Commercial Fuel Oil Sulfur Limits for Combustion Units

Amendments to 25 *Pa. Code* Chapters 121, 123 and 139

Environmental Quality Board Regulation 7-462
(Independent Regulatory Review Commission #2874)

Advance Notice of Final Rulemaking
Comment and Response Document

Bureau of Air Quality
Department of Environmental Protection

Commercial Fuel Oil Sulfur Limits for Combustion Units

In response to comments received during the official public comment period on the proposed rulemaking for commercial fuel oil sulfur limits for combustion units (*40 Pa.B. 5456*, September 25, 2010) following the Department's review of other related information, the Department prepared a draft final-form rulemaking for public comment. The draft final-form rulemaking contained significant changes from proposed in several areas, and the Department believed further discussion and an additional comment period would serve the public interest. An Advance Notice of Final Rulemaking (ANFR) was published in the *Pennsylvania Bulletin* on June 23, 2012 (42 *Pa.B.* 3596). The ANFR comment period closed on July 23, 2012.

This document summarizes the written comments received from the public during the ANFR public comment period held by the Department that followed the Board's official public comment period. Each comment is listed with an identifying number for each commentator that made the comment. A list of the commentators, including name, affiliation (if any), and location, can be found at the beginning of this document. If adopted by the Board and published in the *Pennsylvania Bulletin* as final-form rulemaking, the final regulation will be submitted to the U.S. Environmental Protection Agency (EPA) for approval as a revision to the State Implementation Plan (SIP).

COMMENTATORS

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GENERAL

1. Comment: The commentator supports lowering sulfur standards for commercial fuel oils provided the reductions result in real environmental benefits, and are cost effective, and provided companies are given sufficient lead time to make changes to refining and distribution operations. The draft final-form rulemaking meets these criteria. (5)

Response: The Department appreciates the support.

2. Comment: The commentators support the rule and suggest making changes in two definitions and one record-keeping provision. (1, 6)

Response: The Department appreciates the support and addresses the commentator's suggestions in responses to comments 11 and 12.

3. Comment: The commentator thanks the state for changing the proposal to recognize industry's need for a 4-year lead time. (2)

Response: The Department agrees that allowing refiners, including refineries within Pennsylvania, time to develop adequate desulfurization capacity is important to ensuring supplies of commercial fuel oil in the Commonwealth.

4. Comment: Should the state reconsider a 15 ppm standard as originally proposed, the energy and environmental impacts should be taken into consideration and the earlier comments from the commentator be reviewed. (5)

Response: The 15 ppm standard is not being adopted, at this time, in the final-form rulemaking.

5. Comment: The commentator strongly supports a more aggressive schedule for reducing sulfur in heating oil, and recommends that the Department adopt 15 ppm effective as early as practicable, at the very least no later than the New Jersey schedule (July 1, 2016). The use of ultra-low sulfur heating oil results in improvements in the environment. (4)

Response: The Department has not changed the compliance date for reducing sulfur in heating oil. The Department agrees that the use of 15 ppm sulfur content limit would provide a small additional environmental benefit. However, most of the benefit in the change in sulfur levels comes from reducing sulfur from existing levels (2000 to 2500 ppm) to 500 ppm.

6. Comment: The commentator supports tightening the sulfur allowed in commercial fuel oil but urges the adoption of a tighter standard that is more protective of public health. Heating oil burners emit particulate matter (PM), oxides of nitrogen (NOx), sulfur dioxide (SO2), mercury, and carbon dioxide (a greenhouse gas linked to global warming). These pollutants have a major impact on public health, ozone formation, fine particulate, regional haze and acid precipitation. The change from 15 ppm to 500 ppm results in nearly a 20% increase in SO2

emissions which has real and measurable impacts on human health, including a change from the estimated 85 lives saved in Pennsylvania to 77 lives saved, and an additional $7.4 million in avoided medical costs in 2018. Health and welfare co-benefits include reductions in NOx, CO2, ozone, PM2.5 and acid rain. (7)

Response: The Department agrees that heating oil emits the pollutants mentioned by the commentator, and is reducing sulfur in commercial fuel oil primarily to reduce regional haze. SO2 and NOx are significant contributors to regional haze, and their reduction also has health co-benefits. See also the response to comment 5 above.

COST SAVINGS TO CONSUMERS

7. Comment: The use of ultra-low sulfur heating oil (15 ppm) results in cleaner, more efficient combustion processes in oilheating equipment, resulting in cost savings to consumers. (4, 7)

Response: The Department agrees that cleaner combustion results in cost savings to consumers. However, most of the benefit results from the reduction from existing levels to 500 ppm. Furthermore, the use of advanced efficiency furnaces does not require the use of 15 ppm fuel.

8. Comment: Having on-road, off-road and heating oil at the same sulfur level would result in significant operational efficiencies, through storage in the same containers, and thus cost savings for marketers who distribute these products. (4, 7)

Response: The Department agrees there would be some efficiency in storage and transportation should No. 2 fuel oil and transportation fuels have the same sulfur content. However, as indicated by comments on the original proposal, mandating fuel sulfur levels at 15 ppm also carries the risk of higher prices for both heating oil and transportation fuels.

9. Comment: Recent announcements indicating continued operation of two refineries in Southeast Pennsylvania and previously announced capacity enhancements of the Colonial Pipeline signal a stable source of ultra-low sulfur fuel for the region. (4)

Response: The Department agrees that the potential for stable fuel supply has improved in the last few months. However, one refinery has shut down and will be repurposed. It is still uncertain whether the types of fuels to be supplied into the market from the other refineries will change.

10. Comment: The concerns of refineries are overstated because the small increase in refining costs will be able to be absorbed by the consumer through savings in other areas, and with adequate notice, there will be enough supply to meet the demand. There will be costs to reducing sulfur from existing levels to 500 ppm, but only a small additional cost to reduce sulfur further to 15 ppm. The concern with all Northeast states moving to a 15 ppm standard, namely that there will not be enough supply, is overstated. (7)

Response: The Department disagrees with the characterizations offered by the commentator on cost and supply. The commentator appears to be confusing the incremental cost difference to the consumer with the cost incurred by any individual owner or operator of a refinery to install sufficient desulfurization to meet the 15 ppm level. Desulfurization capacity is very expensive, and is not cost-effective at this time for the additional environmental benefit. See response to comment #9 in regard to supply.

11. Comment: The commentator states that refineries commented during the proposed rulemaking that given adequate time (to 2018), a 15 ppm standard would be a more feasible standard. The commentator therefore supports the stepped approach used in several other states (500 in 2014, 15 in 2018) as reasonable. This would be similar to the incremental stepped approach in transportation fuels. The commentator suggests that the Department revise the compliance date for 500 ppm sulfur from 2016 to 2014 and adopt a 15 ppm sulfur limit. This schedule would provide refiners with four years notice from when they should have known a change will be made. New York successfully transitioned to 15 ppm in a two year time frame. (7)

Response: The Department has not adopted the suggested phased-in schedule, since allowing refiners, including refineries within Pennsylvania, the time to develop adequate desulfurization capacity is important to ensuring supplies of commercial fuel oil in the Commonwealth. New York's transition to 15 ppm in 2012 creates additional demand for 15 ppm fuel, and New Jersey will add to that demand in 2014.

DEFINITIONS

12. Comment: The commentator suggested that the Department revise the definitions of "ultimate consumer" and "retail outlet" by deleting "a combustion unit" and substituting "fuel oil-burning equipment" so that these definitions would be consistent with the definition of "commercial fuel oil." (1, 6)

Response: The Department agrees that the terms should be consistent, and has changed "fuel oil-burning equipment" to "combustion unit" in the definition of "commercial fuel oil"

13. Comment: The commentator requests that language be added to the definition of "ultimate consumer" to ensure that facilities with the same owner or operator that engage in the non-resale transfer of commercial fuel oil are included in the definition. (1, 6)

Response: The Department does not agree that the additional language is necessary because the definition in the final-form rulemaking already includes these non-resale transfers.

HEAVIER OILS

14. Comment: The commentator states that the sulfur levels for No. 5 and No. 6 fuel oils (residual oils) are too stringent and could result in significant loss of supply. Sulfur removal from these heavier fuels is technologically difficult, very costly, and usually economically prohibitive. Dilution is not a viable solution because blending may lead to not meeting other

parameters. Dilution with lighter, more valuable product is unlikely to be undertaken by refiners. Dilution would also yield more product than is needed by the market so there would be no outlets except export. The commentator suggests a fuel sulfur level for No. 5 and 6 of 1.0 percent, while leaving the existing standard for the Southeast Pennsylvania air basin (0.5 percent) in place. (2)

Response: The Department disagrees. The Department has considered the commentator's concerns, along with the concerns and another suggested fuel sulfur level from the same commentator on the proposed rulemaking. As the commentator points out, refiners are currently providing residual fuel oil with a 5,000 ppm sulfur content for sale in the Southeast Pennsylvania air basin, as well as several counties in New Jersey (and 3,000 ppm in some New Jersey counties). The Mid-Atlantic/Northeast Visibility Union (MANE-VU) states, of which Pennsylvania is one, chose the 5,000 ppm residual oil standard for a regionally consistent goal level to reasonably reduce SO2 emissions from this fuel. New Jersey, Vermont, Maine and Massachusetts have already adopted a 5,000 ppm maximum sulfur content. A market for off-specification residual oil, above a 5,000 ppm sulfur content standard, exists in the marine vessel market. According to the U.S. Energy Information Administration State Energy Data System, in 2010 almost half of all residual oil is used for transportation purposes (residual oil by its nature and by EPA regulation cannot be used in on-road vehicles or most off-road uses, but can be used in large marine vessels). Furthermore, fuels with a higher sulfur content than those specified in the final-form rulemaking can be used in combustion units if control equipment or processes ensure that the existing SO2 limits in pounds of SO2 per million Btu of heat input over a 1-hour period are not exceeded.

TEMPORARY SUSPENSION

15. Comment: Establishing a suspension policy for the rare times that compliant commercial fuel oil is legitimately unavailable is a reasonable and prudent measure. (7)

Response: The Department agrees; ensuring that customers have enough fuel for home heating is essential.

16. Comment: The specific requirements of the policy have not been codified, which could leave it open for abuse from commercial fuel oil refiners. The two major flaws are: 1) it is not clear under what limited circumstances DEP can grant a suspension and 2) it includes no time limit for how long a suspension can last. In particular, the provision could allow a suspension of the limits due to poor planning or refusal of the refiners to make enough compliant fuel. (7)

Response: The Department agrees that the temporary suspension provisions should be made more specific. The final-form rulemaking adds additional criteria for granting a temporary suspension and a time limit.

17. Comment: DEP should adopt the language of section 211(c) of the Clean Air Act that sets a suspension limit of 20 days. (7)

Response: The Department has included language similar to section 211(c) as it relates to planning, but has included a 60-day limit rather than 20 days. Many heating oil customers fill their tanks about every two months during the heating season.

SAMPLING, TESTING RECORDKEEPING AND REPORTING REQUIREMENTS

18. Comment: The proposed amendments are not consistent with current industry practice and should be modified. Current practices for testing, transporting and documenting heating oil are sufficient to ensure product delivered and sold in Pennsylvania will meet standards. (2, 3)

Response: Due to comments provided to the Department on the Advance Notice of Final Rulemaking, the Department gained a better understanding of industry practices. The Department revised the sampling and testing requirements to eliminate duplicate testing and to mirror current practices for ensuring product sold in Pennsylvania will be compliant, while ensuring that the Department can adequately enforce compliance and that the ultimate consumer knows that the fuel is compliant.

19. Comment: It is impractical and unworkable to require each heating oil custody or title transfer to identify the actual sulfur content on the product transfer document because of the fungibility of the product. Many transfers within a company or to a bulk distributor often do not test for the exact sulfur level. (2, 3, 5)

Response: The final rulemaking requires information concerning the maximum sulfur level of the commercial oil fuel shipment.

20. Comment: The requirement for specifying actual sulfur content for each sale or transfer is impractical. The Department should amend the regulation so that classification practices would meet this requirement. The practical implication of compliance with the regulation would significantly complicate distribution and slow the system. (3, 5)

Response: The final rulemaking has been revised to address the commentator's concern

21. Comment: The commentator recommended that recordkeeping and reporting requirements be amended to specify that the requirement could be met by properly classifying the fuel by sulfur content as being below 15 ppm, between 15 and 500 ppm and over 500 ppm. (3,5)

Response: The final rulemaking requires information concerning the maximum sulfur level of the commercial oil fuel shipment.

22. Comment: Companies should be able to maintain compliance with the regulation through the current practice of ensuring that a distillate fuel of less than 500 ppm sulfur does not come into contact in a tank or pipeline with another batch exceeding the 500 ppm sulfur standard. (5)

Response: The Department has removed the requirement to record the actual sulfur content and instead only requires the information reflect the maximum sulfur level of the commercial oil fuel shipment.

23. Comment: Federal EPA regulations allow the use of product codes to convey required transfer document information. Fuels are commonly bought and sold per pipeline specifications or "codes," which are widely used throughout the industry. The State should consider a similar approach. (2)

Response: The final rulemaking provides for the use of product codes, under similar conditions as those described by the US EPA for gasoline and diesel fuel (see 40 CFR 80.77, 80.106 and 80.590), in transfers from refiners up to the point that the fuel transfers to a truck carrier.

24. Comment: The commentator provided specific revisions to the draft final-form rulemaking to restore the proposed language requiring refiners to sample, test and calculate the sulfur content of each batch of fuel; add requirements for testing if records are missing; confine the information to a determination of meeting the 500 ppm level rather than the specific sulfur level; and enable product transfer documents not to specify actual sulfur level. (2)

Response:: Due to comments provided to the Department on the Advance Notice of Final Rulemaking, the Department gained a better understanding of industry practices. The Department revised the sampling and testing requirements to eliminate duplicate testing and to mirror current practices for ensuring product sold in Pennsylvania will be compliant, while ensuring that the Department can adequately enforce compliance and that the ultimate consumer knows that the fuel is compliant. The Department has removed the requirement to record the actual sulfur content and instead only requires the information reflect the maximum sulfur level of the commercial oil fuel shipment. The Department has also allowed the use of product codes, under similar conditions as those described by the US EPA for gasoline and diesel fuel (see 40 CFR 80.77, 80.106 and 80.590), in transfers from refiners up to the point that the fuel transfers to a truck carrier.

25. Comment: It is not necessary to specify that percentages or weight be determined on a per gallon basis. (1, 6)

Response: The Department agrees. However, with the revisions to the final-form rulemaking described in the response to comments 18-24, the language is no longer included.

26. Comment: The Department should remove the reference to ASTM D 270 in the section referencing sampling and testing methods which is outdated, and only reference ASTM D 4057. (5)

Response: The Department agrees; the proposed rule had already deleted ASTM D 270 and substituted ASTM D 4057.

27. Comment: The commentator suggests that 25 *Pa Code* §123.46(a)(1)(i) be amended to remove the requirement for continuous opacity monitoring systems (COMS) if natural gas, liquid fossil fuel or a combination thereof is used. The commentator stated that this revision is similar to a federal requirement in 40 CFR Section 60.45(b)(1) (relating to standards of performance for fossil-fuel steam generators). The cost of a COMS is overly burdensome for minimal environmental benefit, especially for natural gas fired sources that may only combust low sulfur fuel oil as a backup or as secondary fuel. (8)

Response: The Department has not made this change. For fuel oil, opacity is much more a function of combustion characteristics. Simply limiting fuel sulfur content for oil-fired units does not, in itself, negate the need to continuously monitor opacity. Subsection, 25 Pa. Code §123.46(a)(1)(ii), does not require COMS for oil-fired combustion units if the units can meet particulate and opacity requirements without particulate control and have not had an opacity violation in the previous five years. For a new source, if the units do not have particulate matter control, COMS do not have to be installed unless and until they have an opacity violation. In addition, §123.46(c) provides the unit with a possible full exemption from the COMS requirement.