



RUBBER
manufacturers
association

1400 K Street, NW • Washington, DC 20005 • tel (202) 682-4800 • fax (202) 682-4854 • www.rma.org

July 15, 2011

Mr. Brian Shrager
Energy Strategies Group
Sector Policies and Programs Division
Office of Air Quality Planning and Standards (D243-01)
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

Re: Liquid Fuel Data - "National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters"
Docket ID EPA-HQ-OAR-2002-0058

Mr. Shrager:

The Rubber Manufacturers Association ("RMA")¹ appreciates the opportunity to provide this additional information related to the Liquid Fuel subcategory in the National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (Boiler MACT). We are concerned with the data and methodology EPA used to establish the emission limits for liquid fuel boilers and believe that further analysis and quality assurance of the data and improvements to the floor setting methodologies are needed.

We agree with EPA's approach of assigning a fuel variability factor to the HCl and Hg data to improve the consideration of variability in setting the floor, but EPA should gather additional data to improve the representativeness of the floor units. EPA should gather additional emissions information to ensure the final limits are achievable by boilers and process heaters burning liquids other than distillate oil and should not use data from boilers burning site-specific process liquids that may or may not be classified as fuels and are not representative of the hundreds of fuel oil-fired boilers that make up the liquid subcategory (e.g., the Milliken boiler that has been classified as a top performer and is burning "anhydrides waste").

¹ The Rubber Manufacturers Association is the national trade association representing every major domestic tire manufacturer including: Bridgestone Americas, Inc.; Continental Tire the Americas, LLC; Cooper Tire & Rubber Company; The Goodyear Tire & Rubber Company; Michelin North America, Inc.; Pirelli North America; Toyo Tire (U.S.A.) Corporation and Yokohama Tire Corporation.

EPA Should Re-Examine its Floor Setting Process for Liquid Fuel Boilers for CO

EPA has grouped all boilers and process heaters firing any liquid fuel into one subcategory. Comments on the proposed rule suggested further subcategorization into heavy and light liquids. This further subcategorization was not incorporated into the final rule. In the response to comments, EPA states that although there are design differences between heavy and light liquid fired units, the approach taken in the final rule is consistent with that for solid fuels, as all solid fuels are grouped together for the fuel based HAP. EPA goes on to say that although solid fuel units are split for CO and dioxin/furan, they are not splitting light and heavy liquid units and the floors are made up of a mix of light and heavy units.² The CO limits that EPA has finalized are made up of 3-run stack test data that EPA has largely adjusted due to measurement capabilities of EPA Method 10, with little variability as a result. The floor units represent only 2 facilities, both burning distillate fuel oil. An analysis of the CO data for heavy and light liquid units indicates that a very different CO limit would result for heavy liquid units when these units are treated as separate subcategories. This would indicate that EPA should be consistent with the Agency's treatment of fuel and design based subcategories by establishing separate CO emission limits for heavy and light liquid units.

At a minimum, as EPA has acknowledged the variable nature of CO emissions, additional data should be gathered to ensure achievability of the established limit, rather than using short term data from boilers at only 2 facilities. We would also like to point out that the NJMerckRahway floor boilers using a CO/VOC catalyst (which EPA has said is the appropriate control technology to reduce boiler CO/organic HAP emissions) have CO emissions higher than the NJMerckRahway floor boilers that are not using a CO/VOC catalyst.

EPA Should Examine the PM Emissions Data and Discard Data Below the Limits of Quantitation

The liquid PM limits are set using a very small amount of data, and are not representative of fabric filter control technology (which EPA states is the technology assumed to be MACT for PM), as none of the floor units have controls. There are only 18 data points used to set the PM floor, one of which is labeled as detection level limited (DLL). Therefore, the "top performers" are determined based on a very limited data set and reflect only combustion of distillate fuel oil or "anhydrides waste". In fact, no unit burning No. 6 fuel oil (even the one listed as having a fabric filter with sorbent injection) meets the liquid fuel PM limit based on the PM stack test and fuel firing information in the EPA database.

Published studies indicate that the practical quantitation limit of Method 5 is 3 to 6 mg, and a 1996 EPA-funded study indicated that the minimum PM catch for ± 10 percent accuracy of Method 5 is 7.2 mg³. The 1996 study examined the level of random errors present in the test method and sought to determine what level of particulate must be captured in order to overcome the influence of that random error on the reported results. The results of the study documented that in order to have a 90% confidence in the accuracy of particulate matter emissions, the

² Response to commenter EPA-HQ-OAR-2002-0058-1869.1, Comment Excerpt Number 4.

³ "Minimum Detection Limit for Method 5," R. Shigehara, Entropy Incorporated, EPA Contract No. 68-D2-0163, Work Assignment 3-06, September 30, 1996.

minimum catch of residue must be ≥ 7.2 mg. Examination of the test data reported for every unit in the liquid floor and several units just outside of the liquid floor indicate that two or more of the test runs for each unit captured less than 7.2 mg of total particulate residue during the test run. Based on this study, these units could be top performers solely due to random error in the test method. Setting an emissions standard for particulate matter using data that contains this level of uncertainty is both unlawful and scientifically flawed. We request that EPA reconsider the use of such data in setting the particulate matter emissions standard.

EPA Should Re-Assess the Mercury Limit for Liquid Units

There are 79 liquid-fired units for which EPA has gathered Hg data, but only 8 stack tests. 71 units are assigned fuel analysis data, but these data represent only 14 facilities. There are 11 floor units, with 50 data points, of which only 10 (2 stack tests and 2 fuel analyses) are labeled as above the detection limit. This is a very limited amount of data and a very biased data set (primarily based on non-detect data) to be used to set Hg limits for units firing any type of liquid fuel. The Hg limits are again based on units with no Hg controls, but on the fuels with the lowest amounts of mercury. EPA has considered fuel variability for the units with paired fuel analysis/stack test data, but should also examine the variability of the fuel analysis data for the other units in the floor (e.g., use the ratio of the 99th percentile fuel Hg content to the average fuel Hg content). EPA should not discard certain fuel analysis data as “outliers” if investigation reveals that the data are of good quality (e.g., values that can be determined to be “real” when compared to other fuel analysis data that are available to EPA in the database).

We offer the following data quality observations with respect to two test reports for the units in the Hg liquid floor:

- MNGPDuluth – EU33 Boiler #3: The data in the test report was examined and found to have errors in calculating emissions of mercury. The test company did not include all of the non-detect fraction levels in the sum of mass from the analytical report. We have recalculated the results using the full detection limits from the analytical report for all sample fractions and determined the results of the testing should have been reported as:

Run 1	[<1.425E-07]
Run 2	[<1.424E-07]
Run 3	[<1.618E-07]
Average	[<1.489E-07]
- NYConEd59thStStationNewYork – Boiler 118: In examination of the test report we have discovered that the analytical laboratory failed to analyzed all five fractions of the EPA Method 29 samples only providing results for fractions 5b and 5c thus not reporting all of the mercury collected by the test method. This test data is incomplete and should be invalidated and removed from the data set.

EPA Should Re-Assess the HCl Limit for Liquid Units

The HCl floors are similarly developed with a small amount of data and are based in large part on non-detect data (only 5 of 35 data points used to set the floor are above the detection limit – 1 stack test and 1 set of fuel analysis data). For PABoeingRidleyPark Units 035, CB4, 031, 036, 037, 039, and 053, the floor data are based on fuel analysis collected during testing on Unit 033 at that facility. In examination of the analytical data for those fuel samples, it is apparent that the

Fuel Analysis Spreadsheet supplied to EPA incorrectly indicated the units of measure as mg/kg. The true analytical results on the report were measured in %. This makes the reported emissions from each of the seven units off by a factor of 10,000. Results should have been calculated as 5.53E-03 lb/mmBtu, which thereby removes all of these units from the floor.

EPA has considered fuel variability for the units with paired fuel analysis/stack test data, but should also examine the variability of the fuel analysis data for the other units in the floor (e.g., use the ratio of the 99th percentile fuel chloride content to the average fuel chloride content). EPA should not discard certain fuel analysis data as “outliers” if investigation reveals that the data are of good quality (e.g., values that can be determined to be “real” when compared to other fuel analysis data that are available to EPA in the database).

The selected top performing unit (TNInvistaChattanooga EU003 Vaporizer #2) emission test data show higher emissions than the limit set for existing liquid fired units (0.00062 lb/MMBtu for this unit versus the existing unit limit of 0.00033 lb/MMBtu). Only the lower test data were used in the floor setting calculations for some reason. This seems to indicate a problem with EPA’s floor setting methodology; the selected top performer should be able to meet the established limit.

EPA Should Not Set Numeric Dioxin/Furan Emission Standards

Work practice standards and not emission limits are warranted for dioxin/furan under Boiler MACT.

- The data collected in order to set the D/F standards for liquid fuel-fired industrial boilers are at levels below the capability of the analytical and stack test methods to detect emissions of these compounds. Much of the test data are labeled as being below the method detection limit and the remainder of the data are often flagged as being below the level the laboratory feels can be reported with confidence.
- It is not appropriate to treat detection level limited data in the same manner as detected values for purposes of establishing regulatory limits because the uncertainty⁴ associated with measurements near or below the method detection limits is too high. The test methods were developed over 30 years ago to measure D/F at concentrations then found in some types of waste incinerator exhaust (levels orders of magnitude higher than those found in exhaust from today’s industrial boilers).
- All source emission measurements have random (precision) errors associated with the sample collection, sample and equipment handling, sample preparation, and sample analysis. When emission levels are much higher than the magnitude of these errors, there is a high degree of confidence in the measured value obtained from a single or a few test runs. However, as the measured value decreases, the contribution of these errors to the measured value increases, thus decreasing the confidence level in the accuracy of the measured value from a single or a few runs until the point where the measured value cannot be distinguished from the random error (“noise” level). This is the case with the

⁴ Uncertainty here refers to the statistical expression of measurement error, such as defined in ASME Performance Test Code 19.1, rather than an inference of something which is unknown.

boiler D/F data. When this occurs, the measurement cannot be distinguished from zero with high confidence.

- In setting the Boiler MACT and CISWI standards, EPA has acknowledged that the emission limit should not be set below the capability of the applicable test method. However, EPA did not use the widely accepted definition of method detection limit, which is based on the capabilities of multiple commercial laboratories to analyze a sample and identify the presence of a chemical above the “noise” level. In its place, EPA coined a new term, representative method detection limit (RDL) to define a measurement method detection limit which is based on the laboratory detection limits reported for the tests with the lowest emissions. This erroneous methodology resulted in estimating D/F detection limits that are over 100 times lower than those regularly achieved by commercial laboratories.
- The detection limit of an analytical method is commonly defined as the lowest concentration that can be distinguished from replicate blanks. The quantitation limit of a method is defined as the smallest concentration of the substance which can be measured with an acceptable level of uncertainty. Detection limits and quantitation limits are defined in a scientific, non-arbitrary manner in various widely-published peer-reviewed consensus guidelines⁵ and EPA documents. Quantitation limits of test methods have great significance when measuring very low concentrations of pollutants. In practice, reported values below the method's quantification limit should not be treated as real values.
- As demonstrated by the measurement issues noted, quantifying the actual, extremely low or non-existent dioxin emission levels for the Boiler MACT floor units is technologically impracticable, and thus, it is not feasible to prescribe or enforce an emission standard for D/F emissions for these units. Clean Air Act Section 112(h)(1) supports establishing a work practice standard for D/F in the Boiler MACT, as was done in the recently proposed Electric Generating Unit (“Utility”) MACT rule⁶. The required tune-ups and other emissions reductions in the Industrial Boiler MACT will result in improved combustion and minimize conditions conducive to D/F formation without establishing a numerical emission standard.
- One-time stack test data from only 2 units are being used to set D/F limits for the liquid subcategory (one of which, SCMillikenDewey, is a unit burning a material available to no other unit in the subcategory). Even if the D/F test methods were not being stretched beyond their limits, this approach does not provide emissions data representative of the normal range of operations and fuel compositions, ambient environmental conditions, geographic locations, and other factors that may influence air pollutant emissions. The

⁵ For example, Keith, L.H. et al., Principles of Environmental Analysis, *Anal. Chem.* **1983**, 55, 2210-2218.

⁶ 76 FR 24976

performance of the top 12 percent of all units cannot be determined using only a few data points.

- EPA has assigned no costs for compliance with the Boiler MACT D/F standards because it is assumed that units will have emissions below detection levels and be able to comply with the finalized standards by assigning values of zero to the non-detect congeners. While we do not necessarily agree with this assumption for units subject to the lowest of the finalized standards, this assumption does suggest that EPA believes that D/F emissions from industrial boilers are impossible to measure with high confidence and are below detectable levels.

We offer the following additional data quality comments on the 2 units that are in the liquid D/F floor:

- SCMillikenDewey – D30: Recalculation of the emissions from this unit indicated that the test results reported are off by a factor of 1000. Results from the three test runs should have been reported as:

Run 1	3.41E-03 ng/dscm@ 7% oxygen
Run 2	2.73E-03 ng/dscm@ 7% oxygen
Run 3	2.74E-03 ng/dscm@ 7% oxygen
Average	2.96E-03 ng/dscm@ 7% oxygen

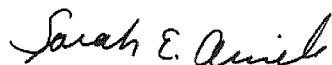
- NYConEd59thStStationNewYork – Boiler 118: Recalculation of the reported emissions by the test company indicates the test results were miscalculated. Results for the three test runs should have been reported as:

Run 1	2.05E-03 ng/dscm@ 7% oxygen
Run 2	1.93E-03 ng/dscm@ 7% oxygen
Run 3	1.33E-03 ng/dscm@ 7% oxygen
Average	1.77E-03 ng/dscm@ 7% oxygen

Summary

If you have any questions regarding this information, please feel free to contact me at (202) 682-4836.

Sincerely,



Sarah E. Amick
Environmental Counsel