

Ohio EPA

Division of Air Pollution Control

Engineering Guide #19

Question:

Which rule is used to determine the allowable particulate emission rate for a by-product coke oven battery combustion stack - OAC rule 3745-17-10 or OAC rule 3745-17-11?

(This question was submitted by Dennis Bush of the Northeast District Office on November 13, 1980.)

Answer:

OAC rule 3745-17-10 (Restrictions on emissions from fuel burning equipment) should be used to determine the allowable particulate emission rate for a by-product coke oven battery combustion stack. More specifically, curve P-1 of Figure I should be used. (All by-product coke oven batteries are located in counties that are subject to curve P-1 of Figure I.)

"Fuel burning equipment" is defined in paragraph (B)(5) of OAC rule 3745-17-01 as "any furnace or boiler, and any appurtenances thereto such as stacks, ducting and similar apparatus, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer, where the products of combustion do not come into contact with process materials" (emphasis added). Also, paragraph (A) of OAC rule 3745-17-10 states the rule "applies to installations in which fuel, including any product or by-product of a manufacturing process, is burned for the primary purpose of producing heat or power by indirect heat transfer" (emphasis added).

In a coke oven battery, coke oven gas (a by-product of the coking process) is combusted to heat the coal in the ovens in order to form coke. The heat transfer is "indirect," through the oven walls, and the products of combustion are emitted to the atmosphere from the combustion stack. In general, the products of combustion do not come into contact with process materials unless there are cracks in the oven walls. In such cases, excessive combustion stack emissions may result from raw coke oven gas leakage from the coking chamber into the heating flues, through the openings in the oven wall brickwork. These openings are undesirable from an operational standpoint, and normally an effective oven wall patching and dusting maintenance program can minimize the particulate emission contributions from the openings.

It should be pointed out that although a coke oven battery may be fired only with gaseous fuels such as coke oven gas or natural gas, the .020 lb/10⁶ Btu limitation in paragraph (B)(1) of OAC rule 3745-17-10 should not be applied to a combustion stack because of the contribution of

particulate emissions that may result from cracks in the oven walls. This limitation was intended to apply only to boilers. Coke oven battery combustion stacks were not considered in developing this emission limitation.

OAC rule 3745-17-07(A)(1), i.e., the 20% and 60% opacity limitations, also is applicable to a coke oven battery combustion stack in addition to OAC rule 3745-17-10.

(Note: 40 CFR Part 63, Subpart CCCCC was promulgated on April 14, 2003 and regulates emissions from coke pushing, soaking, coke quenching, and the battery (combustion) stack. For the battery stack, this Subpart establishes daily average visible emission limitations (see 40 CFR 63.7296).)

JO/PT

(December 30, 1980; reviewed and revised January 3, 2008)