

vary in composition by location. Coal analysis data obtained from the electric utility industry in another rulemaking contained information on the mercury, chlorine, and ash content of various coals. A preliminary review of this data indicate that the composition can vary greatly from location to location, and also within a particular location. Based on the range of variation of mercury, chlorine, and ash content in coal, it is possible for a unit with a lower performing control system to have emission levels lower than a unit considered to be included in the best performing 12 percent of the units.

This situation is reflected in the emissions information used to set the MACT floor emission limits. In some instances there are boilers with ESP or other controls that achieve similar, or lower, outlet emission levels of non-mercury metallic HAP, PM, or mercury than fabric filters. In most cases, this is due to concentrations entering these other control devices being lower, even though the percent reduction achieved is lower than fabric filters.

Additionally, the design of some control devices may have a substantial effect on their emissions reductions capability. For example, fabric filters are largely insensitive to the physical characteristics of the inlet gas stream. Thus, their design does not vary widely, and emissions reductions are expected to be similar (e.g. 99 percent reduction of PM). However, ESP design can vary significantly. Some ESP are two fields, others may have three or four. The more fields the larger the emissions reductions for PM. Similarly, other devices can be designed to achieve higher emissions reductions. This level of detail was not available for the information used to develop the MACT floor emission limits.

Consequently, since fuel substitution has been determined not to be an appropriate MACT floor control technology, EPA still considers the fabric filter to be the best performing control for non-mercury metallic HAP, PM, and mercury and only emissions information for fabric filters was used to develop emission limits.

For existing unit subcategories where less than 12 percent of units in the subcategory use any type of control technology, we could not use the same approach to identify the average level of control achieved by the top 12 percent. Therefore, we looked to see if we could estimate the central tendency of the best controlled units by looking at the median unit of the top 12 percent (the unit at the 94th percentile). Under such circumstances, if the median unit of the top 12 percent is using some control

technology, we might use the measured emission performance of that individual unit as the basis for estimating an appropriate average level of control of the top 12 percent. For subcategories where even the median unit is using no control technology, the average control of the top 12 percent of units is no emissions reductions.

A detailed discussion of the MACT floor methodology is presented in the memorandum "MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers and Process Heaters National Emission Standards for Hazardous Air Pollutants" in the docket.

1. Existing Solid Fuel Boilers and Process Heaters

a. Large Units—Heat Inputs Greater than 10 MMBtu/hr. The most effective control technologies identified for removing non-mercury metallic HAP and PM are fabric filters. About 14 percent of solid fuel-fired boilers and process heaters use fabric filters. Because greater than 12 percent of units in the category use this technology, and because there are no options reasonably available for reducing HAP emissions other than add-on control, we consider sources with fabric filters to be the best controlled sources in this subcategory for purposes of metallic HAP and PM emissions. Thus, it is appropriate to use the measured performance of sources with fabric filters as the basis for establishing the MACT floor for non-mercury metallic HAP and PM for existing boilers and process heaters in this subcategory.

As described earlier, a PM level is set as a surrogate for non-mercury metallic HAP. The MACT floor emission level based on PM test data from the solid fuel units with fabric filters representing the top 12 percent, and incorporating operational variability (using results from multiple tests on best performing units), is 0.07 lb PM/MMBtu. We are also providing an alternative metals limit of 0.001 lb metals/MMBtu which can be used to show compliance in cases where metal HAP emissions are low in proportion to PM emissions. This is because, according to the emissions database, some biomass units have low metals content but high PM emissions. The emission level for metals was selected from metals test data associated with PM emission tests from fabric filters that met the MACT floor PM emission level.

The most effective control technologies identified for removing inorganic HAP that are acid gases, such as HCl, are wet scrubbers and packed bed scrubbers. These technologies are

used by about 13 percent of the boilers and process heaters in the large solid fuel subcategory. About 12 percent of solid fuel-fired boilers and process heaters use wet or dry scrubbers, and approximately 1 percent use packed bed scrubbers.

Because greater than 12 percent of units in the category use this technology, and because there are no options reasonably available for reducing HAP emission other than add-on control, we consider sources with wet or dry scrubbers and packed bed scrubbers to be the best controlled sources in this subcategory for purposes of inorganic HAP emissions. Thus, it is appropriate to use the measured performance of sources with wet or dry scrubbers and packed bed scrubbers as the basis for establishing the MACT floor for inorganic HAP for existing boilers and process heaters in this subcategory. The MACT floor emission level based on HCl emissions test data from units using wet or dry scrubbers and packed bed scrubbers representing the top 12 percent, and incorporating operational variability, is 0.09 lb HCl/MMBtu.

Based on test information on utility boilers, we have concluded that fabric filters are the most effective technology for controlling mercury emissions. As discussed previously, approximately 14 percent of sources in the subcategory use fabric filters. The MACT floor emission level for mercury, based on the measured performance of units with fabric filters representing the top 12 percent, and incorporating operational variability, is 0.000007 lb mercury/MMBtu.

Although EPA used information from utility boilers to conclude that fabric filters are the most effective control technology for controlling mercury emissions, this same information suggests that different fuel characteristics (e.g. mercury and chlorine content of the fuel burned) can lead to both different outlet mercury (Hg) concentrations and different control efficiencies for equivalent control devices.¹ We have emissions test results for mercury emissions from seven industrial boilers and process heaters equipped with fabric filters. The Agency has information about the general type of fuel being burned during

¹ The speciation of mercury in the flue gas is believed to affect the amount of mercury captured by control devices. Mercury can be present in both vapor form (as insoluble elemental mercury and as soluble oxidized mercury (such as, mercury chloride)) and in particulate form. The capture of elemental mercury is reportedly more difficult than the capture of oxidized mercury or mercury in particulate form.