In addition to those categories, new units will have more stringent standards than existing units. For this rule, anything installed after June 4, 2010 is considered new.

The requirements for each category in the Boiler NESHAP are too complex to explain in this bulletin, but a basic summary for each is provided. In addition, applicable exemptions are described as well.

Exemptions from Boiler NESHAP

At area sources, all natural gas fired boilers and process heaters are **exempt** from the rule requirements. It is important to note that a dual fuel boiler, where natural gas is the primary fuel and oil is solely for emergency back-up, can be categorized as a natural gas boiler. There is no limit on the amount of oil used in an emergency to retain the natural gas definition, but testing on oil may not exceed 48 hours in a year.

Any residential location with no more than four units or a multi-use building (combined residential and commercial or institutional) where the boiler is solely used to heat the residential space, is exempt. Also, hot water heating, whether natural gas or liquid fuel, is exempt in units up to 1.6 mmBTU/hour.

Standards for New, Large Boilers

At a major source, a new, large boiler burning clean gas or operating as a limited use unit will only have to perform a periodic tune-up. A new, large boiler at a major source burning solid fuel, oil, or ‘not-clean’ process gas will have numerical emission limits for mercury (Hg), particulate matter (PM), or total selected metals (TSM), hydrogen chloride, (HCl), and carbon monoxide (CO). Compliance with emission limits may mean installing controls. For dioxins/furans (D/F), they only have annual tune-up requirements.

At an area source, a new, large boiler burning coal will have to meet numerical emission limits for Hg, PM, and CO. The same boiler burning biomass or oil will only have a PM emission limit and will be required to conduct a periodic tune-up.

Standards for Existing, Large Boilers

At a major source, an existing, large boiler will have similar limits to meet as for new, large boilers, although the numerical limits will be more restrictive for the new units. In addition, existing units will need to have a one-time energy assessment conducted. The energy assessment process is described in more detail below.

For an area source, an existing large boiler burning coal will have to meet emission limits for Hg and CO. The same boiler burning biomass or oil will only be required to conduct periodic tune-ups.

Standards for All Small Boilers

At both major and area sources, new and existing small boilers will have to conduct a periodic tune-up. The exception is natural gas boilers at area sources, which are exempt.

Energy Assessment

All existing large and small boilers at major sources will need to be included in a one-time, facility-wide energy assessment.

The intent of the energy assessment in the Boiler NESHAP is to identify cost-effective energy conservation measures across all energy use systems at the facility. The assessment must be conducted by a qualified energy assessor, which is defined in the rule. A detailed assessment protocol is also outlined.

Compliance Demonstration

Compliance demonstration methods will differ depending on whether a boiler must meet an emission limit or a work practice standard (tune-up, energy assessment).

Those required to conduct a tune-up will have to maintain a checklist of work completed and submit a compliance report.

Compliance with emission standards must be demonstrated through stack testing. Some units must also install continuous monitors for ongoing compliance demonstration. Records must be maintained for each parameter monitored.

Each requirement must be addressed in a Notification of Compliance Status that is submitted to the appropriate delegated agency.

How SCS Can Help

SCS can assist owners assess how state and federal regulations apply to their facility. We also provide our clients with the expertise to prepare the required documentation, including notices, monitoring summaries, and permit applications, if needed. In addition, our energy management group is prepared to assist with energy audits under this rule.

For more information, please contact:

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