

numerical emission limitations unless it is infeasible, and we must prescribe requirements for continuous monitoring whenever possible. Moreover, we have battery stack emissions data for 16 batteries that cover many months of operation.

Comment: Two commenters claimed that EPA arbitrarily and improperly excluded critical COMS data. Specifically, 3 years of data were excluded for Battery 1 at Bethlehem Steel, Burns Harbor, and all of the data for U.S. Steel Gary Works were excluded. The commenter said that EPA excluded the Burns Harbor data because end flue repairs were suspended in 1994, but noted that twice as many end flue repairs were made in 1993 and after 1994 than in previous years. The commenter said that EPA excluded the Gary Works data because they do not represent periods of good systematic O&M. The commenter further stated that the data for two tall batteries at Gary Works should be included because they represent the battery's performance prior to a \$150 million program of end flue and through wall repair. There is no basis for excluding these data, and EPA must account for all operating periods (other than startups, shutdowns, and malfunctions) to accurately reflect a source's performance under the most adverse operating conditions over time. The commenter provided details on periods of startup, shut down, and malfunction events that occurred during 31 days of the 2 years of data for Gary Works. The commenter concluded that EPA must include all of the data for Battery 1 at Burns Harbor and the data for Gary Works (except for the 31 days they identified) in the MACT floor analysis. Another commenter asked that all of the data supplied for Battery 1 at Burns Harbor be included in the analysis because it represents consistent operating practices over the period.

Response: We strongly disagree that our exclusion of certain COMS data was inappropriate. The data that we did not use were not generated at a facility while it was implementing an effective O&M program. We explained that the data for Battery 1 at Burns Harbor collected in the early 1990's do not represent proper MACT level O&M because repairs were decreased to maintain production while adjacent Battery 2 was being rebuilt. The data clearly show that abandoning repairs increased opacity, which averaged 8.1 percent prior to 1996 and 4.8 percent afterwards. It is also apparent that the earlier data show high opacity spikes (daily averages of 35 to 40 percent) that are indicative of damaged oven walls and clearly show that good O&M

practices were not in place. By definition, good O&M means that the opacity spikes identified by the COMS would have been investigated, problems diagnosed, and repairs made. When repairs were resumed and better O&M procedures were followed, the daily average opacity was consistently maintained below 15 percent for subsequent months. We have 50 consecutive months of data for Battery 1 showing that it achieves the MACT emission limit on a continuing basis. In addition, these are the most recent data which indicate that the battery has improved with age rather than deteriorated with age. It is obvious that the measures taken in the early 1990s to maintain oven walls were not the same as those taken in subsequent years, and this has been confirmed by company data that show no end flue repairs in 1994.

A similar situation exists at U.S. Steel Gary Works. We obtained documentation from the company that shows that batteries were not employing good O&M during high opacity events. Equipment malfunction or untimely repair was the cause of most exceedances during that time period. However, subsequent events confirm that oven repairs and good systematic O&M resulted in batteries achieving the emission limit. After a \$150 million program of end flue and through wall repairs, the four batteries at Gary Works have improved performance significantly and can meet the battery stack limit. We have COMS data for 13 recent months that show the four batteries have achieved the MACT level of control. Moreover, these batteries also show improved performance rather than deterioration as they age.

Comment: One commenter stated that EPA's emission estimates for battery stacks are based on a flawed correlation between opacity and HAP. The commenter said that no correlation exists because high opacity can be caused by situations that do not indicate the presence of HAP, such as poor or incomplete combustion and the presence of sulfates. The commenter noted that the data from two EPA tests (ABC Coke and Bethlehem Steel, Burns Harbor) show no correlation between opacity and PAH, extractable organics, or metal HAP. The commenter concluded that EPA has not met its burden of demonstrating that opacity is a reasonable surrogate for HAP emissions.

Response: It is well established that opacity is directly correlated with the concentration of particles in emissions. Our tests have shown that the particles emitted during coke oven pushing

contain HAP compounds, including POM and metals. Higher opacities mean a higher concentration of particles and therefore higher concentrations of HAP. The correlation of opacity and HAP is also supported by the common industry practice of using COMS to detect leaks in oven walls. Coke oven gas escapes from ovens with cracked or damaged walls and results in increased battery stack opacity. These coke oven emissions that are detected with the COMS are a listed HAP.

The two batteries that we tested had very low opacities (2 to 5 percent), and it is not possible to develop a clear correlation over such a narrow range. The emissions from these well-controlled batteries are not representative of batteries that have high opacity emissions from their battery stacks.

Infrequently, higher opacity occurs because of combustion problems which result in the formation of products of incomplete combustion that also contain HAP. For example, such emissions contain a variety of PAH such as benzo(a)pyrene. All the available data related to poor performing batteries, including the available emissions data and the historical use of COMS to detect coke oven emissions, indicate that coke oven emissions can be appropriately identified by looking at opacity. Therefore, limiting opacity is an appropriate mechanism for limiting such emissions from coke oven battery stacks.

Comment: Two commenters stated that COMS should be used for diagnostic purposes only and not as an enforcement tool. One commenter cited an industry survey that identified 26 COMS used on 27 batteries and stated that they are used as a diagnostic tool. Most of these COMS are no longer commercially available and cannot meet EPA's PS 1 requirements. Consequently, it is inappropriate to use data generated by these COMS to set standards or to demonstrate compliance with an opacity limit. Another commenter also stated that the COMS do not meet PS 1 requirements and added that EPA should not base emission limits on data that were collected by methods less stringent than those that will be used to determine compliance. One commenter noted that there are demonstrated inaccuracies that make COMS unreliable at opacity levels below 10 percent. This is important because battery stack opacity is below 5 percent most of the time at virtually all batteries, so a large number of unreliable data points would be averaged with fewer reliable data points to calculate the daily average opacity. Another