



west virginia department of environmental protection

Division of Air Quality
601 57th Street, SE
Charleston, WV 25304-2345
Phone: 304 926 0475 • Fax: 304 926 0479

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

MEMORANDUM

To: Beverly McKeone, P.E. – New Source Review Program Manager

From: Ed Andrews, Engineer *EJA*

Date: October 20, 2015

Subject: Class I Administrative Update of R13-1772G (R13-1772H) for the Charleston Area Medical Center –General Division (039-00057)

On February 10, 2014, the DAQ received a request from the Charleston Area Medical Center (CAMC) to update Permit R13-1772G. This request entailed updating the permit to reflect the proposed packed bed scrubber and incorporating the latest emissions standards of Subpart Ce to Part 60 which were adopted by the State of West Virginia in 45 CSR §18-3.1.

Rule 13

45 CSR §13-2.17f.1. defines that the installation or replacement of control devices does not constitute a modification. The incinerator is currently permitted in R13-1772G. Rule 13 or the New Source Review Program of the Clean Air Act does not require sources to obtain a permit for making changes to bring the affected emission unit into compliance that is subject to existing regulation that had been updated or incorporated a new more stringent emissions standard unless the source elects to make a process or physical change to the emission source itself.

Rule 18 and Subparts Ce and Ec of Part 60

45 CSR §13-4.2.a.4. defines that changes to a permit condition to incorporate any new more stringent requirements can be processed as a Class I Administrative Update. Thus, the changes that CAMC proposed can be incorporated into Permit R13-1772G as a Class I Administrative Update.

The Medical Waste Incinerator (MWI) was permitted in Permit R13-1772 on March 17, 1995. This permit has been modified and updated seven times. Only Permits R13-1772A and R13-1772B pertained to changes directly affected by the MWI. The revisions of Permit R13-1772 focus on other emission sources at General Division and ensure the facility did not have a potential to emit above the Title V Major Source threshold levels.

Permit R13-1772 was issued prior to the promulgation of Subpart Ce to Part 60 which required the State of West Virginia to develop a State Implementation Plan (SIP) to meet the emission guidelines with corresponding compliance schedules for this regulation. The DAQ's response to this request was 45 CSR 18 effective date of June 1, 2014. Thus, Permit R13-1772 was never written with these provisions in mind. The A and B version attempted to capture the key provisions of Subpart Ce to Part 60. However, the only operating parameters inserted into a permit condition were the maximum charge weight of waste and minimum secondary chamber temperature.

Section 7 of Rule 18 establishes requirements for existing Hospital/Medical/Infectious Waste Incinerators (HMIWI). 45 CSR §18-7.1. requires the owner or operator of such units to comply with Subpart Ce to Part 60. Subpart Ce basically defines the emission standards, testing standards, and compliance schedule for States to use in developing their implementation plans. Subpart Ce makes several references to Subpart Ec of Part 60, which pertains to new HMIWI units.

In both of these regulations, EPA had established that compliance with the actual emission standard is to be demonstrated continuously through the use of operating parameters. 45 CSR §18-7.7.d requires units subject to the emission guidelines under §18-7.3.a and 7.3.b. to comply with the monitoring of 40 CFR §60.57c (monitoring requirements of Subpart Ec).

CAMC's MWI is subject to the emission guidelines of 45 CSR §18-7.3.a.3 which are listed in Table 18-1B. The actual operating parameters that are required to be monitored are listed in Table 3 to Subpart Ec of Part 60 – Operating Parameters to be Monitored and Minimum Measurement Recording Frequencies. CAMC's MWI is configured with a dry scrubber followed by a fabric filter and wet scrubber, which means the following parameters are to be monitored to satisfy 45 CSR 18-7.7d.

Table #1 – Operating Parameters required by Rule 18 (Table 3 of Subpart Ec)			
Operating Parameter	Minimum Frequency		How parameter is establish during performance testing
	Data Measurement	Data Recording	
Maximum			
Maximum Charge Rate	Continuous	1 x hour	110% of the lowest 3-hour average rate measured
Maximum FF inlet temperature	Continuous	1 x minute	110% of the lowest 3-hour average rate measured
Minimum			
Secondary Chamber Temperature	Continuous	1 x minute	90% of the highest 3-hour average rate measured
D/F sorbent Flow Rate	Hourly	1 x hour	90% of the highest 3-hour average rate measured
HCl sorbent Flow Rate	Hourly	1 x hour	90% of the highest 3-hour average rate measured
Hg sorbent Flow	Hourly	1 x hour	90% of the highest 3-hour

Rate			average rate measured
Pressure Drop Across the wet scrubber	Continuous	1 x minute	90% of the highest 3-hour average rate measured (PM Test)
Scrubber liquor flow Rate	Continuous	1 x minute	90% of the highest 3-hour average rate measured
Scrubber liquor ph level	Continuous	1 x minute	90% of the highest 3-hour average rate measured (HCl Test)

FF – fabric filter

These operating parameters are defined in 40 CFR §60.51c of Subpart Ec. In the June 16, 2011 version of Rule 18, these operating parameters were defined. However, the rule was updated in 2012 without the definitions of these other operating parameters. Rule 18 and Subparts Ce and Ec are to be used to determine compliance with the emission standards in the guidelines unless the source is using a continuous emission monitoring system for that specific pollutant.

For the record, there is disagreement between the frequency of measuring the parameters for the wet scrubbers within Table 18-3C of Rule 18 and Table 3 to Subpart Ce. Subpart Ce has the frequency at once every minute and Table 18-3C has it at once every 15-minutes. The writer believes that the frequency listed in Table 3 to Subpart Ce is more stringent and must be required under 45 CSR §18-16.1.

Permit R13-1772G

Permit R13-1772G establishes emission limits for the pollutants listed in the guidelines on a concentration and mass basis in A.1. The mass limits in this condition has never been changed over the years and is not based on any of the standards, which is listed in the following table.

Pollutant	Concentration Limit	Hourly Limit lb/hr	Annual Limit (tpy)
PM ₁₀	0.013 grains/dscf	0.30	0.90
SO ₂	45 ppm	1.20	3.60
CO	40 ppm	0.44	1.31
NO _x	210 ppm	2.60	7.80
VOC	0.0385 grains/dscf	0.05	0.16
HCl	42 ppm	0.622	1.87
Hg	210 grain/10 ⁶ dscf	0.0046	0.014
Cd	22 grains/10 ⁶ dscf	0.0004896	0.0015
Pd	44 grains/10 ⁶ dscf	0.00098	0.00294

Dioxin/Furans	43 grains/10 ⁶ dscf	0.000000756	0.0000023
---------------	--------------------------------	-------------	-----------

The concentration limits in Condition A.1. does not even match the guideline limits in Table 18-1A of Rule 18 or any version promulgated or proposed by EPA. CAMC's MWI is subject to the standards of Table 18-1B, which is presented in the following table.

Pollutant	Concentration Limit	Units ¹	Averaging Time	Mass Rate (tpy)
Particulate Matter (PM)	0.011	grains per dscf	3-run average (1-hour minimum sample time per run)	0.36
Carbon Monoxide (CO)	11	ppmv	3-run average (1-hour minimum sample time per run)	0.28
Dioxins/furans	4.1	grains per 10 ⁹ dscf	3-run average (4-hour minimum sample time per run)	0.0000002
Hydrogen Chloride (HCl)	6.6	ppmv	3-run average (1-hour minimum sample time per run)	0.22
Sulfur dioxide (SO ₂)	9.0	ppmv	3-run average (1-hour minimum sample time per run)	0.52
Nitrogen oxides	140	ppmv	3-run average (1-hour minimum sample time per run)	5.77
Lead (Pb)	0.016	grains per 10 ³ dscf	3-run average (1-hour minimum sample time per run)	0.0008
Cadmium	0.004	grains per 10 ³ dscf	3-run average (1-hour minimum sample time per run)	0.0002
Mercury (Hg)	0.0079	grains per 10 ³	3-run average (1-hour minimum	0.0004

		dscf	sample time per run)	
--	--	------	----------------------	--

1 – Measured pollutant shall be corrected to 7 percent oxygen on a dry basis.

The mass rate of the pollutants was established with a maximum annual charge rate of 1.7 million pounds per year, which is listed in Condition A.2. of Permit R13-1772G. The annual mass rates were corrected to zero percent oxygen. The annual emissions from MWI under the latest standard are significantly reduced compared to the previous limits.

The using the test data and the definitions from Subpart Ec the following operating parameters were developed.

Maximum Charge Rate: 1,029 pound per hour

Maximum Fabric Filter Temperature: 436.4⁰F

Minimum Secondary Chamber Temperature: 1,705.1⁰F

Minimum Sorbent Inject Rate: 39.1 pounds per hour

Minimum ph level: 6.71

Minimum Scrubbing Liquid (liquor) Flow Rate: 78.8 gallons per minute

Minimum Pressure Drop: 1.51 inches of Water Column

During a visit of the facility by the writer on March 26, 2014, it was noted that CAMC has a CO CEMs. The average period for compliance with the pollutant that is monitor using a CEMs is on a 24-hours block average instead of the 3 hour average (See 40 CFR §60.56c(c)). Neither the existing R13-1772G Permit nor the Title V Operating Permit notes the change in averaging period.

The guidelines establish a visible emission limit of 6 percent on a 6 minute block average. Condition A.7. of Permit R13-1772G requires CAMC to use a continuous opacity monitoring system (COMs) to determine compliance with the visible emission standards.

CAMC's COMs is located up stream of the wet scrubber instead of being downstream of the last control device prior to the emission discharge point. This is probably the only acceptable location to avoid interference issues from the water droplets in the ductwork due to the wet scrubber. The writer did not find any relief of the visual emission standard for using other forms of monitoring (PM CEMs or Bag leak Detectors) in lieu of COMs or Method 9 observations in Subpart Ce or Ec.

The writer proposes to replace limits in Conditions A.1. and A.6. (Opacity limit) with the current emission standard of Rule 18 and Subpart Ce., which is in Conditions 4.1.1. & 4.1.2. Conditions A.7. through A.9. pertain to the use of the COMs. These requirements were incorporated into Conditions 4.2.1 through 4.2.3. Condition 4.2.2. establishes the requirements and procedures for the CO CEMs, which is in accordance with 45 CSR §18-7.7a2. and 40 CFR §60.56c(c)(4).

CAMC's MWI actually has a bypass vent, which is not noted in Permit R13-1772G. Typically, the by-pass is used to start-up of MWI prior to charging waste into the unit. Rule 18 requires these by-vents to be monitored. Thus, Condition 4.2.5. is established to account for this additional monitoring. It should be noted that the permit does not allow the permittee to freely use the by-pass vent to by-pass the emission controls.

Condition A.3. was incorporated into Condition 4.1.5., which prohibits the charging of hazardous waste into the MWI. The quarterly excess emission reporting requirements of Condition A.12. were revised into a semi and annual compliance report that included reporting excess emissions and operating parameter exceedances, which satisfies the requirements under Rule 18 in Condition 4.5.1.

The testing requirements in Conditions A.17. and A.18. were revised to meet the requirements of Rule 18 and Subpart Ec. This existing testing schedule did not match the requirements of Rule 18. After the initial testing, the PM, HCl and CO testing is required to be conducted on an annual basis for three consecutive years. If the results indicate satisfactory compliance with the emission limits, then the subsequent testing is conducted once every three years. The source can elect to conduct testing to revise the operating parameters at any time. This requirement is incorporated into Conditions 4.3.1. and 4.3.2. CO testing is not required due to the CO CEMS.

The conditions for the boilers and Ethylene Oxide Sterilizer (A.20 through A.24) were incorporated into Section 5.0. Applicable provisions of Rule 2, 10 and Subpart Dc to Part 60 were incorporated into this section, as well. The emergency generators covered in Conditions A.24. and A.25. were incorporated into Section 6.0. In future permitting actions, CAMC will be proposed to changes these emission units. Thus, these sections will be reviewed in depth and updated or revised accordingly at the time.

Section B of Permit R13-1772G included Rules 2, 2A, 6, 10, Section 6 of Rule 18 and Subparts Ce & Ec to Part 60. Rule 6 is not applicable to any emission unit at the facility and it was omitted. Only certain sections of Rules 2 and 10 were incorporated into Section 5.0. for the boilers. The operator training/qualification for the MWI, waste management, and annual inspection equipment requirements of Rule 18 and Subpart Ce were incorporated into Conditions 4.1.4., 4.1.6., and 4.1.7. with records of inspections maintained in Condition 4.4.4. The record keeping as required in Rule 18 and Subpart Ce was incorporated into Condition 4.4.5., which includes records of operator's qualifications.

CAMC's MWI is not an affected source under Subpart Ec. Thus, inserting the whole subpart into the permit is not appropriate. Rule 18 and Subpart Ce only make a few references to Subpart Ec. The main point that needed to be referred to Subpart Ec is the requirement of developing the maximum or minimum operating parameters, monitoring of the parameters, and exactly what data or information needs to be maintained by the permittee. These particular sections of Subpart Ec were incorporated into the permit with citations of Rule 18 and Subpart Ce which referred to Subpart Ec was noted instead.

The operating limits in Permit R13-1772G are listed in Conditions A.2 and A.4. with the temperature measuring device requirements in A.5. These requirements were incorporated into Condition 4.1.3. with the rest of the applicable operating parameters from Table 3 of Subpart Ec to Part 60. This condition includes the frequency of the individual measurement and definition of establishing the operating parameters from 40 CFR §60.51c of Subpart Ec. Monitoring of parameters will be established in Condition 4.2.6., which replaces the need to use the operator's log form in Attachment A and Condition A.10. of Permit R13-1772G. The use of the COMs and CO CEMS requires the use of a data acquisition system (DAS) to collect, store and report the operating parameters, opacity, and CO emission in formats that are required to be used to demonstrate compliance with the emission standards.

In conclusion, the writer believes that it was EPA's intent for the permitting authority (Title V Operating Permit Program) to review the MWI with relation to actual operations of the emission unit to include the operating parameters with respect to the SIP and/or federal guidelines on a regular basis (i.e. renewal process) and update the operating permit accordingly. However, the operating permit for CAMC clearly misses that intent. To address this lack of ability to incorporate the operating parameters into the Title V Operation Permit, the permit is configured so when the parameters are updated based on satisfactory compliance testing as a Class I Administrative Update Request. The parameters can be updated as long as the data used to develop the parameter was measured during a performance test that demonstrated compliance with the emission limits to the Director's satisfaction. Thus, the writer recommends to the Director to issue this Class I Administrative Update of Permit R13-1772G as Permit R13-1772H to the Charleston Area Medical Center.