# American Foundry Society
# Comments on the U.S. Environmental Protection Agency Proposed Rule on National Emission Standards for Hazardous Air Pollutants: Iron and Steel Foundries Residual Risk and Technology Review
# Docket ID No. EPA-HQ-OAR-2019-0373

**November 25, 2019**

The American Foundry Society (AFS) hereby submits the following comments on the October 9, 2019, U.S. Environmental Protection Agency (EPA) Proposed Rule on the National Emission Standards for Hazardous Air Pollutants: Iron and Steel Foundries Residual Risk and Technology Review under Section 112 of the Clean Air Act (CAA) as it applies to metalcasting operations. 84 Fed. Reg. 54394. AFS supports EPA's conclusions in the proposed rule that the risk is acceptable with an ample margin of safety, there are no adverse environmental effects, and there are no new developments in practices, processes, and control technologies that have occurred since the major source and area source NESHAPs were promulgated. These comments provide further support for EPA's proposed findings with evidence that EPA overstated the risk and significantly underestimated the costs of control measures that were considered. In addition, the comments also request some regulatory clarifications on the requirements for iron and steel foundry major and area sources.

## INDUSTRY OVERVIEW

AFS is the major trade and technical association for the North American metalcasting industry. AFS has more than 8,000 members representing nearly 2,000 metalcasting firms, their suppliers, and customers. The organization exists to provide knowledge and services that strengthen the metalcasting industry for the ultimate benefit of its customers and society. AFS seeks to advance the sciences related to the manufacture and utilization of metalcasting through research, education, and dissemination of technology. AFS also provides leadership in the areas of environmental, health and safety, government affairs, marketing, management, and human resources for the metalcasting industry.

Metal castings are integral to virtually all U.S. manufacturing activities. In the U.S., castings are used to produce 90 percent of all manufactured durable goods and nearly all manufacturing machinery. The industry is composed of 1,956 facilities manufacturing castings made from iron, steel, aluminum, and other alloys that have thousands of applications. In addition to the automotive, construction, and defense industries, other major sectors supplied by the metalcasting industry include agriculture, aerospace, energy exploration and conversion, oil and gas, mining, railroad, municipal/water infrastructure, transportation, and health care.

The American metalcasting industry provides employment for over 200,000 men and women directly and supports thousands of other jobs indirectly. The industry supports a payroll of more than $8 billion and sales of more than $20 billion annually. Metalcasting facilities are found in every state, and the industry is made up of predominately small businesses. Approximately 80 percent of domestic metalcasters have fewer than 100 employees.

## SUPPORT FOR EPA'S PROPOSED RULE

### I. ACCEPTABLE RISK

In the preamble to the proposed rule EPA concluded that the risks associated with the emissions from iron and steel foundries are acceptable stating that "[c]onsidering all of the health risk information and factors discussed . . . , the EPA proposes that the risks are acceptable. The estimated cancer risks are below the presumptive limit of acceptability, and the noncancer risk results indicate there is minimal likelihood of adverse noncancer health effects due to HAP emissions from the source category." 84 Fed. Reg. at 55412. AFS supports EPA's conclusion that the risk is acceptable, and contends that the acceptable risk identified by EPA may be even lower as a result of several factors associated with the quality and accuracy of the data upon which EPA relied. A summary of these factors is provided below.

### A. Data Used by EPA Did Not Reflect Current Foundry Practices

There have been changes in foundry raw materials that may not be reflected in the emission estimates identified in the NEI. Specifically, certain unwanted HAP metals contained in steel scrap used by foundries, such as lead and mercury, have decreased as steel scrap quality has improved. By not considering these changes EPA has added additional conservatism to any post-MACT risk determination. Therefore, emissions of these metal HAPs would be overestimated using the 2014 NEI for operations such as melting, pouring, cooling and shakeout.

Second, some foundries are utilizing newer foundry binder systems that have been engineered to decrease HAPs and/or HAP-generating chemicals within the system. The reduction in HAPs and/or HAP generating chemicals is not reflected in the data EPA used, and consequently EPA's estimates of emissions at mold making, core making, pouring, cooling and shakeout are unnecessarily high resulting in a greater perceived risk.

### B. Stack Parameters and Exit Velocities

In the proposed rule development process EPA identified several foundries that had relatively high emissions for certain HAPs. Spot-checks by AFS of select stack parameters used to model foundry risk and ample margin of safety, showed a number of NEI entries (e.g. air volumes, stack emissions that were identified as fugitive, stack heights, etc.) that were incorrect, and when corrected would lead to a lower modeled impact. A summary of these results is provided below in Table 1. AFS contends that similar overestimates of emissions exist for many of the other foundries that were not reviewed and corrected.

**TABLE 1: Detailed Stack Parameter and Exit Velocity Corrections**

| | |
|---|---|
| Arsenic | |
| | For Foundry A, 6 stack heights were increased between 10 to 20 feet. |
| | For Foundry A, 7 stack exit velocities were increased by 8 to 60 feet per second (fps). |
| | For Foundry C, 10 stack heights were increased 20 feet each. |
| | For Foundry C, 7 stack exit velocities were increased by 20 fps, while 2 stack exit velocities were decreased by 18 fps. |
| | |
| Formaldehyde | |
| | For Foundry A, 8 stack heights were increased by 10 to 126 feet. |
| | For Foundry A, 7 stack exit velocities were increased by 8 to 60 fps. |
| | For Foundry B, 2 stack heights were increased by 53 and 170 feet respectively. |
| | For Foundry B, 2 stack exit velocities were increased by 30 fps and 53 fps, while one stack exist velocity was decreased by 52 fps. |
| | |
| Mercury | |
| | For Foundry D, 3 locations with fugitive emissions were removed from the model as the emissions would have been emitted via a stack. |
| | For Foundry E, fugitive emissions were removed from one location, stack height was increased by 106 feet and stack exit velocity was increased approximately 15 fps. |
| | For Foundry F, release point orientation was moved to vertical from horizontal, stack height was increased 19 feet and exit velocity was increased by 10 fps. |

### C. Fugitive Emissions Were Overestimated

Foundry fugitive sources are unlike fugitive emissions from roadways or storage piles. While certain foundry emissions may be correctly labeled as "fugitive," and are not captured by a "primary" exhaust hood, they are eventually captured by other exhaust systems within the foundry and emitted at a specific elevation and velocity not considered in EPA's air dispersion model. For this reason AFS argues that EPA's modeling of fugitive emissions overstated the risk for most, if not all, iron and steel foundries.

### D. NEI Data Did Not Match Values Reported by Foundries

A spot-check by AFS of a sampling of NEI pollutants showed that for several foundries, the NEI data used by EPA did not match the data reported by the subject foundries. In some cases the NEI database included values for HAP emissions that were not reported by the foundry. This suggests that the data reported by these foundries for the 2014 NEI were changed without regard for each foundry's specific processes and/or raw materials or simply inferred without reference to any facility reporting.

### E. Approach to Derive Allowable Emission Estimates

AFS generally supports EPA's method to derive allowable emission estimates, while acknowledging it is likely conservative in nature. Using emission factors and applying the maximum throughput rate or permitted operating hours would generally result in an overestimate of emissions compared with actual emissions. Emission factors developed from emission testing generally reflect maximum emissions given that in most cases such emission testing is conducted at or near maximum operating rates. Such assumptions do not match real-world operating conditions at iron and steel foundries, and result in significant overestimation of emissions.

Furthermore, as stated above, improved steel scrap quality and less HAP generating raw materials are also not considered in the allowable emission estimates, which would again bias these results to the conservative side.

For the reasons discussed above, EPA has systematically overestimated HAP emissions from iron and steel foundries. Such inflated estimates lead to increased perceived risks associated with HAP emission from foundries. Even though EPA concluded that the risks associated with HAP emissions from iron and steel foundries are acceptable, when the emissions data are corrected as discussed above, the risks would be considerably lower than EPA's calculated values.

## II. AMPLE MARGIN OF SAFETY

In addition to reviewing risk, EPA must also determine if the iron and steel foundry NESHAP rule provides an ample margin of safety to protect public health. In discussing the ample margin of safety standard in the preamble, EPA stated that "[u]nder the ample margin of safety analysis, we evaluated the cost and feasibility of available control technologies and other measures (including the controls, measures, and costs reviewed under the technology review) that could be applied to further reduce the risks (or potential risks) due to emissions of HAPs from the source category." 84 Fed. Reg. at 55412.

EPA noted in the preamble that 144,000 people may be exposed to a cancer risk exceeding one in one million and only 6,900 people may be exposed to a cancer risk exceeding ten in one million. 84 Fed. Reg. at 55412. EPA further stated that "these cancer risks are driven largely by naphthalene, benzene, and PAH emissions from [pouring, cooling and shakeout] lines and by naphthalene emissions from mold and core making operations." 84 Fed. Reg. at 55412.

For the organic HAPs, EPA identified three potential emissions reduction measures: low-emitting binder formulations, carbon adsorption, and thermal oxidizers. For metal HAPs, EPA identified capture systems combined with a particulate control device such as a scrubber or baghouse. Each of these measures is discussed in more detail below.

### A. Potential Use of Low-Emitting Binder Systems

With respect to EPA's consideration of the requirement to use "low-emitting" binder formulations, different binder systems provide specific capabilities and limitations that a foundry needs to consider when selecting binder systems suitable for their operation. Binder systems are chosen by a foundry based on a number of factors, including the following.

1) Dimensional Accuracy and/or Strength Needs – this is dictated by product specifications and casting methods.

2) Availability of Equipment – Some new binder systems preclude the use of existing equipment and may require new or modified equipment, representing significant capital costs.
3) Production Rate Needs – The new binder system must be capable of meeting the production needs of the plant.
4) Tooling Availability – Existing patterns can only be used for a selection of binder systems. Some new binder systems may require significant retooling which can result in significant retrofit costs.
5) Facility Location and Storage Availability – Depending on the area of the country, climate and seasonal temperature and humidity fluctuations impact binder system performance and must be considered during the binder selection process.
6) Economics – Global sourcing demands may influence binder selection due to price competition.
7) Maintenance Requirements – Certain new binder systems may require additional equipment maintenance and, consequently, result in additional costs. In addition, the binder system can also impact the maintenance requirements of the tooling/patterns.

In the preamble to the proposed rule, EPA stated that "[b]ased on the myriad of conditions impacting binder selection, there is no single binder system that will work in all applications, and we cannot determine if a low-emitting binder alternative is available for all applications. As such, we conclude that it would be inappropriate to propose a national emissions standard requiring the use of low-emitting binder systems." 84 Fed. Reg. at 55412. For the reasons stated above and some of the reasons that EPA identified in the preamble to the proposed rule (See 84 Fed. Reg. at 55412), AFS supports the claim that there is no "one size fits all" binder system that is suitable for all production scenarios in the foundry industry and agrees with EPA's conclusion that it would not be appropriate to require the use of low-emitting binder systems as part of this rule. AFS continues to support environmentally sustainable practices such as the use of low-emitting binder formulations where feasible and appropriate.

## B. Carbon Adsorption and Thermal Oxidizers

Recognizing that the risks from this source category were driven primarily by organic HAPs, EPA identified both carbon adsorption and thermal oxidizers as potential control measures. In the preamble to the proposed rule, EPA noted that the costs of these measures were high. The national total capital investment for carbon adsorption was $27 million, for recuperative thermal oxidizers $30 million, and for regenerative thermal oxidizers $70 million, all to be spread across 25 facilities. The total annualized costs for these measures were $5.8 million for carbon adsorption, $17 million for recuperative thermal oxidizers, and $12 million for regenerative thermal oxidizers. At the same time, the risk reduction for these measures was from 50 to 30 in one million for maximum individual risk (MIR), and the number of people that may be exposed to a cancer risk exceeding one in one million would be reduced from 144,000 to 42,000, and the number of people that may be exposed to a cancer risk exceeding ten in one million would be reduced from 6,900 to 400. 84 Fed. Reg. at 55413.

EPA concluded that these control measures were not cost effective because the estimated control costs were based on a best-case scenario (using the most cost effective controls that are unrealistic), are extremely high, and will produce only moderate risk reductions. In addition, for small businesses these costs would likely exceed two percent of annual revenues and would not, therefore, be economically feasible. 84 Fed. Reg. at 55413.

AFS agrees with EPA's general approach to developing control system capital cost and organic HAP emission reduction and its conclusion that these measures are not economically feasible. AFS does, however, contend that the costs for these measures are even higher than EPA estimated for a number of reasons that are summarized below.

1) Conservative Approach on Key Costs – Based on considerable past experience in control system installation, the total cost of the ductwork, ductwork supports, outlet stack and elbows determined by the OAQPS Cost Manual are

substantially understated. However, no cost adjustments have been made to address these concerns.

2) Regarding all identified operations (with a special emphasis on core- and mold-making), AFS believes that VOC concentrations in exhaust air will be substantially less than 100 ppmv. Therefore, available emission control technology with the control efficiency that EPA expects is not capable of meeting the levels identified by EPA in the proposed rule.

3) AFS agrees that using a single aggregate emission control system for mold- and core-making, pouring, cooling and shakeout would be the most conservative approach, but reiterates that this approach is not feasible. These operations are typically spread out over a wide area in most foundries and connecting them to a single control device would present significant technical and economic challenges, assuming it was feasible to do. Also, these operations typically have different operating schedules. Therefore, the problem of low concentrations in aggregate exhaust air stream would be exasperated.

4) It appears a baghouse (fabric filter) or other particulate control device for each identified organic control scenario was not included in the equipment costs. Given the particulate loading for some of these operations a baghouse would be required. Alternatively, existing baghouse capacity would need to be utilized but that would not be feasible given the scenario of using a single organic control device.

5) In addition, a spark arrestor would be needed to protect the baghouse. No costs have been included in the cost estimate for this piece of equipment.

In the margin of safety assessment with the objective to reduce the number of persons at maximum individual risk (MIR) higher than 1-in-1 million, EPA identified pouring, cooling, shakeout, mold-making and core-making operations (operations) as the source of organic HAPs.

Because of the limited amount of time allowed for in the public comment period, AFS could not evaluate and, if necessary, correct any projected annual organic HAP and/or VOC emission rates. Other than emission rates, AFS has the following additional comments on RTI's technical memorandum entitled "Control Cost Estimates for Organic HAP Emissions from Iron and Steel Foundries" submitted to EPA on July 2, 2019 to supplement EPA's margin of safety assessment.

- A requirement to use low-emitting binder systems is not a feasible control option for reducing organic HAPs. In addition, the technical memorandum seems to indicate one could simply change to a lower emitting binder system regardless of binder technology being used at the plant. This is not the case for reasons stated above.
- AFS agrees that one of the challenges of any of the identified organic control methods is the normal historical control efficiencies for any technology cannot be applied because of the organic concentrations that are a result of the low emission rates and higher ventilation requirements. It is difficult to achieve the control efficiencies identified by EPA at lower concentrations of organic HAP emissions at foundries.
- AFS concurs with EPA's assessment that close capture hooding would not be feasible for these operations due to a number of reasons including equipment obstructions, ladle transfers may be mobile and traveling hoods cannot be accommodated, and most importantly, employee safety. In addition, because of thermal drafts that accompany many of these emissions, side draft hoods would require relatively high exhaust rates for effective capture and likely be less efficient than EPA's 90 percent overall control efficiency identified in the technical memorandum.
- To determine cost-effectiveness EPA aggregated emissions from the operations and developed a single control system for the aggregate emissions from each

foundry. A single control system for the aggregated emissions is not practical and represents a conservative, but infeasible, method due to a number of reasons including distance and schedules of the different operations as stated above.

- The cost-effectiveness model neglected installation of a fabric filter that would need to be installed in addition to the organic control device. This would increase the capital cost of each modeled plant.
- EPA assigned one of four air volumes (20,000 cfm, 30,000 cfm, 60,000 cfm or 90,000 cfm) to a foundry based on aggregate emission rates. For annual organic HAP emissions in the range of 51-75 tpy, 14-30 tpy, 8-13 tpy and 2-7 tpy air volumes of 90,000 cfm, 60,000 cfm, 30,000 cfm and 20,000 cfm were respectively used. Air volume is not necessarily linked to cumulative HAPs, but rather based on a number of factors, including:
    - number of core making operations and the equipment used,
    - number of sand mixers – a single mixer supplying mixed sand to multiple machines versus individual sand mixers for each machine,
    - core storage requirements and the emission of HAPs during storage,
    - number of mold making operations and the binder system type (*i.e.*, chemically bonded versus clay/water-based system),
    - chemically bonded mold storage requirements and the emission of HAPs during storage,
    - molds poured on floor versus poured on conveyorized production line,
    - the number of production lines,
    - ability to use close capture hooding versus canopy at pouring, cooling and shakeout,
    - length of cooling conveyor, and
    - number of shakeouts/vibratory conveyors per line (e.g. a shakeout or a secondary or even a tertiary shakeout on the same production line).
- In the technical memorandum, Table 1 identifies operating hours for each modeled plant. These operating hours are used to determine annual operating expenses for any organic control cost-effectiveness analysis. EPA has made the assumption that the annual operating hours for a control cost scenario would vary

with organic HAP emission rates. This assumption does not reflect real-world conditions and industry practice. As stated above, organic HAP emissions are not valid indicators of the operating schedule of a foundry that is determined by a host of other factors. Therefore, annual operating costs are likely conservative for a number of foundries across the four modeled plant scenarios, and the annual costs would be higher than estimated for each control scenario.

In summary, the control costs identified were significantly lower than what would be encountered in practice should a control system be installed. The corrected cost estimates would be more than four times EPA's cost estimate in the proposed rule due to the necessary increase in air volumes, the deflated capital cost estimates in EPA's Control Cost Manual, and the need to install a baghouse for each of the scenarios presented by EPA. Regardless of our concerns stated above, AFS agrees with EPA's conclusion that the costs to control the pollutants are relatively high, while the resulting reduction in risk that would be achieved is comparatively low.

### C. Capture and Control of Metal HAPs

Even though the risks from this source category were driven primarily by organic HAPs, EPA identified capture systems combined with a particulate control device such as scrubbers and bag houses as control measures to reduce metal HAPs. The specific foundry emissions sources that EPA identified as the metal HAP emissions that contributed to the risk were scrap charging, alloy additions, and molten metal transfer. EPA concluded that these were primarily through fugitive emissions. 84 Fed. Reg. at 55413. In the preamble to the proposed rule, EPA stated that "[r]educing these emissions for these metal HAP sources would require installing and operating capture systems (e.g., hooding, duct work, fans, etc.) that direct the emissions to a particulate control device (e.g., scrubber or baghouse)." 84 Fed. Reg. at 55413.

EPA estimated that the nationwide total capital investment for the metal HAP controls would be $23 million, with total annualized costs of $6 million. The estimated reduction of metal HAPs for the source category was 4.64 tons per year for an average cost effectiveness of $1.3 million per ton of metal HAP reduced. The estimated number of people that may be exposed to a cancer risk exceeding one in one million would be reduced from 144,00 to 100,000 and the number of people that may be exposed to a cancer risk exceeding ten in one million would be reduced from 6,900 to 6,500. 84 Fed. Reg. at 55414.

EPA concluded that because of the high cost and cost effectiveness of these control measures, the potential impact on small business, and the low risk reductions, the existing NESHAP for the source category "provides an ample margin of safety to protect health and we are not proposing any change to the NESHAP based on risk review." 84 Fed. Reg. at 55414. AFS agrees with EPA's conclusion that these measures are not economically feasible, but AFS states that the costs for these measures are even higher than EPA estimated for a number of reasons that are summarized below.

Regarding the capture and control of metal HAPs, AFS has the following comments.

1) AFS is concerned that the emissions sources identified as major contributors to these elevated cancer risks from metal HAPs are scrap charging, alloy addition and molten metal transfers. This concern is based on the following:
    a. Based on industry experience HAP emissions and the emissions in general from these operations are minimal;
    b. EPA cannot support its claim because information on actual emissions from these operations is limited or non-existent;
    c. The operations in question are not clearly and specifically defined; for example, "alloy addition" can refer to a range of separate operations that are typically conducted in foundries.

2) Based on industry experience in designing control systems, the total cost of the ductwork, ductwork supports, outlet stack and elbows determined by the OAQPS Cost Manual are substantially understated. Nonetheless, no cost adjustments have

been made to address these concerns. In addition, a spark arrestor would be needed to protect the baghouse, and the costs for this have not been included.

3) As discussed above, the reduction of metal HAPs in steel scrap over time has not been considered in the NEI emission estimates, and therefore, biasing the resulting risk analysis to the high side.

4) AFS does not support the option of requiring only foundries that use alloys containing metal HAPs to capture and control those emissions for the following reasons.

   a. Emissions from alloying with metal HAPs have not been determined.
   b. Exhaust air requirements associated with capturing metal HAPs form alloying operations have not been determined.
   c. Alloying of metal HAPs occur in many different areas and those have not been identified and evaluated separately (for example, in furnace, in ladle, in pouring ladle, at ductile inoculation, etc.).
   d. Many different alloying methods are utilized including: in ladle, in mold, tundish, sandwich, etc.
   e. "Alloy addition" has not been clearly and specifically defined.
   f. As some alloys may have low levels of HAPs, EPA would need to define "de minimis" levels of HAPs for alloys to be subject to this requirement.

5) Assuming scrap charging, alloy addition and molten metal transfers are the sources of concern, effective capture of these emissions would be very difficult as these emissions are typically fugitive. Also, new emission control systems (*e.g.*, fabric filter) would need to be installed, because most foundries would not have existing fabric filter capacity to meet this need.

6) Relatively high exhaust rates would be needed to effectively capture emissions from these sources. Close capture hooding would likely not be feasible due to

equipment obstructions, operational needs and safety concerns. This would dictate either a roof exhaust system or high canopy hood as a means of capturing the emissions requiring relatively high exhaust rates. In particular, the high canopy hood would be susceptible to cross drafts which are further complicated by the thermal drafts that may occur at charging.

7) Regarding the capture and control of metallic HAPs from furnaces, the calculated air exhaust rate for the baghouse appears incorrect. In practice, melting operations are divided into three distinct operations - charging, melting, and tapping. The design and construction of individual furnaces and how they are operated needs to be considered in the design of any capture system, including the following:

   a. Method of Charge Delivery to Furnace – typically either a charging bucket or a vibratory conveyor;
   b. Type of Furnace Lid – typically either a lid that lifts up or swings away;
   c. Method of Furnace Slagging – manual or clamshell via overhead crane; and
   d. Device hot metal from furnace is tapped into - typically either ladle via overhead crane or into ladle car.

8) The differences between the above items preclude an “off the shelf” method for capturing particulate emissions throughout the charging, melting, and tapping operations for furnaces.

   In addition, the design of the capture system is made more difficult by the dispersion of fumes due to thermal currents resulting from the hot metal in the furnace. As the hot air from the melting process rises from the furnace, cooler air is drawn into the thermal draft by a process of turbulent mixing which increases the volume of air as the distance above the hot metal bath increases. Again, due to obstructions and furnace design, if a canopy or roof evacuation system is necessary, a large enough exhaust air rate would be needed to counteract any cross drafts. EPA did not include any estimated costs to address these concerns.

9) An aggregate capture and control efficiency of 90 percent is too high and not feasible to achieve without substantially increasing the exhaust air rates used by EPA.

In the margin of safety assessment to reduce the number of persons at maximum individual risk (MIR) higher than 1-in-1 million EPA identified alloying, inoculation, scrap handling, charging, ladle transfers and pouring as operations of concern. In aggregate these operations were identified as "ancillary sources of metal HAP emissions."

With regard to RTI's technical memorandum entitled "Control Cost Estimates for Metal HAP Emissions from Iron and Steel Foundries" as submitted to EPA on July 3, 2019 to supplement EPA's margin of safety assessment, AFS has the following comments.

- Any emissions of hexavalent chromium would be extremely limited and likely occur at the small population of foundries where stainless steel is cast and/or welded.
- In particular, and as stated above, HAP emission estimates for alloying, inoculation, scrap handling, charging and ladle transfers are overstated.
- AFS concurs with EPA's assessment that close capture hooding would not be feasible for these operations due to equipment obstructions, operations such as ladle transfers, and most importantly, employee safety. In addition, because many emissions are accompanied by thermal drafts side draft hoods would require relatively high exhaust rates for effective capture, and likely be less efficient.
- The technical memorandum randomly assigns one of two air volumes to a foundry (either a 40,000 cfm or an 80,000 cfm baghouse) to control emissions from the "ancillary sources of metal HAP emissions." Based on industry

experience, these air volumes are too low and due to distance, a single control device would not be a viable solution.

To illustrate that the control costs identified in the technical memorandum are underestimated, AFS has crafted a model foundry to illustrate the likely control cost for charging/back-charging a single electric furnace with an external alloy/inoculation station and with two pouring stations.

Using the Industrial Ventilation: A Manual of Recommended Practice for Design," published by the American Conference of Governmental Industrial Hygienists, 28th Edition, Section 13.27.7.1, AFS calculates 216,213 cfm total/facility for effective capture from hot metal operations. This is broken down into 102,061 cfm for the electric furnace; 34,942 cfm for the inoculation/alloying station and 79,210 for the two pouring station hoods. Using the above air volumes, EPA's Control Cost Manual and the 2017 Utilities and Labor Rates table provided in the technical memo, the revised cost estimates are summarized in Table 2 below.

**Table 2: Revised Summary of Cost Effectiveness for Metal HAP Control Options**

| Control Option | Nationwide Total Capital Cost ($) | Nationwide Total Annualized Cost ($/yr) | Metal HAP Emission Reduction (tons/yr) | Cost Effectiveness ($/ton metal HAP reduced) |
|---|---|---|---|---|
| All Foundries | $236,623,180 | $39,631,719 | 4.58 | $8,653,214 |

The revised cost estimates are over four times higher than EPA's numbers as a result of the necessary air volume increases and the deflated capital cost estimates in EPA's Control Cost Manual.

### D. Appropriateness of Controls for Organic HAPs and or Metal HAPs

As stated above, EPA made a number of decisions that both unrealistically reduced the annualized costs and increased the expected emission reduction in the EPA analysis. Regardless of the concerns expressed above, AFS agrees with EPA's conclusion that no additional control technology is warranted for the control of organic HAP and metal HAPs and that the current NESHAP provides an ample margin of safety to protect public health.

## III. ADVERSE ENVIRONMENTAL EFFECTS

EPA must ensure that the proposed rule will not impose any adverse environmental effects. In the preamble to the proposed rule EPA stated that "based on our analysis, we do not expect any adverse environmental effect as a result of HAP emissions from this source category . . . [and] it is not necessary to set a more stringent standard to prevent . . . an adverse environmental effect." 84 Fed. Reg. at 55414. AFS agrees with this conclusion and the rational set forth by EPA.

## IV. TECHNOLOGY REVIEW ANALYSIS

Based on its review of literature, the RBLC database, air permits for iron and steel foundries, and industry best practices, EPA "did not identify any developments in practices, processes or control technologies to further reduce emissions" from iron and steel foundry major and area sources. 84 Fed. Reg. at 55414-5. Any controls and measures considered for iron and steel foundry major and area sources were either not feasible and/or not cost effective. 84 Fed. Reg. at 55415. EPA concluded that based on the technology review for both major and area sources, it did not propose any changes to these NESHAP rules. 84 Fed. Reg. at 55415.

AFS agrees that no new developments in practices, processes, and control technologies have occurred since the major source and area source NESHAP were promulgated and supports EPA's conclusion that no changes are needed for the proposed rule based on technology review.

## V. STARTUP AND SHUTDOWN EMISSIONS

In the preamble to the proposed rule, USEPA identified meeting the parametric monitoring requirement of 1300 degrees may be an issue during cupola startup. EPA chose not to address the concern because of the assumption the issue would be taken care of by the three-hour parametric averaging period. Given the complex process and the many tasks that must occur at the beginning of each cupola melting campaign, AFS suggests the following additional definitions, additions and changes be incorporated into the final rule to address this concern.

*Cupola Startup* means the time beginning when molten metal is first tapped from a cupola that had previously been shut down.

*Cupola Shutdown* means the time ending once the last charge is added to the cupola preceding either cupola banking or cupola bottom drop.

*Off Blast* means those periods of cupola operation when the cupola is not actively being used to produce molten metal. Off blast conditions also include idling conditions when the blast air is turned off or down to the point that the cupola does not produce additional molten metal.

These revised definitions will allow EPA to address activities where the parametric parameter values cannot be met, even with the three-hour averaging time.

## VI. REGULATORY CLARIFICATIONS

### A. Compliance Dates

EPA proposed two changes that would impact ongoing compliance requirements for 40 CFR part 63, subparts EEEEE and ZZZZZ.

First, EPA proposed to add a requirement that initial notifications, performance test results, performance evaluation reports, and the semiannual reports using the new template be submitted electronically. EPA proposed six months to transition to the periodic reports being submitted electronically through CEDRI (excluding performance tests). EPA also proposed to change the requirements for SSM by removing the exemption from the requirements to meet the standard during SSM periods and by removing the requirement to develop and implement an SSM plan. EPA proposed this change be effective on the date of the final rule.

AFS requests that the compliance date related to SSM changes be moved to six months from the date of the final rule. This will allow facilities sufficient time to extract O&M Plans that may be integrated with SSM Plans as well as address other facility-specific procedures to address current rule requirements related to SSM events and the corresponding plan.

### B. Wet Scrubber Parametric Monitoring Limits

§63.7690(b)(2) currently requires that major source foundries operating a wet scrubber to control emissions from a metal melting furnace, scrap preheater, pouring area, or pouring station operate the wet scrubber such that the 3–hour average pressure drop and scrubber water flow rate does not fall below the minimum levels established during the initial or subsequent performance test.

The above language presents a practical problem because unlike real-world conditions in a routine foundry operation, there is not significant variability during a performance test to establish a minimum level for either monitored parameter. To address this issue, AFS requests EPA append the following phrase to the end of § 63.7690(b)(2): ". . . or established by the equipment manufacturer or provider."

### C. Visible Emission Requirements for Subpart EEEEE

§63.7732(d)(1) requires major source foundries to determine compliance with the opacity limit in § 63.7690(a)(7) for fugitive emissions from buildings or structures using a certified observer to conduct each opacity test using EPA Method 9. In most instances this requires major source foundries to contract with a firm to conduct the certified visual reading and in many cases, there are no visible emissions observed from buildings or structures.

AFS requests the language in § 63.7732(d)(1) (and other related sections) be changed to allow the flexibility of using EPA Method 22 [with EPA Method 9 serving as a backup should opacity be observed, as discussed] as provided for in Table 1. §2 of the Foundry Area Source Rule [40 CFR Part 63, Subpart ZZZZZ, Table 1].

### D. Scrap Management Requirements for Subpart EEEEE

§ 63.7700 (a)-(c) and related sections incorporate the management of metallic scrap and mercury switches identified in § 63.10885 including procedures to perform visual inspections of a representative portion of the incoming scrap shipments. Given that lead and mercury are less of an issue in foundry scrap today and given the language in the Foundry Area Source Rule is as stringent and effective, AFS requests the scrap management requirements in § 63.7700 (a)-(c) and related sections be changed to more closely mirror the Foundry Area Source metallic scrap and mercury switch requirements contained in 63.10885.

## VII. CONCLUSION

AFS supports EPA's conclusion in the proposed residual risk and technology review for the iron and steel foundries NESHAP for major and area sources that no additional controls are needed. According to EPA the risk is acceptable with an ample margin of safety, there are no adverse environmental effects, and there are no new developments in practices, processes, and control technologies that have occurred since the major source and area source NESHAPs were promulgated. As discussed above, these comments provide further support for EPA's conclusion because EPA has overstated the risk posed by iron and steel foundries and significantly underestimated the estimated costs for control measures that were considered.

AFS appreciates the opportunity to provide these comments on the proposed residual risk and technology review for the iron and steel foundries NESHAP for major and area sources. AFS remains committed to promoting environmentally sustainable practices for the metal casting industry to continue to reduce HAP emissions. If you have any questions or would like additional information about the comments, please contact Jeff Hannapel with our AFS Washington office at jhannapel@thepolicygroup.com.