

2.2. BROMINATED PAC PERFORMANCE

The proposed rule assumes a 90% Hg removal efficiency is feasible from all lignite units, even those equipped with an ESP.

- In the Beyond-the-Floor memo (Docket ID No. EPA-HQ-OAR-2009-0234), it states that “[g]reater than 90 percent control can be achieved at lignite-fired units at a 2.0 lb/MMacf injection rate for units with installed fabric filter and using treated (*i.e.*, brominated) activated carbon or at an injection rate of 3.0 lb/MMacf for units using treated activated carbon with installed ESPs.”
- According to the proposed MATS rule, EPA reiterates that “[i]n the beyond-the-floor analysis in the final MATS rule, we noted that the results from various demonstration projects suggest that greater than 90 percent Hg control can be achieved at lignite-fired units using brominated activated carbon sorbent at an injection rate of 2.0 lb/MMacf for units with installed FFs for PM control and at an injection rate of 3.0 lb/MMacf for units with installed ESPs for PM control.”

The Final Rule relies on the same assumption. In EPA's 2024 Technology Memorandum, EPA finds, “In the beyond-the-floor analysis in the final MATS rule, we noted that the results from various demonstration projects suggest that greater than 90 percent Hg control can be achieved at lignite fired units using brominated activated carbon sorbent at an injection rate of 2.0 lb/MMacf for units with installed Fabric Filters for PM control and at an injection rate of 3.0 lb/MMacf for units with installed ESPs for PM control. . . all units (in 2022) would have needed to control their Hg emissions to less than 95 percent to meet an emission standard of 1.2 lb/TBtu. Based on this, we expect that the units could meet the proposed, more stringent, emission standard of 1.2 lb/TBtu by utilizing brominated activated carbon at the injection rates suggested in the beyond-the-floor memorandum from the final MATS rule.”

During the MRY Unit 1 March testing, MRY secured a temporary rental injection skid. The materials of construction of the existing PAC silo (common to MRY Units 1 and 2) is not currently compatible to store halogenated PAC. The silo would require an internal coating to prevent corrosion (but could otherwise be reused). The temporary rental injection skid avoided corrosion to the existing silo, but also allowed for decoupling MRY Unit 1 from the common PAC storage silo to prevent interfering with MRY Unit 2 Hg control operation.

To achieve a dosage rate of 3.0 lb/MMacf, an injection rate of 245 lb/hr would be required which would exceed the existing MRY Unit 1 Train A PAC injection/transport system limit of 192 lb/hr (2.37 lb/MMacf). The maximum BPAC injection rate tested was limited to 185 lb/hr (2.28 lb/MMacf) to avoid line pluggage.

The Hg emissions reductions achievable based on maximizing the use of BPAC (without any fuel additives) supplied via a temporary rental injection system tied into the existing transport piping/lances is summarized below for MRY Unit 1. A higher PAC injection rate was not possible due to maximum capability of the existing transport piping while preventing pluggage.