

monitoring systems (CMS) in the by-product hydrogen, end box ventilation system, and mercury thermal recovery unit vent streams. According to the commenter, the types of control devices likely to be used for controlling mercury emissions from these streams (*i.e.*, carbon or molecular sieve units) have very good performance characteristics and are not likely to incur short-term upsets. The commenter noted that performance is subject to normal variations, and the ability of these systems to absorb mercury does degrade over time. The commenter stated that before emissions reach the permit limits due to reduced performance, the beds must be replaced. The commenter requested that in lieu of CMS, facilities should be allowed to rely on the known capability of the systems to operate reliably. The commenter stated that the Agency could delete the requirement for CMS without any real harm to the environment.

*Response:* In general, we disagree with the premise of the commenters' argument. The proposed rule would have required that continuous compliance for each vent be determined by monitoring mercury concentration as an operating limit. The measured concentrations would not have been used to compare directly with the emission limitations. Rather, they would have provided an indication that the control device was performing in a manner consistent with the operation during the initial performance test. Therefore, the proposed requirements to establish operating limits would have established emission limitations, or resulted in changing emission limits, based on the initial performance test.

However, we do acknowledge that there is a difference in a mercury concentration operating limit and an operating limit based on surrogate parameters because the mercury concentration is obviously a direct measure of mercury emissions. In fact, we agree with the point made by the one commenter that there is no need to rely on operating parameters when a direct measurement of emissions is being required.

As discussed at length in the proposal preamble (67 FR 44690), we considered requiring mercury continuous emission monitors (CEM) that would directly measure in units of the standard. Although monitoring that directly measures compliance is preferred, we decided to propose mercury concentration operating limits based on the uncertainties associated with the cost and reliability of the mercury monitoring devices. Commenters did not provide any information to alleviate

these concerns. In fact, they shared our basic concerns even if the monitoring devices were only used for operating limits.

We weighed the comments related to the mercury concentration operating limits against the concerns associated with using mercury concentration monitors as CEM. Our preference continues to be to require mercury CEM. With sufficient evaluation, analysis, and refinement, the industry will find these devices acceptable. However, we could not require these devices in the final rule without a fallback alternative if sources found that these monitoring devices were not acceptable for use within the industry.

During the development of the proposed standards, we learned that many mercury cell chlor-alkali facilities conducted periodic (*e.g.*, weekly, monthly) tests to determine the mercury content in vent streams. This is done to assess control device performance or, for the by-product hydrogen stream, to ensure product quality. These tests are not typically conducted using EPA-approved test methods, but are usually conducted using modified methods. Since this periodic testing is already being conducted at many mercury cell plants, we evaluated whether a continuous compliance option could be included in the final rule based on such periodic testing. Since such testing directly measures mercury emissions, we concluded that it would be an acceptable alternative to mercury CEM. The only question was how often such testing would be needed to ensure continuous compliance with the emission limitations. Daily testing would certainly be adequate, but we were concerned about the costs and burden associated with 365 tests each year for each process vent.

The most common final control device is (or will be) nonregenerative carbon adsorption. These fixed bed carbon devices can operate for long periods of time before a carbon change is needed. The carbon replacement frequency is often more than a year. Weekly testing would be more than sufficient to represent the emissions for the entire week and to indicate when breakthrough (*i.e.*, the point at which the carbon has become saturated with mercury emissions) is approaching. Because breakthrough does not occur instantaneously, but is slowly approached over time, weekly testing is sufficient to detect the point at which breakthrough is approaching.

However, there is the possibility that non-carbon devices such as condensers, absorbers, or regenerative molecular sieves could be used as the final control

device to comply with the emission limits in the final rule. Since improper operation of these devices could result in higher emissions for short periods, we had concerns about utilizing weekly testing for these devices. However, we concluded that if parametric monitoring of surrogate parameters (*e.g.*, condenser temperature) were conducted to ensure consistent and proper operation of these devices, weekly testing would be acceptable.

Therefore, the final rule includes two options for continuous compliance for the by-product hydrogen stream, the end box ventilation system vent, and the mercury thermal recovery unit vent. The first option is continuous emissions monitoring using a mercury continuous emissions monitoring system. The second is periodic testing using Method 101, 101A, or 102 or an approved alternative method. Specifically, this second option requires that at least three acceptable test runs be conducted each week. As part of the periodic testing option, if the final control device is not a nonregenerative carbon adsorber, surrogate parameter monitoring is required.

## **V. What Are the Environmental, Cost, and Economic Impacts of the Final Rule?**

### **A. What Are the Air Emission Impacts?**

The level of mercury emissions allowed by the Mercury NESHAP is 2,300 grams per day. If one assumes that all nine plants in the source category emit mercury at this level, and that each operates 365 days a year, total annual potential-to-emit baseline emissions would be 7,556 kg/yr (16,658 lb/yr). Annual potential-to-emit baseline emissions for fugitive emission sources would be 4,271 kg/yr (9,416 lb/yr), based on 1,300 grams per day assumed for each plant's cell room ventilation system when the 18 design, maintenance, and housekeeping practices referenced in the Mercury NESHAP are followed. Annual potential-to-emit baseline emissions for by-product hydrogen streams, end box ventilation system vents, and mercury thermal recovery unit vents would be 3,285 kg/yr (7,242 lb/yr), based on the remaining 1,000 grams per day allowed. We estimate that the final rule will reduce industrywide mercury emissions for by-product hydrogen streams, end box ventilation system vents, and mercury thermal recovery unit vents from this annual potential-to-emit baseline to around 217 kg/yr (478 lb/yr), which is equivalent to about 93 percent reduction.