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Louisiana Department of Environmental Quality

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Please accept this fourth set of comments on Hyundai's permit application from Sierra Club and its Delta Chapter, which includes two expert reports. Dr. Elizabeth Boatman's¹ report details how Hyundai's application fails to include the best available methods for controlling toxic dust, which can blow off uncovered trucks and storage piles, and have severe health impacts on workers and the neighboring community. Clean Air Act permitting expert Katie McClintock's report describes the deficiencies that permeate all of the application's BACT analysis from start to finish. The expert reports show that Hyundai's application does not even meet the basic requirements for completeness. To meet regulatory requirements, Hyundai must start over and resubmit its application, include proper 5-step BACT analyses, and select the best available controls for all pollutants, including fugitive toxic dust. More importantly, these actions are also necessary to protect Hyundai's workers and the surrounding community from harmful pollution.

I. Hyundai's Application Does Not Evaluate or Include the Best Available Methods for Controlling Toxic Dust

For decades, toxic dust from trucks and storage piles has plagued communities around steel plants, forcing residents to turn to the courts for relief. In Pennsylvania, Mon Valley neighbors have had to scrub mill dust from their windows daily;² in Ohio, a local business owner had to use thousands of bottles of cleaner just to dissolve the concrete-like lime dust coating his property.³

This dust is not just affecting communities' quality of life, it is causing severe human health impacts. Fine particulate matter (PM2.5) enters the bloodstream, and can cause asthma and lung cancer. Slag and cement dust contain manganese, hexavalent chromium, and silica—toxins

¹ See Boatman, Elizabeth, PhD, PE, May 2026, Resume, 5 Lakes Energy (attached as Exhibit II.i).

² Cioppa, Jordan, People living near Edgar Thomas Works receive settlement check in lawsuit against U.S. Steel, WTAE ABC News, Aug. 2025, available at <https://www.wtae.com/article/edgar-thomson-works-receive-settlement-check-lawsuit-us-steel/65609558>, (attached as Exhibit II.ii).

³ Pilcher, James, Steel fallout creates complaints in one Tri-State city, Local 12, Sept. 2025, available at <https://local12.com/news/investigates/steel-fallout-creates-complaints-middletown-cleveland-cliffs-persistent-pollution-damaging-residue-waste-airborne-issue-cincinnati>, (attached as Exhibit II.iii).

known to damage the nervous system, especially in children,⁴ and cause irreversible lung scarring.⁵

Although the proposed Hyundai steel facility is obligated to use the "Best Available Control Technology" (BACT) to control dust, Hyundai's proposed controls would not adequately control toxic dust. Hyundai's current proposal fails to consider or include covers for storage piles, crushing operations, or transport trucks that are transporting materials likely to become airborne, even though Hyundai's own application appendices (from the RACT, BACT, LAER Clearinghouse (RBLC)) show these methods are employed at other facilities.

For example, Hyundai is proposing to store iron ore, scrap and slag "outdoors in large stockpiles."⁶ The application does not even quantify or evaluate controls for the toxic dust that blows off the trucks, as well as other dust-producing activities like slag crushing and screening, dumping/loading of carbon charge (coke) and lime, and the Electric Arc Furnace (EAF) dust. Without enclosures and covers, the wind will inevitably carry toxic dust into the lungs of Hyundai's workers and neighbors, causing severe health impacts. Hyundai must enclose and cover these sources.

The attached expert report of Dr. Elizabeth Boatman provides ample evidence that the best controls for dust include enclosing storage piles, slag crushing and screening, loading/unloading and material transfer operations, covering truck loads, paving roads, establishing and enforcing 5 mph truck speed limits, and installing wheel-wash stations at every exit. Standard industry practices—the same ones implemented at new mills and enforced upon old mills after environmental violations—demand that Hyundai incorporate these dust control methods (and additional controls specified in Dr. Boatman's report) into its proposed steel plant.

Hyundai is legally bound by the Clean Air Act and the Louisiana Public Trust to install these controls. LDEQ and Hyundai also have a moral imperative to ensure that the proposed facility does not become a health disaster for the workers and families living nearby.

⁴ EPA, Electric Arc Furnace (EAF) Slag, (accessed May 2026), available at <https://www.epa.gov/smm/electric-arc-furnace-eaf-slag>, (attached as Exhibit II.3).

⁵ The National Institute for Occupational Safety and Health (NIOSH), CDC, Engineering Controls Database, (accessed May 2026), available at <https://www.cdc.gov/niosh/engcontrols/ecd/detail2.html>, (attached as Exhibit II.iv).

⁶ Hyundai Steel Louisiana, LLC, Initial Title V Permit and PSD Permit Application, AI No. 248885, (Dec. 23, 2025), at 3-57 (pdf 87), [hereinafter "Application"], available at <https://edms.deq.louisiana.gov/app/doc/view?doc=15036873>.

II. Hyundai's BACT Analyses Are All Fundamentally Flawed, Incomplete and Must Be Resubmitted

As Sierra Club has detailed in past comment letters on Hyundai's air permit application, the BACT analyses suffer from numerous flaws. The attached report of Clean Air Act permitting expert Katie McClintock⁷ provides a detailed description of the flaws permeating the application that make it impossible for LDEQ to conduct a proper BACT evaluation and determination. Her analysis also demonstrates that Hyundai must be regulated as a synthetic minor since it relies on controls to avoid major source classification for hazardous air pollutants. All of Hyundai's BACT analyses need to be redone and resubmitted, and Hyundai must submit additional information about hazardous air pollutants.

In brief, Hyundai did not properly conduct a 5-step BACT analysis, nor did it provide all the necessary information for LDEQ to establish BACT. First, the application fails to provide the fundamental information required for a BACT review. It lacks clear unit descriptions, explanations of how emissions are generated and captured, as well as the essential data on throughputs, emission factors, capture and control efficiencies, and the number of emission sources. Hyundai fails to provide an uncontrolled baseline emission rate for each unit, and the application contains pervasive deficiencies in emissions calculations including use of restricted operating hours, and in particulate matter fugitives and GHG estimates.

Second, Hyundai fails to properly identify all the potential control options at step 1 of the BACT analysis, as it fails to: 1) list all available control options in the RBLC; 2) provide options outside of the RBLC including technology transfer and controls at foreign facilities; 3) list both standalone and combinations of technologies.

Third, Hyundai improperly dismisses some controls or emissions limitations without adequate (or any) documentation or discussion. Under the "top-down" BACT process, the most stringent control option must be selected unless the applicant provides robust documentation demonstrating that it is technically infeasible, not cost-effective, or results in adverse collateral impacts. A bare, unsupported claim in the application that Hyundai's technology is different is an insufficient reason to dismiss an available control.

Fourth, all of Hyundai's step 3 analyses are deficient. Hyundai failed to evaluate specific control efficiencies for each unit, and failed to evaluate a range of control efficiencies for control options like SCR that can achieve a range of emission reductions. Hyundai must create a table for each unit that lists the technologies (and combinations of technologies), the specific (or range of) control efficiencies for each control option, and the rank. If Hyundai does not choose the top ranked control/limit as BACT, it must provide further documentation on cost-effectiveness and

⁷ Kate McClintock, CAA Regulatory and Technical Consultant, May 2026, Resume (attached as Exhibit II.v).

collateral impacts for all options that were not selected. Hyundai failed to document its cost estimates, and failed to provide cost-effectiveness analyses for the vast majority of its proposed controls. Hyundai selected BACT without any of this information and failed to provide the permitting authority the information necessary to complete the required process before issuing a permit.

Fifth, Hyundai chooses inappropriate controls and emissions limits as BACT and erroneously uses the RBLC at step 5 to select BACT. Hyundai wrongfully uses the RBLC as a menu where it chooses a random limit without any reasoned explanation as to why stricter limits are not achievable. In another step 5 failure, Hyundai chooses a limit for one unit based on an inapplicable BACT limit that exceeds anything in the RBLC.

Sixth, Ms. Clintock's report explains how Hyundai should be regulated as a synthetic minor since the facility's uncontrolled emissions of hazardous air pollutants exceed the major source threshold. LDEQ should require a supplemental application that explicitly details the uncontrolled emissions of each HAP, control efficiency for each add-on technology, and what appropriate monitoring recordkeeping and monitoring the facility will do to demonstrate compliance.

Finally, Ms. McClintock explains the deficiencies in all the BACT analyses using the Electric Arc Furnaces ("EAF") as an example. She explains how Hyundai erroneously selected high emissions limitations, and that adopting emissions limitations for the EAF that represent the absolute minimum floor of what Hyundai could achieve with best available controls would reduce at least 116.8 tons per year (tpy) of particulate matter (PM), 69.2 tpy of PM10/PM2.5, 178.7 tpy of nitrogen oxides (NOx), and 2922.8 tpy of carbon monoxide (CO). The best available controls could likely reduce pollution significantly more, both at the EAF and plantwide.

The Hyundai application does not meet even the basic requirements for completeness, let alone the company's commitments to environmental excellence.

Please do not hesitate to contact us with any questions.

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4. Particulate matter

4.1. Paved/unpaved roads

Truck transport at large industrial facilities like steel mills creates particulate matter through two primary mechanisms: (1) movement of the truck over paved/unpaved roads with material buildup on their surfaces and (2) transporting of materials within the truck’s bed that are likely to become airborne. When these activities generate airborne dust/particulate matter, they are typically categorized as “fugitive” particulate matter emissions. Fugitive emissions are quantified as part of a major source air permit application for a proposed Iron and Steel Mill.

In the case of Hyundai Steel, the applicant identifies the use of trucks for transporting a range of materials on- and off-site, including trucks transporting processed slag and steel products, both of which have the potential to contribute to fugitive particulate matter emissions during transport. In its emission estimates, the company identifies multiple unpaved roads, parking areas, and areas within the facility that will be the source of fugitive PM emissions,¹ with unpaved areas contributing an estimated 12.67 tpy of fugitive PM.

However, Hyundai Steel does not specify how certain materials (e.g., dry cement, lime, and coke) with the potential to become airborne during transport will be transported on-site, nor does the application quantify such emissions. The applicant should be asked to submit additional materials to clarify how these materials will be delivered so that appropriate emissions estimates and handling processes can be developed.

The fugitive emissions from movement and material transport activities that Hyundai identified in its application are catalogued under 3.8.23 PM/PM10/PM2.5 BACT Analysis for Paved/Unpaved Roads.² These fugitive emissions appear to be tabulated as emission unit ID “ROAD.FUG” under “Ancillary Equipment”,³ with the following emission unit descriptions and associated PM values: 114.03 tpy for Paved Road, 10.01 tpy for Unpaved Road, 1.90 tpy for Unpaved Area, 1.07 tpy for Parking Area – Paved, and 0.76 tpy for Parking Area – Unpaved, with a total of 127.77 tpy.⁴ The calculations presented for vehicle travel on paved and unpaved

¹ See Hyundai Steel January 2026 Supplemental Emissions Calculations, at 3, *available at*

<https://edms.deq.louisiana.gov/app/doc/view?doc=15068105> [hereinafter “Updated Appendix C”].

² Hyundai Steel Louisiana, LLC, Initial Title V Permit and PSD Permit Application, AI No. 248885, (Dec. 23, 2025), at 3-58 – 3-59 (pdf 88-89), [hereinafter “Application”], *available at*

<https://edms.deq.louisiana.gov/app/doc/view?doc=15036873>.

³ Updated Appendix C at 3.

⁴ *Id.*

surfaces are based on AP-42 Sections 13.2.1⁵ and 13.2.2⁶, respectively, which only consider dust generated from tire-road interactions, vehicle-induced turbulence, the resuspension of loose particulate matter on the road surface, the generation of PM due to brake and tire wear, and which assumes an average of 110 days of precipitation. In the case of paved surfaces, the applicant assumes a 0% control efficiency, whereas for unpaved surfaces, the applicant assumes an 80% control efficiency⁷ identifying this control strategy as the use of a “dust suppressant.” This approach does not consider any potential to emit fugitive PM from truck loads, even though the applicant has not demonstrated that all truck loads will be covered while on-site.

The applicant’s BACT analysis states that “Emissions from vehicles traveling on paved and unpaved roads are fugitive in nature; therefore, enclosures and capture/control systems, including fabric filters, cyclones, full/partial enclosures are not feasible”,⁸ and then presents “Watering/Material Moisture Content” and “Good Process Operation” as the only feasible control options for Paved/Unpaved Roads.⁹ The proposed adoption states that these two approaches are “the most prevailing control technique identified in the RBLC database.”¹⁰ Table 3-65 identifies the efficiency of “Watering/Material Moisture Content” as 70%, and further states “Hyundai proposes to utilize a combination of wet suppression and good housekeeping practices as PM BACT for paved and unpaved roadways.”¹¹

Both of these are inconsistent with how the applicant calculates the annual PM potential to emit for paved and unpaved surfaces within the facility: (1) in the analysis presented in Appendix C for paved surfaces, the applicant identifies no control; (2) in the analysis presented for unpaved surfaces, the applicant specifies the control efficiency of wet suppression as 80%, which therefore underestimates the potential to emit relative to the stated efficiency of 70% in the PM BACT analysis.

Furthermore, this description of the available control options is inconsistent with the control options that the applicant actually presents for transport trucks and paved/unpaved roads in RBLC Entries for Paved and Unpaved Roads.¹² RBLC entries include truck covers and limiting vehicle speed on-site and/or near production areas as adopted controls. For example, the

⁵ EPA, Air Emissions Factors and Quantification, AP 42, Fifth Edition, Volume 1, Chapter 13: Miscellaneous Sources, 13.2.1, available at https://www.epa.gov/sites/default/files/2020-10/documents/13.2.1_paved_roads.pdf, (attached as Exhibit II.22).

⁶ EPA, Air Emissions Factors and Quantification, AP 42, Fifth Edition, Volume 1, Chapter 13: Miscellaneous Sources, 13.2.2, available at https://www.epa.gov/sites/default/files/2020-10/documents/13.2.2_unpaved_roads.pdf, (attached as Exhibit II.23).

⁷ Application at pdf 348, footnote 4.

⁸ Application at 3-58 (pdf 88).

⁹ Application at 3-59 (pdf 89), Table 3-65.

¹⁰ Application at 3-59 (pdf 89).

¹¹ *Id.*

¹² Application at pdf 602, *et seq.*

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applicant includes the following in the RBLC review: Permit No. P0118959 specifies “covering, at all times, of open-bodied vehicles when transporting materials likely to become airborne” as a control technique for trucks traveling on paved roads, while Permit No. P0125944 specifies “limiting vehicle speeds to 15 miles per hour in production areas” for paved roadways and Permit No. P0124972 specifies “posting and limiting vehicle speeds to 20 miles per hour” although whether relevant to paved or unpaved roads is not specified.¹³

Consistent with EPA recommendations and Louisiana state law,¹⁴ (“Loads on vehicles”),¹⁵ all trucks entering or exiting Hyundai Steel should be required to cover their loads at all times while in motion on property. This is an especially important consideration for trucks transporting materials that are likely to become airborne and are known to be particularly hazardous to health if inhaled, such as slag dust,¹⁶ lime,¹⁷ and cement powder.¹⁸ For example, the City of Dearborn, in Michigan, recognizing the serious risks of such fugitive dust from industrial sites such as the Dearborn Works integrated iron and steel mill, including “pulmonary inflammation, asthma, and fibrosis,”¹⁹ implemented an ordinance in 2024 to control hazardous fugitive dust. Section 13-551 of the ordinance requires “all trucks carrying bulk solid material [to] cover all truck beds and trailers before leaving the facility”.²⁰ Additionally, consistent with EPA-recommended control measures and best practices for fugitive dust control, Hyundai Steel should establish and require all vehicles to adhere to posted speed limits of 5 miles/hour on unpaved roads and 10 miles/hour on paved roads.²¹ Limiting vehicle speeds will further reduce the opportunity for truck bed contents to become airborne.

¹³ Application at pdf 603.

¹⁴ La. R.S. § 32:383.

¹⁵ E.g., 40 C.F.R. § 49.126, available at <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-B/part-49/subpart-C/subject-group-ECFR31dd40b47455f3c/section-49.126>, (attached as Exhibit II.1); Louisiana Department of Transportation & Development, Louisiana Regulations for Trucks, Vehicles, and Loads, 2025, available at <https://dotd.la.gov/media/2u4lj431/rules-and-regulations-1.pdf>, (attached as Exhibit II.2).

¹⁶ EPA, Electric Arc Furnace (EAF) Slag, (accessed May 2026), available at <https://www.epa.gov/smm/electric-arc-furnace-eaf-slag>, (attached as Exhibit II.3).

¹⁷ The National Institute for Occupational Safety and Health (NIOSH), CDC, Calcium Oxide, (accessed May 2026), available at <https://www.cdc.gov/niosh/npg/npgd0093.html> (attached as Exhibit II.4).

¹⁸ Occupational Safety and Health Administration, Pocket Guide, Worker Safety Series Concrete Manufacturing, (accessed May 2026), available at https://www.osha.gov/sites/default/files/publications/3221_CONCRETE.pdf, (attached as Exhibit II.21).

¹⁹ Dearborn, Mich., Code of Ordinances, Art. VIII § 13-541, Purpose, intent and authority, 2026, available at http://codelibrary.amlegal.com/codes/dearborn/latest/dearborn_mi/0-0-0-25548 (attached as Exhibit II.5).

²⁰ Dearborn, Mich., Code of Ordinances, Art. VIII § 13-551, Vehicle covering and other dust control measures; leaking fluids, 2026, available at http://codelibrary.amlegal.com/codes/dearborn/latest/dearborn_mi/0-0-0-25548 (attached as Exhibit II.6).

²¹ E.g., EPA, Fugitive Dust Control Measures and Best Practices, January 2022, available at <https://www.epa.gov/system/files/documents/2022-02/fugitive-dust-control-best-practices.pdf>, (attached as Exhibit II.7); Minnesota Pollution Control Agency, Fugitive dust emissions management and best practices, accessed May 2026), available at <https://www.pca.state.mn.us/sites/default/files/p-sbap5-45.pdf>, (attached as Exhibit II.8).

According to EPA, the primary controls for limiting fugitive emissions from unpaved traffic areas are:

- Pave unpaved roads
- Reduce the surface's silt content by adding gravel
- Conduct inspections using visual emissions observations such as EPA Method 9 or Method 22 at least daily²²
- Limit truck speeds to 5 miles/hour on unpaved surfaces and 10 miles/hour on paved surfaces
- Apply water to minimize the development of dust.

EPA also recommends installing wheel wash stations at every vehicle exit point to minimize tracked material on public roads.²³

Separately, the European Bureau for Research on Industrial Transformation and Emissions BREF (Best Available Technique Reference Document) for Iron and Steel Production details a range of control techniques related to the handling, transport, and delivery of bulk materials (e.g., slag, scrap, cement, lime, coke). Relevant controls suggested for limiting the development of PM from active transport activities in iron and steel production sites include:²⁴

- High standards of road housekeeping (cleaning and dampening)
- The use of sweeping cars on hard surfaced roads
- Restricting loading/unloading activities to enclosed facilities with dust control systems
- The use of well-positioned windbreaks
- Pausing vehicle activities/production activities in times when dust/particulate emissions cannot otherwise be brought under control

Recommendation: Hyundai should consider the best available control options and prepare a thorough implementation plan for each:

- (1) Mandatory covers on truck beds entering or exiting the facility when the truck beds contain materials with a potential to become airborne during transport
- (2) Paving all high-traffic roads and traffic areas

²² EPA, Fugitive Dust Control Measures and Best Practices, January 2022, *available at* <https://www.epa.gov/system/files/documents/2022-02/fugitive-dust-control-best-practices.pdf>, (attached as Exhibit II.7).

²³ *Id.*

²⁴ European Commission, JRC Reference Report, Best Available Techniques (BAT) Reference Document for Iron and Steel Production, 2013, *available at* <https://bureau-industrial-transformation.jrc.ec.europa.eu/reference/iron-and-steel-production>, (attached as Exhibit II.9).

- (3) Depositing gravel on high-traffic roads and traffic areas to reduce their silt content, when paving may not be cost-effective
- (4) Limiting truck speeds to 5 miles/hour on unpaved surfaces and 10 miles/hour on paved surfaces
- (5) Installing wheel wash stations at vehicle exit points
- (6) Implementing routine cleaning and dampening practices consistent with the traffic area surface type and potential to accumulate surface debris
- (7) Implementing a daily visual inspection protocol with an appropriate response plan based on observed conditions (e.g., changes to wetting protocols or cleaning frequency, stopping work/traffic if airborne particulate matter cannot be sufficiently controlled)
- (8) To the extent Hyundai includes undefined vague phrases like “Good Process Operation” or “Good Housekeeping” it must describe specifically a thorough implementation plan that includes consideration of the above elements.

4.2. Material piles, slag processing and storage, material storage silos, and material transfer activities

As acknowledged by Hyundai Steel, “PM/PM10/PM2.5 emissions are generated when material is added to piles and when wind blows over the piles.”²⁵ The applicant proposes to store iron ore, scrap, and slag (a solid byproduct of steel production) “outdoors in large stockpiles.” Similar to cement dust, slag dust can have toxic effects on the human body if inhaled because it contains crystalline silica.²⁶ The applicant also proposes to store cement and lime in enclosed silos, as well as cold DRI, EAF dust, and charging carbon (coke) in some form of storage bin or silo.

4.2.1 Material piles

Hyundai Steel addresses the PM emissions from material stockpiles under Section 3.8.21 PM/PM10/PM2.5 BACT Analysis for Material Storage Stockpiles.²⁷ Under Step 2 of the BACT analysis, the applicant eliminates “technically infeasible options” for controlling the PM associated with material stockpiles, stating that “materials stored at the stockpiles must be accessible by crane and truck; therefore, enclosures and capture/control systems may not be feasibly utilized. As a result, the control options of fabric filter, cyclone, or full/partial enclosure are considered technically infeasible for the proposed stockpiles.” The section then goes on to identify “Watering / Material Moisture Content” and “Good Process Operation” as the only two

²⁵ Application at 3-57 (pdf 87).

²⁶ LaFarge, Material Safety Data Sheet, accessed May 2026), *available at* <https://semspub.epa.gov/work/10/500015619.pdf>, (attached as Exhibit II.10); EPA, Electric Arc Furnace (EAF) Slag, (accessed May 2026), *available at* <https://www.epa.gov/smm/electric-arc-furnace-eaf-slag>, (attached as Exhibit II.3).

²⁷ Application at 3-57 (pdf 87).

control options but provides no further details on how these activities will be carried out, implemented, or monitored.

The European Bureau for Research on Industrial Transformation and Emissions BREF (Best Available Technique Reference Document) for Iron and Steel Production details a range of control techniques related to the handling, transport, delivery, and storage of bulk materials (i.e., stockpile materials).²⁸ For example:

- Total enclosure (in-vessel or in-building storage) or covering of stockpiles, and the enclosure of hoppers in buildings equipped with dust extraction systems
- Orienting exposed stockpiles in the direction of the prevailing wind, installing wind barriers, constructing wind breaks using banks of earth or rows of dense foliage like evergreen trees, partially enclosing against retaining walls to reduce the exposed surface, and/or restricting the height of stockpiles
- Controlling the moisture content of delivered and stored materials, for example through the use of dust-suppressing water sprays (with additives, where appropriate) and monitoring of moisture content
- Minimizing stockpile disturbance
- Additionally, limiting the amount of material stored on-site at any given time, to contain stockpiles within volumes that can be reasonably enclosed and managed with improved dust minimization/capture systems

Hyundai has eliminated some of these controls, despite their adoption at other, similar facilities, and does not explicitly address others. For example, Mesabi Metallics, a new-build iron ore mine and pelleting plant in Minnesota, will produce 7 million tonnes per annum (MTPA) of DR-grade iron ore pellets per year (the same type of iron ore pellet that Hyundai Steel will import and store on-site). Similar systems for pellet transport like conveyors, will be used within both facilities. However, Mesabi Metallics has built a large-capacity enclosure for its iron ore stockpile, to fully enclose the stockpile and limit dust generation.²⁹ This plant will produce roughly the same amount of iron ore pellets that Hyundai Steel will process. Additionally, Stegra, a new-build green hydrogen-DRI-EAF integrated steel mill under construction in Sweden, was designed with full enclosure of materials during transfer and storage in stockpiles.³⁰ This facility is planned to produce 5 MTPA of steel per year, which is nearly twice the size of the proposed Hyundai Steel

²⁸ European Commission, JRC Reference Report, Best Available Techniques (BAT) Reference Document for Iron and Steel Production, 2013, *available at* <https://bureau-industrial-transformation.jrc.ec.europa.eu/reference/iron-and-steel-production>, (attached as Exhibit 11.9).

²⁹ Mesabi Metallics, Environmental Sustainability, (accessed May 2026), *available at* <https://www.mesabimetallics.com/environmental-sustainability/>, (attached as Exhibit II.11).

³⁰ Stegra, Our Boden plant, accessed May 2026), *available at* <https://stegra.com/en/the-boden-plant>, (attached as Exhibit II.12).

facility. A variety of companies construct stockpile enclosure buildings of the relevant scale (for example, Geometrica Circular and Longitudinal Domes, which have been adopted in the ore, cement, coal/coke industries)³¹ and some have specific expertise in constructing circular and longitudinal stockpile management systems that incorporate both traditional bulk material conveyors *and* enclosures (for example, Schade³², which also sells its systems into the iron and steel sector). Alcox engineering specifically advises iron and steel customers on the adoption of stockpile sheds for managing iron ore, pig iron, and other iron-based material stockpiles, and states that the benefits of iron ore stockpile sheds include: preservation of material quality, increases to operational efficiency, cost savings, enhanced pollution control, and greater ease of regulatory compliance.³³ As can be seen from the examples provided, many of these systems offer the high-level clearance needed for cranes, while meeting the clearances needed for trucks and conveyors.

In regard to steel scrap storage, recommendations typically include covering scrap piles (i.e., partial or full enclosure) to limit exposure and storage on concrete floors to minimize dust lift-off from vehicle traffic.³⁴

As an alternative to high-clearance erected enclosure systems, other companies (e.g., Cover-Tech,³⁵ Tarp Supply³⁶) manufacture large, heavy duty tarps designed for covering large material stockpiles, some of which specifically target the mining industry, including coal/coke stockpile needs. For example, Bollison advertises its Bollison-Mints tarp model as “designed specifically for use in mining environments ... engineered to handle extreme conditions such as abrasive loads, constant UV exposure, rain, wind, and temperature changes,” which “makes them ideal for covering haul trucks, coal and ore stockpiles, conveyors, crushers, and exposed on-site equipment.”³⁷

³¹ Geometrica, Bulk Storage Mineral Ores, accessed May 2026), available at <https://www.geometrica.com/en/bulk-subsection-english>, (attached as Exhibit II.13).

³² Schade Aumund Group, Performance in Stockyard Technologies, (accessed May 2026), available at <https://aumund.com/wp-content/uploads/2023/06/SCHADE-Performance-in-Stockyard-Technologies.pdf>, (attached as Exhibit II.14).

³³ Alcox, Enhancing Industrial Efficiency & Environmental Sustainability with Iron Ore Stockpile Sheds, accessed May 2026), available at <https://alcox-steel.com/blog/enhancing-industrial-efficiency-environmental-sustainability-iron-ore-stockpile-sheds/>, (attached as Exhibit II.15).

³⁴ European Commission, JRC Reference Report, Best Available Techniques (BAT) Reference Document for Iron and Steel Production, 2013, available at <https://bureau-industrial-transformation.jrc.ec.europa.eu/reference/iron-and-steel-production>, (attached as Exhibit II.9).

³⁵ Cover-Tech, Stockpile Tarps & Covers, accessed May 2026), available at <https://www.cover-tech.com/stockpile-covers>, (attached as Exhibit II.16).

³⁶ Tarp Supply Inc., Heavy Duty Tarps for Mining and Extraction Sites, Aug. 2024, available at <https://www.tarpsupply.com/blogs/tarps-articles/heavy-duty-tarps-for-mining-and-extraction-sites?srsId=AfmBOoqlN2coGeidtS134CTi0jGWLpNTMnUeQji6d4inPbbFpgyON5E>, (attached as Exhibit II.17).

³⁷ Bollison, Mining Tarps, (accessed May 2026), available at <https://bollisontarp.com/product/mining-tarps/#top>, (attached as Exhibit II.18).

Recommendation:

Stockpile enclosures are both technically feasible and a better control technology for managing PM than “Watering / Material Moisture Content” and “Good Process Operation,” and already have a demonstrated history of serving the iron and steel industry to increase operational efficiency while promoting environmental compliance. Beyond full stockpile enclosure, there are a range of effective controls (listed above) that Hyundai Steel failed to consider (or has not elaborated on) beyond “Watering / Material Moisture Content” and “Good Process Operation,” and thus should be evaluated as additional control options. Above all, fully enclosed stockpiles are the ideal solution for limiting PM generation from all stockpiles (iron ore, scrap, slag) at Hyundai Steel’s plant, and thus are also the ideal solution for protecting workers and the surrounding community from harmful dust. Hyundai should evaluate these controls for all its outdoor stockpiles.

4.2.2 Slag processing and storage

Hyundai Steel describes slag processing and storage under 1.2.5 Miscellaneous Operations, 1.2.5.1 Material Storage Piles.³⁸ This text identifies potential emissions originating from “material transfer (conveyors and drop points), slag crushing, truck loading, and wind erosion of the storage piles.”³⁹ As acknowledged above, similar to cement dust, slag dust can have toxic effects on the human body if inhaled because it contains crystalline silica.⁴⁰ All identified slag processing/handling and storage activities have the potential to develop significant amounts of health-harming slag dust.

Hyundai Steel states that hot slag will be transported to the slag dump station within the steel melting plant and then quenched with process water, followed by transport from the steel melting plant to the slag processing area for crushing and separation into different products. The applicant further states that once crushed and separated, the slag will be stored in outdoor storage piles until retrieved by customers via truck hauling.

Points of concern in the applicant’s PM BACT analysis for these various slag processing/handling activities:

- The full application file interchangeably identifies fugitive PM emissions from slag processing as SMP.FUG and DRP.FUG, whereas in the Updated Appendix C the applicant only identifies these emissions as associated with DRP.FUG despite stating that

³⁸ Application at 1-5 (pdf 17).

³⁹ *Id.*

⁴⁰ LaFarge, Material Safety Data Sheet, accessed May 2026), *available at* <https://semspub.epa.gov/work/10/500015619.pdf>, attached as Exhibit II.10); EPA, Electric Arc Furnace (EAF) Slag, (accessed May 2026), *available at* <https://www.epa.gov/smm/electric-arc-furnace-eaf-slag>, (attached as Exhibit II.3).

slag quenching will take place in the steel melting plant (SMP) and processing will take place outside and in association with the slag stockpile. These are inconsistent.

- Proposed Air Emission Sources – Steel Mill⁴¹ identifies three instances of SMP.FUG associated with slag (Slag Storage Area Transfer, Slag Storage Pile Erosion, Truck Loading of Slag), whereas Table 3-1⁴² lists just one instance of SMP.FUG as associated with the Material Storage Piles, but otherwise does not explicitly identify where these various slag handling/processing activities will be analyzed within the BACT framework. Then, slag next appears in 3.8.21 PM/PM10/PM2.5 BACT Analysis for Material Storage Stockpiles.⁴³ These are inconsistent.
- Ultimately, of all the slag processing/handling steps described in 1.2 Process Overview, 1.2.5 Miscellaneous operations, 1.2.5.1 Material Storage Piles, 1.2.5.1.1 Slag Processing,⁴⁴ the only place that the applicant considers fugitive PM emissions is in the BACT Analysis for Material Storage Stockpiles.⁴⁵ Based on the description of activities provided, slag processing/handling will develop PM emissions in more locations and at more steps than the storage piles.
- In Updated Appendix C, the total estimated PTE of DRP.FUG1, DRP.FUG2, and DRP.FUG3 associated with all slag processing/handling activities is 8.52 tpy. These entries describe the associated activities (Emission Unit Description) as slag storage area transfer, truck loading of slag, and slag storage pile erosion. It is not clear that the applicant has evaluated the fugitive emissions from slag quenching, slag crushing, or slag screening, all of which would be sizeable and could thus further increase this total.

Recommendation:

- Hyundai should clarify the inconsistencies described above.
- Hyundai Steel’s analysis of PM emissions related to slag processing/transfer/handling/storage requires significant attention. Hyundai must submit separate analyses for each of the four major activities identified (quenching in the SMP, transfer to the slag processing station, slag crushing and screening, and slag stockpile storage), and tally the associated emissions under appropriate processes within Appendix C.
- Emissions from quenching in the SMP should not be analyzed as fugitive, because they will exit the building through ventilation and exhaust systems.

⁴¹ Application at 1-6 (pdf 18), Table 1-1; Updated Appendix C Table 1-1 at 2.

⁴² Application at 3-5 (pdf 35); Table 3-1 Sources Requiring a BACT Analysis.

⁴³ Application at 3-57 (pdf 87).

⁴⁴ Application at 1-5 (pdf 17).

⁴⁵ Application at 3-57 (pdf 87).

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Elizabeth Boatman, 5 Lakes Energy
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- Emissions from transport within the facility but outside of any enclosed structures may be analyzed as fugitive, and proper controls for transporting a material prone to developing airborne emissions should be evaluated in the application.
- Slag crushing and screening should take place in an enclosed space with efficient dust extraction and bag filters to reduce dust emissions.⁴⁶ It is unclear from the application where crushing and screening will take place, and how related emissions will be controlled. If these activities take place in an enclosed space, then the associated emissions should not be analyzed as fugitive.
- Slag stockpile storage should be subject to the same controls described above for stockpiles, with preference given to full enclosure to limit the risks associated with airborne slag dust, in light of its health-harming nature. Dampening of slag storage stockpiles may also be helpful for minimizing PM emissions.⁴⁷
- Slag transport off-site should be subject to the same controls as for other trucks (see **4.1 Paved/unpaved roads**, above).
- All points where slag is dropped should strive to minimize the drop distance (to 3 feet or less) and carry out such activities within enclosed spaces with proper dust collection and building ventilation and exhaust systems, consistent with the techniques described in the European Bureau for Research on Industrial Transformation and Emissions BREF (Best Available Technique Reference Document) for Iron and Steel Production.⁴⁸

By enclosing nearly all slag handling operations, Hyundai Steel should be able to better estimate, monitor, and control PM emissions from slag operations that may otherwise be classified as fugitive. EPA Method 22 should be used for monitoring associated baghouse filtration systems and stockpiles. If slag crushing and screening is not carried out in an enclosed facility with dust capture and exhaust filtration controls, then EPA Method 9 should also be used for monitoring these activities. Limits to visible emissions from slag processing should be set at least as strictly as those prescribed in the recent slag processing permit issued to U.S. Steel’s Edgar Thomson Plant in Allegheny County, Pennsylvania (i.e., not to equal or exceed an opacity of 20% for a period of three minutes in any 60-minute period, and not to equal or exceed an opacity of 60% at any time).⁴⁹

⁴⁶ European Commission, JRC Reference Report, Best Available Techniques (BAT) Reference Document for Iron and Steel Production, 2013, *available at* <https://bureau-industrial-transformation.jrc.ec.europa.eu/reference/iron-and-steel-production>, (attached as Exhibit II.9).

⁴⁷ *Id.*

⁴⁸ *Id.*

⁴⁹ Allegheny County Health Department, Minor Source/Minor Modification Installation Permit, Issued Feb. 2026, *available at* <https://www.alleghenycounty.us/files/assets/county/v/1/government/health/documents/air-quality/uss-et-ip10.pdf>, (attached as Exhibit II.19).

4.2.3 Material storage silos

Hyundai Steel states that storage silos will be used for managing EAF dust, cold DRI (i.e., “CDRI”), charge carbon (coke), and lime. The applicant identifies the corresponding emission points as SMP.1 and SMP.2 for the EAF dust, DRP.DC08 for the cold DRI silos, and SMP.FUG for the charge carbon (coke) and lime silos. The role of SMP.cDRI1 and SMP.cDRI2 in regard to the cold direct reduced iron (CDRI) silos is unclear. Additionally, the applicant describes dust collector 7 (DRP.DC07) as associated with Transfer Cold DRI to Cold DRI Silos and dust collector 9 (DRP.DC09) as associated with Transfer Cold DRI to Meltshop. Finally, the Raw Material Storage & Handling diagram⁵⁰ identifies the SMP.FUG associated with charging carbon and lime as Carbon Dump Station Fugitives and Lime Dump Station Fugitives, and also states that these storage silos will have bin vents. Section 4.1.5 Miscellaneous Operations, 4.1.5.1 Material Storage Piles, 4.1.5.2 Material Storage Silos⁵¹ describes the use of storage silos for the EAF dust, charge carbon (coke), and lime, whereas 4.1.1.4 Product Handling⁵² identifies CDRI as being “stored in silos for later use” in association with the steel melting plant (SMP).

The proposed controls associated with these various operational elements and storage sites are recorded in 3.8.22 PM/PM10/PM2.5 BACT Analysis for Material Handling and Storage Equipment,⁵³ Table 3-64,⁵⁴ and Table 4-5 Proposed PM BACT.⁵⁵ Section 3.8.22 considers “equipment such as conveyors, screeners, and silos” collectively, and the two tables cited above identify only “Baghouse/Fabric Filter” (described as a “negative pressure fabric filter baghouse”)⁵⁶ and “Good Process Operation” as the controls, with a proposed limit of 0.0022 gr/dscf.

While multiple sources support that a baghouse/fabric filter is the ideal technology for controlling PM in these types of operations, the applicant has combined activities and emission points in the documentation in a way that obscures which specific controls are most relevant to individual activities/sources. For example, while loading of the lime silo may develop fugitive emissions, PM emissions from the silo/bin vent should not be considered fugitive because this is a controlled exit point.

⁵⁰ Application at pdf 157.

⁵¹ Application at 4-6 (pdf 115).

⁵² Application at 4-3 (pdf 112).

⁵³ Application at 3-57 (pdf 87).

⁵⁴ Application at 3-58 (pdf 88).

⁵⁵ Application at 4-11 (pdf 120).

⁵⁶ Application at 3-58 (pdf 88).

The South Coast Air Quality Management District requires additional relevant controls that Hyundai should consider and adopt:⁵⁷

- The use of a continuous opacity monitoring system on the baghouse exhaust
- Stipulations that at least one continuous 5-minute visible emissions observation using EPA Method 22 should be performed each week, and that if emissions exceed the established limit, then the operator should have 24 hours to identify and correct the challenge points after which point the operator is required to shut down the system creating the emissions to take further corrective action
- The use of a bag leak detection system to monitor baghouse performance, and that the system should be equipped with an automatic alarm, and that the operator shall act to minimize instances of the alarm sounding by proactively addressing instances that trigger the alarm, in addition to maintaining records of the complete time over which the alarm sounds, causes of the alarm, and steps to address those causes

Additional technically feasible options from BREF include:⁵⁸

- Installing filter units on storage bins

Recommendations:

- Each emission point should be described fully, including diagrams:
 - As mentioned, because Hyundai has combined activities and emission points in the application materials in a way that obscures which specific controls are most relevant to individual activities/sources, the applicant should resubmit materials that specifically identify and assess individually the activities of: cold DRI (i.e., “CDRI”) handling and storage, dumping/loading of carbon charge (coke) and lime into storage silos, transfer and dumping/loading of EAF dust into storage silos, conveying of these various materials throughout the facility, and the vents on the bins.
 - In this process, the applicant should also more clearly and accurately distinguish between fugitive emissions (associated with activities occurring outside of enclosed spaces) and those emissions which can be mitigated using ventilation controls like dust capture/filtration.
- Analysis of controls should include more enclosure options. There are many technically feasible controls that have not been considered by Hyundai Steel. For example, transport

⁵⁷ South Coast Air Quality Management District, Rule 1155 Particulate Matter (PM) Control Devices, May 2014, available at <https://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1155.pdf>, (attached as Exhibit II.20).

⁵⁸ European Commission, JRC Reference Report, Best Available Techniques (BAT) Reference Document for Iron and Steel Production, 2013, available at <https://bureau-industrial-transformation.jrc.ec.europa.eu/reference/iron-and-steel-production>, (attached as Exhibit II.9).

of materials within the facility should occur in enclosed systems like enclosed conveyors; material delivery/drop points should occur in contained areas enclosed with dust curtains and drop distances should be limited to no more than 3 feet; storage silos/bins should be fitted with dust collection systems such as filters (ideally, a fabric baghouse filter, as the applicant has identified), those systems should be fitted with continuous opacity monitoring systems and automatic alarms, and appropriate protocols should be used for monitoring and addressing exceedances, including shutting down the operation if after 24 hours the cause of an exceedance fault cannot be effectively identified and addressed; and unloading hoppers should either be fitted with dust baffles or housed within buildings equipped with dust extraction/filtration systems. EPA Method 9 should be used to monitor associated baghouse filtration systems and any vents on storage silos/bins, as well as for material delivery/drop points, hoppers, and other material transport connection points or vent points where PM may develop.

4.2.4 Material transfer

Hyundai Steel identifies that its facility will use the following feedstocks: lime, cement, charge carbon (coke), and cold DRI (CDRI) pellets. According to the applicant, the facility will also generate EAF dust and steel slag, both of which will face additional on-site handling activities. All these materials have the potential to generate particulate matter during transfer activities. For example, the applicant states that “materials such as dust from EAF operations and raw materials including lime and carbon will be loaded and stored in silos”⁵⁹; “mechanically transported CDRI is then stored in CDRI silos” (where CDRI is metalized cold DRI);⁶⁰ that “conveyors and drop points” will comprise related “material transfer” activities for slag transfer and processing.⁶¹

As described in Section 3.8.21 PM/PM10/PM2.5 BACT Analysis for Material Storage Stockpiles⁶² and Section 3.8.22 PM/PM10/PM2.5 BACT Analysis for Material Handling and Storage Equipment,⁶³ the applicant’s proposed controls associated with material transfer activities described as “when material is added to piles” and the use of “conveyors, screeners, and silos” are:

- Watering / Material Moisture Content
- Baghouse/Fabric Filter
- Good Process Operation

⁵⁹ Application at 4-6 (pdf 115).

⁶⁰ Application at 4-3 (pdf 112).

⁶¹ Application at 1-5 (pdf 17).

⁶² Application at 3-57 (pdf 87).

⁶³ *Id.*

However, these sections do not consider PM generation associated with the handling and transfer of EAF dust and slag, or specific materials stored in silos or outdoor stockpiles.

The applicant does include a series of additional controls in its list of “RBLC Entries for Steel Mill Material Handling and Storage Silos.”⁶⁴ These are summarized as:

- Permit No. V-20-001 – Dust collectors at dump stations, conveyor transfer points, and hopper loading points, as well as passive bin vents.
- Permit No. 2445-AOP-R0 – Enclosed receiving points, enclosed and/or hooded conveyors, use of water sprayers at transfer points, enclosed transfer points, enclosed receiving points, a dust control plan, and silos with bin vent filters.

These additional control technologies are not adequately considered in the relevant BACT analysis identified above.

Moreover, additional control technologies for limiting PM associated with material transfer can be found in readily available resources. For example, the European Bureau for Research on Industrial Transformation and Emission BREF (Best Available Technique Reference Document) for Iron and Steel Production⁶⁵ specifies:

- Controlling the moisture content of delivered materials
- Limiting all material drop heights to 0.5 m (1.6 feet)
- Careful attention to procedures to avoid the unnecessary handling of materials and long unenclosed drops
- Adequate containment on conveyors and in hoppers, etc.
- Total enclosure of unloading hoppers in a building equipped with filtered air extraction for dusty materials, or hoppers should be fitted with dust baffles and the unloading grids coupled to a dust extraction and cleaning system
- The use of dust-suppressing water sprayers, preferably using recycled water
- Rigorous maintenance standards for equipment

And EPA recommends the following controls:⁶⁶

- Limiting drop distances at material transfer/dump points to no more than 3 feet
- Restricting the flow of material using dead boxes, socks, drop down spouts/sleeves

⁶⁴ Application at pdf 595-596.

⁶⁵ European Commission, JRC Reference Report, Best Available Techniques (BAT) Reference Document for Iron and Steel Production, 2013, *available at* <https://bureau-industrial-transformation.jrc.ec.europa.eu/reference/iron-and-steel-production>, (attached as Exhibit II.9).

⁶⁶ EPA, Fugitive Dust Control Measures and Best Practices, January 2022, *available at* <https://www.epa.gov/system/files/documents/2022-02/fugitive-dust-control-best-practices.pdf>, (attached as Exhibit II.7)

- Installing and maintaining dust curtains around material transfer points
- Enclosing all conveyor belts and using belt wipers when applicable
- Spraying water or an approved dust suppressant at the conveyor feed during material transfer
- Cleaning up spillage

Recommendations:

- The applicant should more clearly identify the controls that will be used by each relevant facility element in relation to material transfer activities. For example, material storage silos may be loaded by using pneumatic systems, whereas outdoor stockpiles are more likely to be loaded using conveyor discharge or truck dumping. These are different loading approaches occurring under different conditions (enclosed/unenclosed), for different materials with different dust generation tendencies – each warrants its own consideration for relevant controls.
- The various materials that should be considered separately include: cement, lime, charge carbon (coke), DRI iron ore pellets, scrap iron and/or steel, EAF dust, cold DRI (metallized cold DRI), and slag (in multiple, discrete stages of handling within the facility, consistent with the processes described, such as quenching, crushing, storage, and loading by truck for transfer off-site and the transfer activities necessary to move the slag between these processes/activities).

**Analysis of Hyundai Steel – Air Permit
Application
BACT Determination
Katie McClintock
May 2026**

Introduction

I am an engineering consultant with over 20 years of experience working at the Environmental Protection Agency and consulting on the Clean Air Act New Source Review Program. I have significant expertise in integrated steel and industrial sector operations, and deep expertise in the Clean Air Act rules and policies, Title V permitting, and Best Available Control Technology (BACT) analyses for complex industrial facilities. I have reviewed Hyundai's air permit application and provide the following comments.

Summary of Findings

The BACT analyses in Hyundai's air permit application are fundamentally flawed and incomplete. I recommend that LDEQ deem the application incomplete and request additional information before proceeding with a draft permit. Below, I outline the general flaws with the application and provide a detailed analysis of the flaws in the BACT analyses for the EAFs as a primary example of these systemic errors. I chose the EAFs because they are the largest units of pollution, contributing the most to the overall PTE of the plant. Lastly, I address the lack of critical data regarding the potential emissions of hazardous air pollutants (HAPs).

I. General Flaws in the Application/BACT Analysis

The application has some fatal flaws which make it impossible to conduct a full BACT evaluation and determination including, but not limited to:

- A. **Misapplication of the RACT/BACT/LAER Clearinghouse (RBLC).** Hyundai incorrectly relies on the RBLC at the end of its BACT analysis rather than the beginning. The RBLC is supposed to be used in Step 1 to help identify all control options. An RBLC search is one of the multiple ways companies can search for potential control technologies, in addition to assessing technology transfer from other industries and controls at facilities outside of the country.¹ After identifying all potential control technologies at step one, the top-down 5-step BACT analysis requires that each control is evaluated and the highest-ranked option that was not properly eliminated is chosen. Rather than using the RBLC at step one, Hyundai improperly uses RBLC in step 5 to select BACT. The RBLC plays no role at this phase of the analysis and utilizing it in this manner has caused Hyundai to incorrectly choose the wrong technology or limit in many of its analyses. The Hyundai application BACT analyses boil down to a review of the RBLC and decision to pick something off of it with no explanation for why more stringent controls or limits were not feasible. All of Hyundai's BACT analyses suffer from this flaw and must be redone.

¹ See EPA, New Source Review Workshop Manual, Prevention of Significant Deterioration and Nonattainment Area Permitting, October 1990, at B.5 (pdf 80), [hereinafter "NSR Manual"], available at <https://www.epa.gov/sites/default/files/2015-07/documents/1990wman.pdf>, (attached as Exhibit II.A).

B. Incomplete Identification of Control Options in Step 1. Hyundai’s analysis did not include a sufficient number of potential control options at step 1 of the BACT review. BACT requires the evaluation of standalone controls and the combinations of feasible controls, such as Low-Burners (LNB) used in tandem with SCR.² Although Hyundai lists control options separately in the tables in the application, for example in Table 3-4 for the Process Gas Heater, in fact, Hyundai improperly evaluated SCR only as an aggregated control with low-Nox burners, and failed to evaluate it as a standalone control.³ Hyundai must identify all combinations and individual options in Step 1.

C. Failure to Evaluate Control Performance Ranges in Step 3: The NSR Manual provides that “[t]he applicant should use the most recent regulatory decisions and performance data for identifying the emissions performance level(s) to be evaluated in all cases.”⁴ When a technology can achieve a range of emission reductions, it must be evaluated at both the higher and lower performance rates because they may have different capital costs, operating costs and environmental implications⁵ While Hyundai states that Selective Catalytic Reduction (SCR) can achieve 70–90% reduction in NOx for two units,⁶ it only evaluated the 70% rate.⁷ Failing to evaluate multiple control rates skews the cost-effectiveness calculations in favor of less stringent controls. LDEQ must require Hyundai to evaluate SCR reduction at both a 70 and 90% rate.

Hyundai states “As low-NOx burners lower the inlet loading of NOx to the potential control device, SCR or SNCR would not achieve the high end of their respective control efficiencies.”⁸ If Hyundai believes only 70% is possible when considering the scenario of box Low-Nox Burners and SCR, it must provide evidence from vendors or other plants to document that and then include the highest technically achievable number in the table specifically.

D. Failure to Determine Potential Reductions from Each Possibly BACT Technology for each Unit Specifically in Step 3. In Hyundai’s application, each BACT determination has a table of ranked technologies that Hyundai says are technically feasible for that unit,⁹ but that list always has the same range unit to unit for each technology with no evaluation or calculation of how that technology would do for this unit. For example, for each NOx-emitting unit, the BACT determinations list some or all

² NSR Manual at B.10 (pdf 85).

³ Hyundai Steel Louisiana, LLC, Initial Title V Permit and PSD Permit Application, AI No. 248885, (Dec. 23, 2025), at 3-10 – 3-22 (pdf 40-52), (pdf 650-661), [hereinafter “Application”], *available at* <https://edms.deq.louisiana.gov/app/doc/view?doc=15036873>.

⁴ NSR Manual at B.23 (pdf 98).

⁵ NSR Manual, B.23 – B.25 (pdf 98-100).

⁶ Application at 3-11 – 3-14, 3-19 – 3-22 (pdf 41-44, 49-52).

⁷ Application at pdf 650- 661.

⁸ Application at 3-11 (pdf 41).

⁹ Application at 3-12, Table 3-6 Rank of Remaining Control Technologies for NOx from PTS Heater (pdf 42).

of the following technologies and efficiency: SCR as 70-90%, Low-NO_x Burners as “up to 80%” Oxy-Fuel Burners as “20%”, and Good process operation as N/A (despite the very real ability of good process operation to lower emissions).¹⁰ The same error appears in each of the BACT analyses in the application. However, Step 3 of the BACT analysis requires that Hyundai determine the reductions for each unit and each technology specifically.¹¹

For each technology in all BACT analysis, LDEQ must require Hyundai to create a table that lists the technologies (and combinations of technologies), the proposed reductions and the rank. All of Hyundai’s Step 3 analyses in the application are deficient because they do not determine specific control efficiencies for each control option (and combinations of controls of technologies) for each unit.

- E. **Absence of Uncontrolled Baseline Emission Calculations:** Hyundai’s application is fundamentally incomplete because it fails to establish “uncontrolled” baseline emission rates. Establishing a pre-control emission rate is a mandatory starting point for any BACT analysis.¹² Without this baseline, it is impossible for LDEQ to accurately evaluate the effectiveness of proposed controls or verify claimed emission decreases. Hyundai must provide these calculations to allow for a technically sound review of its BACT determinations.
- F. **Lack of Required Cost-Effectiveness Data:** Hyundai failed to provide cost-effectiveness analyses for the vast majority of its proposed controls. Aside from a limited analysis for SCR on six units in Appendix E, the application is devoid of the economic data required by Step 3 of the top-down process. Cost-effectiveness is a fundamental metric for evaluating and eliminating control options.¹³ Without detailed, unit-specific cost data for all technically feasible controls, the BACT selection process is incomplete and fails to meet regulatory standards.
- G. **Failure to Document the Basis of Cost Estimates:** The limited cost data provided in the application is insufficient because it does not include the basis for the cost estimates, and it lacks documentation. Under the top-down BACT process, applicants must provide detailed and comprehensive project cost data that is easily traceable to source documents—such as vendor quotes or the EPA Control Cost Manual—to justify the elimination of control options.¹⁴ Hyundai’s failure to itemize costs or provide verifiable source documentation prevents LDEQ from determining if these costs are reasonable.¹⁵

¹⁰ Application at 3-11 – 3-12, 3-13, 3-16 – 3-17, 3-19 (pdf 41, 42, 44, 46, 47, 49).

¹¹ See NSR Manual B.23 – B.25 (pdf 98-100).

¹² NSR Manual at B.36 (pdf 111) et seq.

¹³ NSR Manual at B.6, B.25, B.36 (pdf 81, 100, 111) et seq.

¹⁴ NSR Manual at B.33, B.35, Appendix B, Estimating Control Costs (pdf 108, 110, 304) et seq.

¹⁵ NSR Manual at b.3 (pdf 307).

- H. Omission of Critical Design and Operational Specifications:** The application fails to provide clear and comprehensive unit descriptions, which are foundational to a BACT review. For example, crucial operational details—such as the fact that the Electric Arc Furnace (EAF) utilizes raw material pre-heating—are buried within the CO BACT narrative rather than being clearly defined in the unit description. Most of the units have only simple descriptions. Without a transparent "process description" and detailed design parameters, a reviewer cannot accurately identify potential process modifications or additional controls to reduce emissions.
- I. Failure to Characterize Emission Generation and Capture Mechanisms:** Hyundai's application lacks a comprehensive description of how pollutants are generated and captured within its processes. For example, NO_x formation in the EAF occurs through air infiltration and fuel combustion, yet the application fails to provide any discussion of this. Furthermore, the application is vague regarding the scope of the EAF canopy hood, making it nearly impossible to determine which specific emission points are being captured by the hood. These details are clearly transparent in other RBLC entries.¹⁶ Without identifying the specific sources and causes of emissions, it is impossible for LDEQ to determine if the applicant has evaluated all relevant reduction techniques.
- J. Improper and Unsupported Use of Restricted Operating Hours in PTE and BACT Calculations:** Hyundai's calculations for the EAFs are based on an arbitrary and unexplained 7,680 hours per year,¹⁷ while other units are also inexplicably calculated at 8,000 hours.¹⁸ The NSR Manual¹⁹ instructs that a BACT analysis must be conducted based on the unit's maximum Potential to Emit (PTE)—defined as the maximum capacity of a source to emit a pollutant under its physical and operational design. Unless Hyundai accepts a federally enforceable permit limit restricting the throughput of a unit, the BACT analysis must be redone using the true physical maximum (8,760 hours/year). The current analysis artificially lowers the PTE and skews the baseline for all subsequent BACT decisions.
- K. Pervasive Deficiencies in Emission Calculations and Data Substantiation:** Overall, the application's emission calculations are fundamentally deficient, undermining the determinations about BACT, applicability of rules, HAP avoidance limits, and the ability of the permitting authority to set meaningful limits and monitoring related to those limits. For all pollutants across all units, Hyundai has failed to provide necessary data on throughputs, emission factors, capture/control efficiencies, and source counts. Without

¹⁶ Application at pdf 435.

¹⁷ Application at pdf 232.

¹⁸ Application at pdf 200.

¹⁹ NSR Manual at A.1, A.4 (pdf 20, 23).

this information, Hyundai's calculations are unverifiable and the application is incomplete. Examples of these deficiencies include:

- i. **Fugitive Emission Points:**²⁰ The calculations for dumping and material handling lack a count of "drop points" and the specific source of the emission factors. While AP-42 provides factors per drop point, the absence of throughput and point-count data makes it impossible to verify the PTE or assess future operational changes. Furthermore, the application fails to justify why these are classified as "fugitive" rather than point sources since conveyor belts can be enclosed. (Nor does the PM BACT analysis consider enclosures for belts and drop points as a control option.) This is true for many of the emissions labeled as "fugitive" in the application.
- ii. **Unsupported Vendor Factors for EAFs:** All emission factors for the EAFs are attributed solely to "Danieli" without any supporting data.²¹ While vendor guarantees may be appropriate for add-on controls or novel units, because there are many EAFs in the world, emissions estimates should be based on real-world operating data or stack test results from similar units. If these factors are based on proprietary testing, that data must be provided to LDEQ to establish a technically sound baseline.
- iii. **Unexplained 99% Reduction in RH Degasser CO₂e emissions:** The original application calculated the RH Degasser at 16,396,128.63 tpy,²² while the January 2026 revision claims only 8,220.45 tpy.²³ This massive discrepancy—a 99% reduction—is completely unexplained. Was there an error? Was there a change in proposed technology? Furthermore, the proposed BACT limit of 1,816,891 tpy²⁴ does not align with either the original calculation of 18,325,647 tpy of CO₂ emissions²⁵ or the revised number of 1,937,739 tpy,²⁶ suggesting ongoing mathematical errors. Such radical shifts in data without narrative justification create a lack of confidence in the facility's projected emissions and its ability to monitor future compliance.

²⁰ See Hyundai Steel January 2026 Supplemental Emissions Calculations, at pdf 16, *available at* <https://edms.deq.louisiana.gov/app/doc/view?doc=15068105> [hereinafter "Updated Appendix C"].

²¹ Application at pdf 327-329.

²² Application at Appendix C – Emissions Calculations, Table 1-1, pdf 311.

²³ Updated Appendix C (pdf 2).

²⁴ Application at 3-79 (pdf 109).

²⁵ Application at pdf 312.

²⁶ Updated Appendix C at pdf 3.

II. BACT Analysis for the EAF

A. PM BACT For the EAF

The PM BACT determination²⁷, and PM10, PM2.5 for the EAF are correct in so far as selection of the baghouse as the best available control technology is appropriate. Either baghouse or ESP would work, but Hyundai has selected a baghouse as most EAFs use because of the nature of the operation.

However, the PM BACT analysis determination of the appropriate emission limit for the baghouse is significantly flawed. Instead of selecting an achievable rate based established performance of these units as established in similar units, Hyundai has proposed the new (and inapplicable) New Source Performance Standards (NSPS) limit of 0.16 lb/ton (equivalent to 0.00327 gr/dscf and 33.8 lb/hr). Where an NSPS applies to a source, it “represent[s] the absolute minimum requirements for BACT.”²⁸ In this case, the NSPS do not apply to the proposed Hyundai EAFs, and even if it did, it would be the not represent BACT.

Hyundai’s proposed limit exceeds almost every other EAF PM BACT limit in the RBLC except one (and tied with one)²⁹. LDEQ should at a minimum set the PM limit at 0.0018 gr/dscf, or a lb/ton equivalent of 0.088lb/ton, the most common EAF PM BACT limit in the RBLC. Absent a satisfactory and documented explanation from Hyundai. In addition, LDEQ should require Hyundai to evaluate whether an even lower rate is achievable here. RBLC sets a floor, but each BACT analysis must consider “manufacturer’s data, engineering estimates and the experience of other sources...[to] determine achievable limits.”³⁰

Maximum Correct limit - 0.0018 gr/dscf (could be expressed in the alternative as 0.088 lb/ton)³¹

Hyundai proposed emissions for both EAFs - 259.9 tpy (129.94 tpy PM per EAF).

Annual corrected PM combined for both EAFs - 143.1 tpy (71.53 tpy PM per EAF).

Reduction - 116.8 tpy PM

B. PM10/PM2.5 BACT For the EAF

For both PM10 and PM2.5, Hyundai is proposing the same limit of 0.16 lb/ton. The RBLC entries cited in the RBLC, however, show more variability. Some of the limits are higher than the PM limits. Presumably this is accounting for condensables in PM10 and PM2.5, where the PM limit is often filterable only. One would have to review each of these RBLC entries to understand

²⁷ Application at 3-26 (pdf 56).

²⁸ NSR Manual at a.5 (pdf 301).

²⁹ Application at pdf 442.

³⁰ NSR Manual at b.24 (pdf 99).

³¹ Calculation done using calculations on Application at pdf 327.

the variability. The Hyundai application assumes the same for each PM10 and PM2.5, without any discussion of condensables, consistent with the overall lack of information in the application.

Hyundai should be required to meet at least a limit of 0.0024 gr/dscf, which is equal to or slightly higher than 4 permits. LDEQ should require Hyundai to provide information on why this limit is not technically achievable, cost effective or has collateral impacts.

Correct limit for Pm10/PM2.5 - 0.0024gr/dscf (could be expressed as 0.117 lb/ton).

Hyundai proposed emissions from both EAFs = 259.9 tpy (129.94 tpy per EAF).

Annual corrected PM10/PM2.5 combined for both EAFs = 190.7 tpy (95.34 tpy per EAF).

Reduction - 69.2 tpy PM10/PM2.5

C. NOx BACT for the EAF (and ladle furnace (LF))

The NOx analysis for the EAF³² is internally inconsistent, fails to meet regulatory standards and reaches a flawed outcome. After dismissing several control options as technically infeasible, the applicant ranked the remaining controls as: (1) low-NOx burners, (2) oxyfuel burners, and (3) good combustion practices. Despite stating that no options were eliminated based on collateral impacts or cost,³³ the applicant ultimately bypassed the top-ranked option (low-NOx burners) in favor of options 2 and 3. The analysis did not explicitly eliminate the first option of low-NOx burners for any documented reason, and yet Hyundai did not choose the first option.

Under the "top-down" BACT process, the most stringent control option **must** be selected unless the applicant provides robust documentation demonstrating that it is technically infeasible, not cost-effective, or results in adverse collateral impacts. The application offers no such justification for rejecting low-NOx burners, rendering the analysis deficient.

In addition, as discussed above, the application provides no explanation of where NOx is created (fuel and non fuel sources) and how various control technologies work to reduce NOx in practice. Oxyfuel burners can increase or decrease NOx depending on how they are used. Other techniques like reducing air infiltration can also combat NOx, but such techniques were not considered at all.

The RBLC shows a mixture of low NOx burners and oxyfuel and also several good operating practices.³⁴ Hyundai must redo its BACT analysis to evaluate each of the available technologies, determine the rate that could be achieved through each, and the cost/collateral impacts of those rates. The analysis in the application failed to do any of this.

³² Application at 3-13 (pdf 43).

³³ Application at 3-14 (pdf 44).

³⁴ Application at pdf 434.

The analysis also lacks discussion of what practices would be included in good combustion - such as using CEMS to make adjustments, or regular tuning of the burners, since an untuned oxyfuel burner increases NO_x. While there is little in this BACT analysis about the EAF, the application discusses the EAFs in some detail in the GHG Analysis.³⁵ The same discussions should be included in the NO_x BACT analysis. Hyundai should evaluate the NO_x reductions associated with each combustion practice and the costs. Hyundai should also consider using multiple options like low-NO_x burners along with airtight operation and engineered refractories.

Finally, Hyundai improperly dismisses the limit of 0.24 lb/ton in the RBLC because it was part of a Lowest Achievable Emission Rate (“LAER”) determination. However, LAER determinations must be considered for BACT and typically represent the top control option.³⁶ Unless Hyundai provides evidence showing why the limit is not cost effective or technically feasible, it should be selected as BACT.

Correct limit for NO_x - 0.24 lb/ton.

Hyundai proposed emissions from both EAFs = 568 tpy (284.24 tpy per EAF).

Annual corrected NO_x Emissions combined for both EAFs = 389.8 tpy (194.9 tpy per EAF).

Reduction = 178.7 tpy NO_x.

D. CO BACT analysis for the EAF/LF

The CO BACT analysis for the EAF³⁷ determines that good process operation is the only available technique in addition to the planned direct-shell evacuation. However, the resulting emission limit determination is fundamentally flawed. While the applicant reviews the RBLC³⁸ and reports limits ranging from 1.7 lb/ton to 4.0 lb/ton. Instead of selecting the “emissions limitation ...based on the maximum degree of reduction,” which is the definition of BACT,³⁹ they select 3.5 lb/ton limit.

Hyundai attempts to justify this high limit by claiming that their unit is different from others in the RBLC since it uses DRI and scrap preheating, both which it claims can increase CO emissions. However, Hyundai provides no technical basis for its claim or the emission factor. They do not cite to a vendor or to other tests on similar units. They also do not discuss if any of the prior RBLC decisions are for similar units.

Given the magnitude of emissions from these units – 2,842 tons of CO per year per unit, even a small shift of 0.1 lb/ton in the limit to 3.4 lb/ton would reduce CO emissions by 162 tons per

³⁵ Application at 3-72 (pdf 102).

³⁶ See NSR Manual at B.5 (pdf 80) (“(LAER) determinations are available for BACT purposes and must also be included as control alternatives and usually represent the top alternative.”)

³⁷ Application at 3-26 (pdf 56).

³⁸ Application at pdf 438.

³⁹ NSR Manual at B.1 (pdf 76).

year over both units. LDEQ should at minimum set BACT at 1.7 lb/ton, unless Hyundai submits evidence that it is not a technically or economically achievable limit. Furthermore, LDEQ must investigate and require Hyundai to evaluate whether even lower rates are achievable.

Correct limit for CO – 1.7 lb/ton (or lower).

Hyundai proposed emissions from both EAFs = 5684 tpy (2842 tpy per EAF).

Annual corrected CO Emissions combined for both EAFs = 2761.2 tpy (1380.6 tpy per EAF) .

Reduction = 2922.8 tpy CO.

E. GHG BACT for the EAF

The permit application lists GHG control options in Table 3-80⁴⁰ but fails to evaluate them using the required top-down approach. Furthermore, Hyundai didn't select any options that are enforceable choices, proposing instead a plantwide limit,⁴¹ which is inconsistent with BACT requirements, as Hyundai acknowledges elsewhere in its application, and explicitly prohibited by the NSR Manual.⁴²

As mentioned above, Hyundai drastically revised their projected CO2 emissions from the facility, mostly from the RH Degasser, from the original application to the revised calculations.⁴³ See Section K.iii, *infra*. There is no explanation, which makes evaluating the limit they proposed even more difficult. Since the proposed limit is less than the calculated emissions in the application, it is unclear where any of the numbers came from.⁴⁴

As Hyundai says, “BACT must be determined for each new emission unit from which these pollutants [which included GHG] are emitted.”⁴⁵ They need to then provide this information. LDEQ must require a formal top-down GHG BACT determination for each unit. This analysis must quantify potential reductions for each technology, provide detailed cost-effectiveness data, and justify selections based on economic and collateral impacts.

III. Total HAPs Issues:

The application reports total Hazardous Air Pollutants (HAPs) at 9.143 tpy, with hydrochloric acid (HCl) accounting for 6.526 tpy.⁴⁶ While these figures fall below the major source thresholds (25 tpy for total HAPs or 10 tpy for a single HAP), the underlying calculations remain opaque. The HCl comes from the pickling line and the acid recovery. If these estimates include

⁴⁰ Application at 3-78, Table 3-80 Rank of Remaining GHG Control Technologies (pdf 108).

⁴¹ Application at 3-79 (pdf 109).

⁴² NSR Manual at B. 4 (pdf 79).

⁴³ *Supra* note 22; see Section K.iii.

⁴⁴ Calculated CO2e from the plant in the Updated Appendix C is 1,937,739.35 (pdf 3). Proposed limit in Application is 1,816,891 tpy, at 3-79 (pdf 109). The limit was not revised in a supplemental submittal, to my knowledge.

⁴⁵ Application at 3-5 (pdf 35).

⁴⁶ Updated Appendix C at pdf 5.

reductions associated with control techniques or add on controls, then the source may be synthetic minor for HAPs.

Similarly, for lead the facility is accepting a limit to remain below threshold levels, however, without controls, the PTE for lead is likely well above the threshold.⁴⁷ The application's failure to include baseline uncontrolled emissions or specific control efficiencies for the proposed controls makes it impossible to verify the facility's true status.

Because the facility relies on control measures to avoid major HAP source classification, it must be regulated as a synthetic minor. This requires rigorous monitoring, recordkeeping, and reporting to ensure continuous compliance.⁴⁸ LDEQ should require a supplemental application that explicitly details the uncontrolled PTE of each HAP, control efficiency for each add-on technology, and what appropriate monitoring recordkeeping and monitoring the facility will do to demonstrate compliance.⁴⁹

This facility needs to be considered synthetic minor for HAPs and adequate monitoring, recordkeeping and reporting needs to be proposed to ensure compliance with the limit for all HAPs. A supplemental application should be submitted with all the information above before a permit draft is written.

⁴⁷ Updated Appendix C at pdf 2, calculated 0.37 tons/year of lead from each EAF. The Application mistakenly calculated 1.3 tpy from each (pdf 311). With the proposed limit of 0.00045lb/ton, the 0.37 calculation is correct. However, uncontrolled, assuming conservatively 99% control, the PTE is over 35 tons/year.

⁴⁸ EPA, Memorandum, Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act, Jan. 25, 1995, (This policy sets forth EPA's main guidance on establishing synthetic minor limits for HAPS), *available at* <https://www.epa.gov/sites/default/files/2015-08/documents/ptememo.pdf>, (attached as Exhibit II.B).

⁴⁹ 40 C.F.R. § 49.158 – Synthetic minor source permits. (This tribal minor NSR rule contains a helpful list of necessary requirements to establish a synthetic minor operating limit for HAPs), *available at* <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-B/part-49/subpart-C/subject-group-ECFR82dff0ea37769e/section-49.158>.

EXHIBIT II.i

Boatman, Elizabeth, PhD, PE, May 2026, Resume, 5 Lakes Energy



Elizabeth Boatman, PhD, PE

She | Her | Hers

Lead Consultant

eboatman@5lakesenergy.com

Expertise

Industrial decarbonization; principles of manufacturing, materials, and mechanical engineering across all material classes, especially structural materials (steel and concrete); state strategy development and implementation; principles of human-centered design; community engagement; scientific, strategic, and executive communications.

Portfolio Features

- **State Strategy for Tackling Industrial Decarbonization in the Great Lakes Region.** Reducing the fuel consumption and emissions output of the U.S. industrial sector is a critical element of our country's efforts to mitigate climate change, offering new opportunities for 5LE to have an impact within this complex, technical space. As Lead Consultant of 5LE's industrial decarbonization portfolio, Boatman has developed close, collaborative relationships with state agency leadership in Michigan, Wisconsin, and Minnesota, securing the necessary grant funding for her team to support these states in developing and implementing their industrial decarbonization strategies through in-depth roadmap projects and broad stakeholder engagement. In 2026, these efforts culminated in three industry net-zero reports, after which Boatman's team was invited to develop a tailored industrial decarbonization policy roadmap for the Office of Climate and Energy, in Michigan's Department of Environment, Great Lakes, and Energy.
- **Transitioning U.S. Manufacturers to "Green Steel" Technology.** Primary steel has a carbon problem that new technologies can help fix – with the potential for a significant impact on U.S. greenhouse gas emissions. Boatman provides technical support to multiple "green steel" advocacy coalitions across the United States, which has included the development of two in-depth transition studies on existing integrated BF-BOF steel mills. She also serves as a mentor to green iron and green steel start-up companies via the Third Derivative climate tech ecosystem, and provides expert advice to states considering economic and policy strategies designed to foster an economically-competitive emerging "green steel" sector.
- **Waste and Recycling of Renewable Energy Materials.** Renewable energy materials – like rechargeable batteries, solar panels, wind turbines, and thermal storage systems – are key to unlocking our clean energy potential. However, they also pose new safety and recycling challenges at end of life. Drawing on her expertise as a materials engineer, Boatman provides technical insights and perspectives to inform state-level and industry-specific solid waste management plans.



Selected Publications

- **Jobs in the Balance: Building Toward a Clean Steel Transition in Indiana.** Commissioned by Indiana Conservation Voters, this report assesses what a transition to newer, cleaner iron and steelmaking technologies might look like for Northwest Indiana. | April 2026
- **Net-Zero Industry in Minnesota: Foundation for a state roadmap built on stakeholder perspectives.** This preliminary report profiles Minnesota's industrial sector, defines priority decarbonization strategies and technical approaches, profiles systemic and industry-specific barriers, presents diverse stakeholder perspectives, and suggests key next steps for Minnesota – laying the foundations and stakeholder-based framing needed to support a forthcoming, comprehensive state-level industrial decarbonization roadmap. | February 2026
- **The Potential for Hydrogen to Support Low-Carbon Industry in Minnesota.** This report explores how clean hydrogen could support Minnesota in the state's transition to a low-carbon industrial sector. The study assesses the use potential for clean hydrogen to decarbonize existing high-temperature industrial heat needs as well as support the launching of new low-carbon ammonia, iron, sustainable aviation fuel, and methanol industries in Minnesota. The report also identifies the associated logistical, regulatory, and cost barriers, and offers community engagement strategies that state agencies and industrial partners can follow to help earn the social license needed for industrial hydrogen deployment. | May 2025
- **Dearborn Works: An Integrated Steel Mill Transition Study.** Michigan is a recognized leader in the transition toward economy-wide carbon neutrality, but to achieve the objectives of the state's MI Healthy Climate Plan, Michigan's steel sector needs its own decarbonization leader, and that leader needs a viable transition plan. This report provides a thorough presentation of a potential transition plan – including costs, job creation, timeline, environmental and health impacts, and suggestions for co-funding and policy interventions. | October 2024

Past Employment

- **Staff Writer | American Physical Society | 2022-2023**
- **Engineering Physics Program Planning Leader | Gustavus Adolphus College | 2020-2022**
- **Founding Faculty | Department of Engineering, Wake Forest University | 2017-2019**
- **Assistant Professor | Department of Engineering, University of Wisconsin-Stout | 2015-2017**
- **Policy Fellow | AAAS Science & Technology | 2013-2015**
 - ✓ Office of Science & Technology, National Institute of Justice, U.S. Department of Justice
 - ✓ Office of Legislative and Public Affairs (OLPA) & Assistant Director's Office of the Directorate for Education and Human Resources (EHR), National Science Foundation

Education

- **PhD, Materials Science & Engineering | University of California, Berkeley | 2012**
- **MS, Materials Science & Engineering | University of California, Berkeley | 2009**
- **BS, Physics, Applied Chemistry | Beloit College (Wisconsin) | 2007**

Professional Licenses

- **Professional Engineer | MN Licence # 63933**



EXHIBIT II.ii

Cioppa, Jordan, People living near Edgar Thomas Works receive settlement check
in lawsuit against U.S. Steel, WTAE ABC News, Aug. 2025

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People living near Edgar Thomson Works receive settlement check in lawsuit against U.S. Steel

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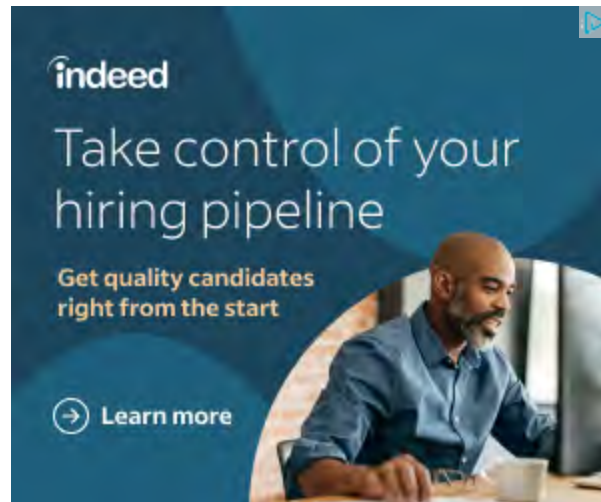
Jordan Cioppa ✉



Reporter

BRADDOCK, Pa. — Checks went out in the last few days to people who live near the U.S. Steel Mon Valley Works as part of a settlement for a 2022 lawsuit.

“In my opinion, \$900 is not enough for my breathing,” said Zenobia Bowey.



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Bowey is a lifelong Braddock resident who lives near the Edgar Thomson Plant. She shares the same complaints alleged in the class action lawsuit filed against U.S. Steel; noxious odors, pollution, and property damage from dust.



“Because I live by the steel mill, real close to it, the windowsills, you see the mill dust right on your window lens, we constantly got to clean the window lens. Cars in our parking lot in the complex I live in, all mill dust on them,” Bowey told Pittsburgh’s Action News 4.

Bowey is one of the people who received a \$912 check in the mail as a result of the \$1.5 million settlement.

Liddle Sheets P.C. is the law firm that represents the residents. According to their website, those living within a mile of the mill anytime from 2020 to the present were eligible for the check if they filled out the claim form.

The firm notified claimants this week there was a bank issue with the settlement checks and encouraged people to wait for a second check. However, they followed up and said the bank will honor the original check.

“Everybody makes mistakes, nobody’s perfect, and the biggest thing right now is they are going to honor all of the checks, so if you do have a deposit, it’s not going to mess up your account,” said North Braddock Mayor Cletus Lee.

Lee received his check and has high hopes for the future of the mill, especially after the recent deal between U.S. Steel and Nippon Steel.

“We’re glad that the mill is still here. I’m glad that there’s going to be new technology and new jobs,” Lee added.

Bowey hopes it is a step toward less pollution in her neighborhood.

“Whatever they can do to cut it down because it’s really, really bad and the smells,” Bowey said.

The settlement also calls for \$4.6 million worth of improvements to be made at the facility.

A spokesperson for U.S. Steel released a statement saying,

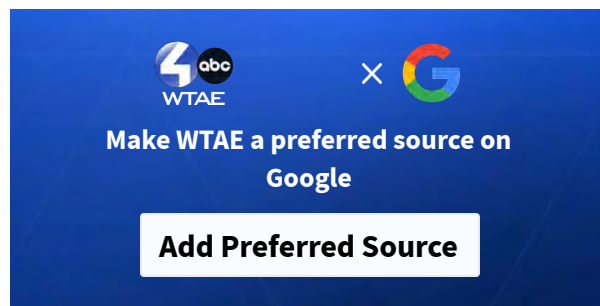


“U. S. Steel fulfilled its obligations under the settlement agreement. Environmental stewardship is a core value at U. S. Steel, and we remain committed to the safety of our communities as do our more than 3,000 Mon Valley Works employees.”

They also added the company was not responsible for the distribution of checks.

U.S. Steel will spend \$740,000 on two street sweepers, \$2,250,000 on truck wheel wash stations for vehicles leaving the facility, and \$1,650,000 for paving of Burma Road, according to a spokesperson.

A lawyer with Liddle Sheets told Pittsburgh’s Action News 4 there will not be any fees for claimants due to check issues.



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EXHIBIT II.iii

Pilcher, James, Steel fallout creates complaints in one Tri-State city, Local 12,
Sept. 2025

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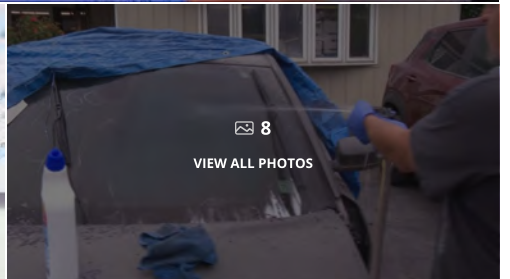
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Steel fallout creates complaints in one Tri-State city

by James Pilcher, WKRC
Mon, September 15, 2025 at 2:56 PM
Updated Mon, September 15, 2025 at 6:25 PM



8

VIEW ALL PHOTOS

Residents and business owners in Middletown are voicing their concerns over persistent pollution from the operation of a nearby steel plant, which they claim leaves damaging residue on buildings and vehicles. (WKRC)

1 Comment

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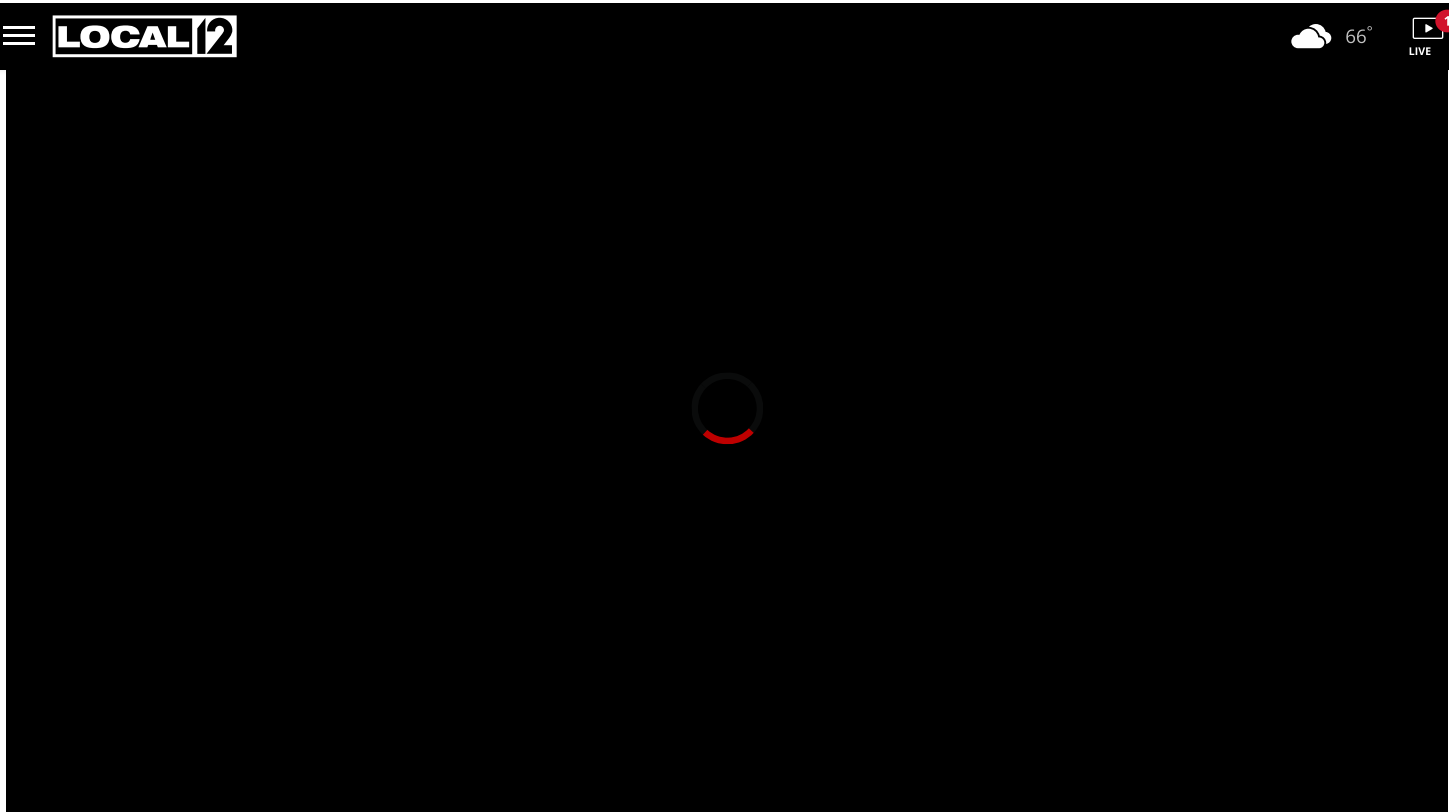


MIDDLETOWN, Ohio (WKRC) - Residents and business owners in Middletown are voicing their frustrations over persistent pollution from the operations of a nearby steel plant, which they claim is damaging property with residue.

Doug Baker, owner of Car Connection, a Middletown auto salvage business, has been battling the fallout he says comes from the Cleveland Cliffs steel mill, formerly known as AK Steel, and its vendor, TMS International.

"And then, we have to make a chemical reaction to actually remove this. If it has this stuff on it from there, it turns white like that," said Baker.

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Residents and business owners in Middletown are voicing their concerns over persistent pollution from the operation of a nearby steel plant, which they claim leaves damaging residue on buildings and vehicles. (WKRC)

Baker applied toilet bowl cleaner to a dirty windshield, which immediately foamed and turned white from the reaction. Baker said he has used 2,000 bottles of the toilet bowl cleaner in the past year to remove the lime-based material that settles on vehicles, setting like concrete.

"Well, I'm tired. You know, I can't pay people all day long, including myself, to sit here and just constantly toilet bowl clean everything," Baker said.

Baker, who has operated his business for over 24 years, said the pollution has made it difficult to sell parts.

"They say, 'Is this part from Middletown?' I say, 'Yeah.' They said, 'We can tell, and that's why we don't buy anything from Middletown because everything in Middletown is junk because of the steel mill,'" said Baker.

Despite inspection reports from state environmental agencies indicating the ma Mill or TMS International, a judge dismissed Baker's lawsuit against the company.

A Cleveland Cliffs spokeswoman stated that a state environmental investigation compliance with environmental permits, but the Ohio EPA reported issuing a no exceeding visible emission limits.

TMS International, formerly known as Stein LLC, takes away slag and other mate behind Baker's business.

The company was found to have violated state air pollution standards last year, definition cameras and create a plan for managing material piles. A company sp

Baker said it's not enough.

"So, they have enough money that they can just pay the fines and just keep going and not worry about it," said Baker.

Baker's employee, Adam Kohls, expressed his frustration with the situation.

"It's getting vandalized by a company that I don't work for. So, there's got to be something done," said Kohls.




city's permitting costs are prohibitive.

 [READ THE COMMENTS \(1\)](#)

The Ohio EPA encouraged residents to report further air quality concerns by calling (513)-946-7777 or submitting complaints online. If you would like to submit a claim online, [click here](#).

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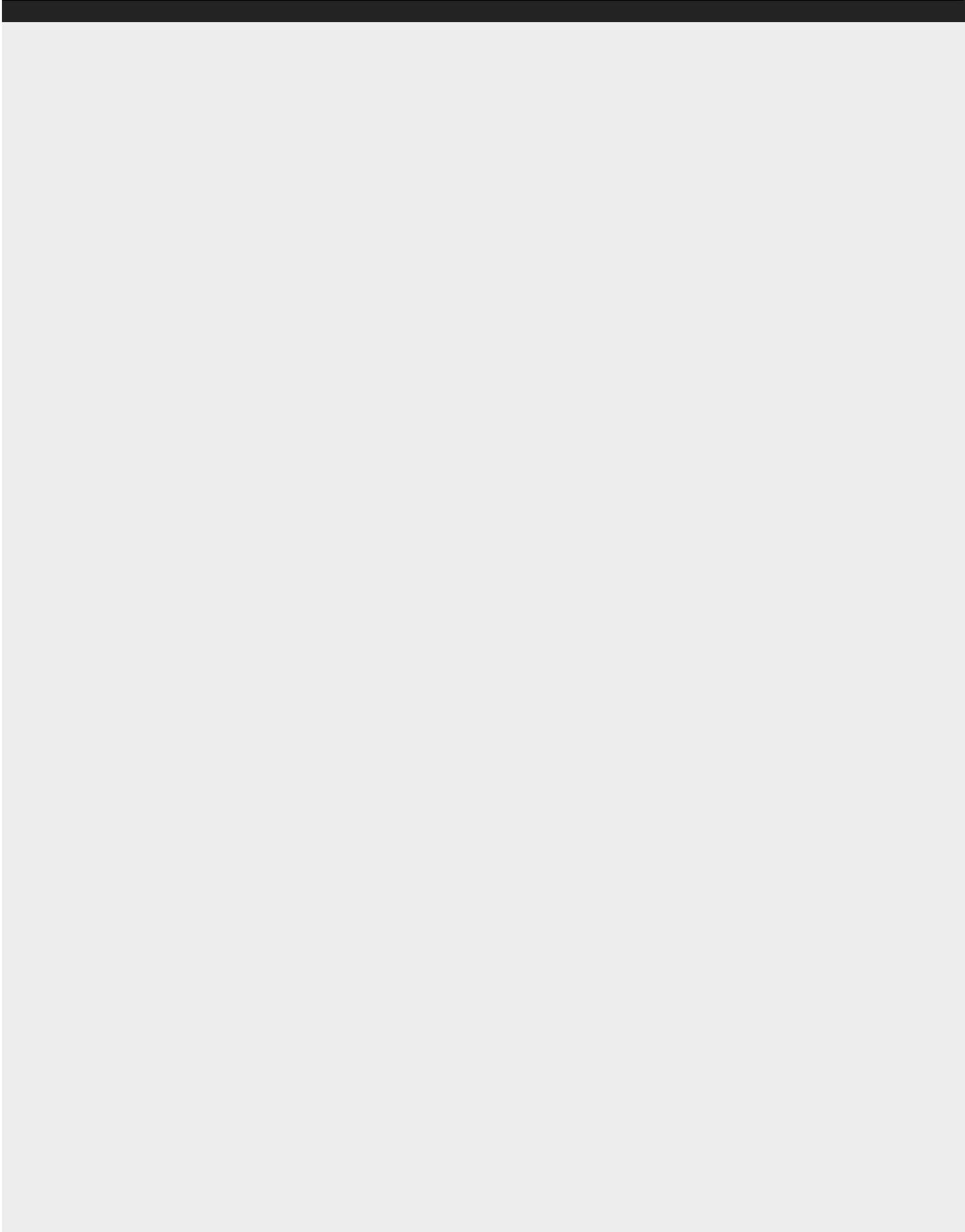


EXHIBIT II.iv

The National Institute for Occupational Safety and Health (NIOSH), CDC,
Engineering Controls Database



The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces
through safety and health research / **NIOSH**[®]

Control of Crystalline Silica Dust When Grinding Concrete

Problem: Construction workers may be exposed to hazardous dust containing crystalline silica when using handheld electric grinders to smooth poured concrete surfaces

What this means to you: Breathing dust that contains crystalline silica can lead to the development of silicosis, a deadly lung disease. No effective treatment exists for silicosis, but it can be prevented by controlling workers' exposure to dust containing crystalline silica. Exposure to crystalline silica has also been linked to lung cancer, kidney disease, reduced lung function, and other disorders. A NIOSH study found that workers grinding concrete to smooth poured concrete surfaces after forms were stripped were exposed from 35 to 55 times the NIOSH recommended exposure limit (REL) for airborne dust containing crystalline silica.

Description of control:

NIOSH found that dust exposures could be reduced if a local exhaust ventilation (LEV) shroud was attached to the grinder. The LEV system consisted of a grinder that was equipped with a ventilation shroud, a length of flexible corrugated hose, and a portable electric vacuum cleaner that acted as the fan and dust collector for the ventilation system. Four commercially available shrouds were used in the NIOSH study.

The shroud can be purchased with the grinder, separately, or as a unit with the vacuum cleaner and hose. The commercially available grinder/shroud pairs should be connected with a 1.5- or 2-inch hose with a relatively smooth interior and a length of no more than 15 feet to provide adequate air flow. The choice of a vacuum cleaner depends on the task. It should draw at least 10 amps and have sufficient flow rate to capture dust and transport it to the vacuum source. The vacuum should also (1) use a high-efficiency particulate air (HEPA) filter to reduce the chance of releasing dust containing crystalline silica from the vacuum into the worksite (2) use a pre-filter or cyclone to increase the length of service of the HEPA filter (3) use a filter replacement indicator and (4) allow filters to be cleaned and replaced or full collection bowls or bags replaced without exposing the operators to dust



Grinder in use with the control in place

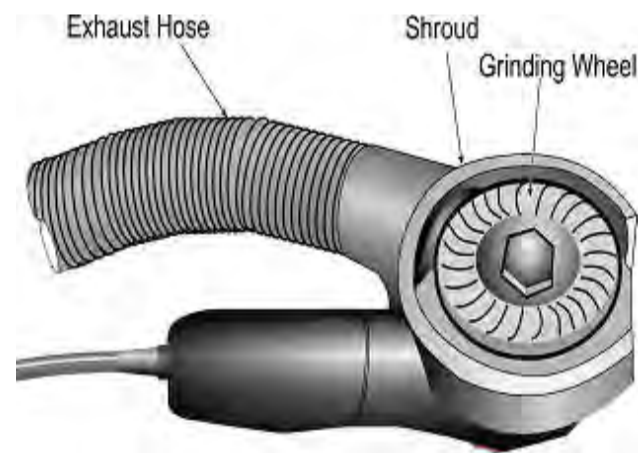


Diagram of grinder showing main parts

Engineering and Physical Hazard Report Numbers:

[247-11](#); [247-15-A](#); [247-15C](#); [247-21](#);

NAICS Codes:

2357;23571;4213

Keywords:

concrete finishers
 construction workers
 electric grinders
 grinders
 smoothing concrete

How well
does this
control work?

The NIOSH study found that all grinder/shroud combinations reduced dust exposure by at least 90%.

 Was this page helpful?

Yes Partly No

Page last reviewed: November 16, 2018

EXHIBIT II.v

Kate McClintock, CAA Regulatory and Technical Consultant, May 2026, Resume

Katie McClintock
CAA Regulatory and Technical Consultant
kmenvironmentalconsulting@gmail.com
206-313-7889

Experience Summary:

- ***Industrial sector expertise*** — Significant experience across glass manufacturing, cement, coke, integrated steel, wood products, chemical plants, asphalt production, heaters and boilers, landfills, mini-mills, ozone-depleting substance management, foam manufacturing, and pulp and paper operations.
- ***New Source Review*** — Deep expertise in EPA's NSR rules and policy evolution since program inception, including source determinations, project aggregation, baseline and projected-actual emissions, excludable emissions, and BACT/LAER analyses for complex industrial modifications.
- ***Title V and synthetic minor permitting*** — Extensive experience reviewing, enforcing, and commenting on Title V permits and synthetic minor permits, with particular focus on monitoring, recordkeeping, and reporting sufficiency and enforceability of limits.
- ***Case development and technical analysis*** — Strong technical capability to rapidly learn any industrial process, interpret regulatory requirements, analyze company data, and identify compliance problems routinely overlooked by regulators, companies, and the public. Emphasis on tracing community-impacting pollutants back to specific, solvable issues at the facility tied to violations.
- ***Rule applicability and interpretation*** — Decades of experience evaluating complex EPA Part 60, 61 and 63 rules and applying them to new and existing sources across multiple industrial sectors.
- ***Consent decree, SIP, and rule drafting*** — Experience drafting SIP NSR language to address program deficiencies, writing rules, and developing consent decrees with innovative, enforceable solutions tailored to unique operating scenarios.
- ***Negotiation and compliance strategy*** — Skilled in researching and negotiating innovative compliance options, advancing technology, and prioritizing reductions where pollution most affects communities.
- ***Collaborative problem solving*** — Proven ability to diagnose program deficiencies, communicate issues clearly to all levels of management, build consensus across agencies, and implement effective, durable solutions with state and local partners, companies, and stakeholders.

Katie McClintock
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Professional Experience:

Jan 2024-present Independent Consultant. Providing engineering and regulatory Clean Air Act support to environmental organizations and law firms, with work centered on permit reviews, NSR applicability evaluations, and enforcement strategy across heavy industrial sectors. Evaluating major industrial permit applications, including identifying significant deficiencies in emissions characterization and federal compliance for many permits. Conducting broad reviews of communities to understand facilities of concern and strategize about how to improve air quality, including meeting with community groups, and assisting in negotiations between communities and industries.

2016 – 2022 US Environmental Protection Agency. Engineering Manager. Clean Air Act, Toxics Release Inventory, Data Management, Federal Insecticide Fungicide Rodenticide Act, and Toxic Substances Control Act

2003-2016 US Environmental Protection Agency. Senior Air Enforcement Engineer; National Glass Expert; Program Lead; Lead Case Developer.

- National NSR and Glass expert –Detailed to HQ to oversee National Enforcement Investigation priority into NSR violations in the glass and cement sectors. Nationally prioritized work, reviewed documents and case development, advised management, lead national settlement negotiations, and drafted consent decrees.
- Senior Case developer bringing judicial and administrative cases resulting in millions of pounds reduced.

Education:

- University of Washington: Bachelors in Chemical Engineering. 2003

Awards:

- Non-Supervisory Award for Advancing Environmental Protection – 2004 – National award given to the three best new employees each year in the entire EPA.
- U.S. Department of Justice Certification of Commendation in 2010 for outstanding performance and invaluable assistance in support of the activities of ENRD
- Over 20 Special Accomplishment Recognition Awards including Gold, Silver and Bronze OECA honor awards.