Current Technology and the New Mercury Limitation

The MATS RTR mercury limit is technically justified by the conclusion that brominated powdered activated carbon (PAC) improves mercury removal to make compliance available to lignite plants. EPA cited a 2010 trade article to support this proposition in the MATS RTR, which it used in its original MATS analysis.[12] EPA uses the ACI Fuel 2010 Article to support its proposition that a performance standard greater than 90% mercury removal can be achieved by lignite units. The Article presents a chart that compiles mercury removal test results from Department of Energy (DOE) mercury control systems. The scatterplot presents a variety of results under different conditions and equipment configurations. The ACI Fuel 2010 Article dataset contains only one lignite datapoint, which is a unit equipped with a fabric filter. Fabric filters aid in mercury removal because of increasing resonance time and temperature differential. Given the limited dataset, lack of testing data, and lack of ESP-equipped units like the Young Station Units, the ACI Fuel 2010 Article does not support the conclusion that a performance standard of 90% mercury removal can be achieved across the lignite industry, particularly with respect to lignite-fired units that are not equipped with a fabric filter. Minnkota is unaware of any verified testing or evidence that demonstrates that lignite units equipped with ESP can meet the New Mercury Limitation of 1.2 lb/TBtu.

Minnkota also has no existing data or other evidence that the Young Station's mercury control system can achieve 1.2 lb/TBtu simply by adding more PAC. So, Minnkota embarked on a testing project. The Young Station purchased brominated PAC for the purpose of determining if that product could achieve improved mercury removal as compared to non-brominated PAC. Minnkota selected Unit 1 for this trial because its mercury emissions baseline rate was higher than Unit 2. As shown below, the Unit 1 average mercury emissions rate was higher when injecting brominated PAC as compared with non-brominated PAC. This confirms that the technology EPA chose (brominated PAC) was not effective in removing more mercury and thus attaining the emissions standard.[13]

MRY Unit	**Average Hourly Hg Emissions Value Achieved at Full Load (Sorbent Trap) Brominated PAC**	**Average Hourly Hg Emissions Value Achieved at Full Load (Sorbent Trap) Non-Brominated PAC**
Unit 1	2.57	2.17

[12] Sjostrom, "Activated carbon injection for mercury control: Overview," Fuel Vol. 89, Issue 6 at 1320-22 (June 2010) (ACI Fuel 2010 Article). The ACI Fuel 2010 Article was cited in the beyond-the-floor memorandum, Kevin Culligan, SPPD/OAQPS to EPA-HQ-OAR-2009-0234, "Emission Reduction Costs for Beyond-the-floor Mercury Rate for Existing Units Designed to Burn Low Rank Virgin Coal" (Dec. 16, 2011) (Beyond-the-Floor Memorandum), for the proposition that a performance standard greater than 90% mercury removal can be achieved by lignite units.

[13] Minnkota's feasibility testing confirmed that its existing mercury control equipment cannot meet the mercury limit of 1.2 lb/TBtu. Sargent & Lundy, *Mercury Testing Results for the MATS Residual Risk and Technology Review*, at 3-5 (May 22, 2024), Attachment A ("At the current injection capabilities of the existing system (i.e. requiring minimal modifications/retrofit of the existing equipment), BPAC cannot be applied to reduce Hg emissions to 1.2 lb/TBtu.").