



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 29 2004

OFFICE OF
AIR AND RADIATION

J. L. Blatt
Authorized Account Representative
Union Carbide Corporation
P.O. Box 8004
437 MacCorkle Avenue SW
South Charleston, WV 25303

Re: Petition to Use a Site-Specific Default F-factor for South Charleston (Facility ID (ORISPL) 880026), Unit 27

Dear Mr. Blatt:

This is in response to your letter, dated November 4, 2003, in which Union Carbide Corporation (UCC) requested approval of a site-specific default F-factor for purposes of reporting nitrogen oxides (NO_x) mass emissions and heat input data under the NO_x Budget Program, under the West Virginia Division of Air Quality (WVDAQ) Series 1 regulation. EPA approves the petition, for the reasons discussed below.

Background

UCC's South Charleston, West Virginia facility consists of three boilers, Units 25, 26 and 27, which are subject to the NO_x Budget Program requirements of the WVDAQ Series 1 regulation. For Units 25, 26 and 27, this regulation requires UCC to continuously monitor and report ozone season NO_x mass emissions and heat input beginning on May 1, 2003, in accordance with Subpart H of 40 CFR Part 75.

Unit 27 is a natural gas-fired boiler with a rated capacity of 250,000 pounds of steam per hour. Occasionally, process vent gases are co-fired with natural gas in the boiler. Vent gases account for only about 2 to 4% of the total heat input to the unit. UCC uses a dry extractive NO_x-diluent continuous emission monitoring system (CEMS) and a stack flow monitor to meet the NO_x Budget Program monitoring and reporting requirements for Unit 27. NO_x emission rate (lb/mmBtu) is calculated using Equation F-5 in Appendix F of 40 CFR Part 75, heat input rate is calculated using Equation F-18, and NO_x mass emissions are determined using Equation F-24.

Both Equations F-5 and F-18 have a dry-basis F-factor term (F_d). F-factors are fuel-specific. For natural gas combustion, Part 75 specifies a F_d value of 8,710 dscf/mmBtu. However, no F_d values are given in Part 75 for the types of vent gases combusted in Unit 27. This raises a question as to the appropriate F_d value to use when vent gases and natural gas are co-fired in the unit. In a September 3, 2002 petition, UCC proposed to use a constant F_d value of 9,086 dscf/mmBtu for hours in which natural gas and vent gases are co-fired. The proposed F_d was a prorated value, which was derived using Equation F-8 in Appendix F of Part 75, in conjunction with maximum potential vent gas flow rates, fuel sampling data for the vent gases, and representative process data (i.e., average values recorded over a one-year period from October 1, 2000 to September 30, 2001). EPA approved the petition on March 25, 2003.

However, UCC plans to make a slight change in its manner of operating Unit 27. In the November 4, 2003 letter, UCC stated that the combustion of PVA, one of the vent gases previously used, will be permanently discontinued prior to the 2004 ozone season, and that another vent gas (POV) will be combusted in the unit instead. In view of this, UCC recalculated the site-specific F-factor for Unit 27, using the same calculation methodology that was approved by EPA in the March 25, 2003 petition response. In the calculations, UCC replaced the maximum flow rate, heating value, and F-factor for PVA with the corresponding values for POV. The results of the calculations indicate that when POV is combusted instead of PVA, a slightly higher default F-factor of 9,349 dscf/mmBtu is appropriate.

EPA's Determination

EPA reviewed the data and calculations presented by UCC to justify using a constant F_d value of 9,349 dscf/mmBtu during periods when natural gas and vent gases are co-fired in Unit 27. The proposed F_d value, which was derived using the methodology approved in the March 25, 2003 petition response, is conservatively high, having been derived using maximum potential flow rates for the vent gases. This will have no impact on the reported NO_x mass emissions from Unit 27, because the F-factor is in the numerator of the NO_x emission rate equation and in the denominator of the heat input rate equation, and F_d cancels out when these equations are multiplied together to give NO_x mass. Further, using this F_d value in Equation F-18 will result in heat input rates that are conservatively low, thus ensuring that Unit 27 will not receive more NO_x allowances than appropriate, based on unit heat input. In light of these considerations, EPA approves the use of the proposed F_d value of 9,349 dscf/mmBtu, for periods when natural gas and vent gases are co-fired in Unit 27. This F_d value supersedes the previously-approved value of 9,086 dscf/mmBtu and is effective as of the date of receipt of this petition approval.

EPA's determination in this letter relies on the accuracy and completeness of the information provided by UCC in the November 4, 2003 petition and is appealable under Part 78. If you have any questions about this determination, please contact Robert Vollaro, at (202) 564-9116. Thank you for your continued cooperation.

Sincerely,

A handwritten signature in black ink, appearing to read "Sam Napolitano", with a stylized flourish at the end.

Sam Napolitano, Director
Clean Air Markets Division

cc: Jerry Curtin, EPA Region III
Laura Crowder, West Virginia DEP, Division of Air Quality
Robert Vollaro, CAMD