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HORSEHEAD CORPORATION
Leading the World in Zinc Recycling

BY MESSENGER

June 13, 2014

Bechara Choucair, M.D.
Commissioner, Department of Public Health
City of Chicago
333 South State St., Room 200
Chicago, IL 60604

Re: Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials – Horsehead Corporation

Dear Commissioner Choucair:

Pursuant to Section 8.0 of Article II, Part E of the City of Chicago Department of Public Health's Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials (the "Bulk Solid Materials Rules" or "Rules"), Horsehead Corporation ("Horsehead") submits this request for variance relief from certain of the requirements of the Rules. The information required by the provisions of Section 8 of the Bulk Solid Materials Rules is set forth below.

Horsehead's Chicago facility is located at 2701 E 114th St, in the Calumet area of Chicago, on the Calumet River. The Chicago Plant is not a coal or coke terminal nor is it a bulk solids material terminal of any kind. Horsehead is not in the business of receiving and transferring bulk coke, coal or any other ores. It is subject to the Bulk Solid Materials Rules because it uses a limited amount of coke material in its manufacturing operations and it produces two metals-rich products which appear to fall within the definition of a "Bulk Solid Material" under the City's Rules. Horsehead's facility is either already in compliance or is working towards timely compliance with the City's Rules, but needs variance relief from a few of the requirements under those rules, as more fully explained below.

I. The Regulation or Requirement from which the Variance is Requested (§8.0(2)(a)).

Horsehead is requesting a variance from the following regulation or requirements of the Bulk Solid Materials Rules, all of which have a 90-day deadline for compliance:

Rules Section Reference	Regulation or Requirement
Section 3.0(4)(a) through (e)	Installation and monitoring of 4 PM-10 monitors with data logging
Section 3.0(2)(c)	Measurement of Opacity – variance requested to allow use of EPA Method 9 for opacity testing within the property line, consistent with 35 Ill. Admin. Code § 212.109.
Section 3.0(5)	Wind Monitoring – variance request is for an extension of time to install a wind monitoring station
Section 3.0(8)(d)	Transport – variance request is conditional and limited to the requirements for a wheel wash station and rumble strips. Horsehead requests that the Department of Public Health confirm the Horsehead Fugitive Dust Plan measures regarding truck cleaning provide acceptable alternatives to a wheel wash station/rumble strips to prevent track-out of materials onto the public way.
Section 5.0(5)	Dust Suppression System – the variance request is for an extension of time to achieve compliance with the Section 5.0(5)(a) requirement to have a dust suppressant system available "at all times" for outdoor IRM storage areas and for a variance from the requirement in Section 5.0(5)(b) regarding the use

Rules Section Reference	Regulation or Requirement
	of Chemical Stabilizers and/or water heating systems when temperatures fall below 32° F.
Section 5.0(2)	Height Limit - variance request for an additional 90 days to complete the grading process to reduce the height of two of the IRM storage piles to 30 feet.
Section 5.0(6)(d)	Runoff Management – variance request is limited to the prevention of "any" pooling of water at the facility.

II. Description of the Process and Activities for which the Variance is Requested (§8.0(2)(b))

Horsehead is a leading U.S. producer of specialty zinc and zinc-based products and a leading recycler of electric arc furnace dust ("EAFD"). Horsehead, headquartered in Pittsburgh, Pa., employs approximately 1,100 people and has production and/or recycling operations at seven facilities located in the U.S. and in Canada, including its Chicago facility.

A. Location and Size of the Horsehead Plant

Horsehead's Chicago facility is located at 2701 E 114th St, in the Calumet area of Chicago, on the Calumet River. It originally was built in 1940. Horsehead Resource Development Company, Inc. ("Horsehead R & D") purchased the plant in 1986. In 2003, Horsehead purchased the assets of Horsehead R&D in a then pending bankruptcy proceeding. In all material respects, Horsehead has continued the plant manufacturing operations substantially unchanged since the 2003 asset acquisition. The facility currently employs 65 employees.

An aerial photograph of the Horsehead Chicago facility is attached as Exhibit A. The facility encompasses approximately 33.5 acres. To the north and south of the facility property boundaries, there are other industrial facilities, respectively a warehouse to the north and a grain facility to the south. To the west, there are railroad tracks between the facility and Torrence Avenue. The facility's eastern boundary is the Calumet River and across the river there are other industrial facilities, including two former coke plants which are now used for storing bulk materials and periodically loading barges and trucks. There are no residential properties in the immediate vicinity of the facility. The closest residential property is located to the southwest on

Torrence Avenue, approximately ¼ mile distance from the facility. The Horsehead facility is located within a district that is zoned for manufacturing use under the City of Chicago Zoning Ordinance. Exhibit A to this variance request contains an aerial photo (Figure 1) showing the location of the Horsehead facility and the surrounding area, with the approximate property lines depicted for the Horsehead facility.

The Horsehead facility is located in the South Deering neighborhood of Chicago, which covers an area of approximately 11 miles, bounded on the east by the Calumet River and on the west by Lake Calumet.[1] The population of this area is approximately 20, 000 people. The area has a long industrial history because of its ready access to transportation, including river, railcar and nearby Interstate highway connections. The City's Rules request information on "the population and geographic area affected by, or potentially affected by, the process or activity." Horsehead does not believe that its manufacturing operations affect the surrounding population beyond the normal effect of any ongoing manufacturing operation within a community, such as the presence of truck traffic entering and exiting the facility. Horsehead strives to be a good member of the local community and has not received complaints from its neighbors, other local citizens, local police or elected officials regarding any adverse effects attributed to its manufacturing operations. Other than the use of the local roads leading to and from its facility by employees and contractors, Horsehead believes that the area affected by its manufacturing activity is generally limited to the Horsehead premises.

B. Overview of the Horsehead Manufacturing Process

As stated above, the Chicago Plant is not a bulk materials terminal. Horsehead is not in the business of receiving and transferring bulk coke, coal or any other ores. Horsehead's Chicago Plant is a recycling operation for EAFD that produces two metals-rich products, "Waelz Oxide" ("WOX") and "Iron Rich Material" ("IRM"). WOX consists of approximately 60% zinc and represents approximately 35% of Horsehead's production. WOX is a reusable product that Horsehead's Mooresboro, North Carolina facility uses as a feedstock for the production of Special High Grade zinc metal. It also may be sold to other zinc producers as a raw material feedstock. IRM consists of approximately 45-50% iron and represents the balance of Horsehead's production. IRM is used as an iron source in cement production, as an aggregate in asphalt production and as a passive water treatment medium, among other uses.

The primary bulk solid materials used or produced at the Chicago Plant are EAFD, WOX, IRM and coke. WOX and EAF dust are managed entirely indoors. WOX is directly loaded to railcars as it is produced and EAF dust is placed directly in the process from trucks and

[1] The information on the South Deering neighborhood was obtained from the following websites: http://www.cityofchicago.org/content/dam/city/depts/doit/general/GIS/Chicago_Maps/Community_Areas/CA_SOUTH_DEERING.pdf (last checked May 23, 2014); http://www.city-data.com/neighborhood/South-Deering-Chicago-IL.html (last checked May 23, 2014); http://www.zipmap.net/Illinois/Cook_County/Z_South_Deering.htm (last checked May 23, 2014)

railcars offloaded indoors. Only two bulk materials are stored on the property: a relatively small amount of coke and IRM. Coke is a necessary ingredient for the recycling operation. All coke received at the facility is consumed in the recycling process, and the coke maintained at the facility is not loaded, transferred or transported to other facilities.

A detailed description of the Chicago Plant operations is set forth below. A Master Site Diagram of the Chicago Plant taken from Appendix B – Figure 3 of Horsehead's Dust Control Plan is attached as Exhibit B to provide a visual depiction of the layout of the facility and the location of the structures, roadways and activities conducted at the Chicago Plant referenced herein.

Horsehead's recycling of EAFD material generated by the steel mini-mill industry prevents this material from winding up in landfills and instead turns it into valuable commercial products.[2] In a 2000 decision, the Illinois Pollution Control Board determined that Horsehead's production process for what was then called "crude zinc oxide" or "CZO", and now simply referred to as "Waelz Oxide" or "WOX," was not regulated as a solid waste (See, *In the Matter of Petition of Horsehead Resource and Development Company, Inc. for an Adjusted Standards Under 35 Ill. Adm. Code 720.131(c),* AS 00-2 (February 17, 2000).

The Chicago Plant's receipt and use of EAFD as a feed material to its manufacturing process has been conducted in a fully enclosed process. The EAFD and other zinc-bearing feedstock materials (collectively, the "feedstock material") arrive at Horsehead's facility via enclosed railcar or truck. They do not present a threat of off-site emissions either during transport to Horsehead's facility or after arrival at Horsehead's facility. All handling of this material is done indoors or within enclosed structures, which are equipped with particulate matter (PM) pollution control equipment. Feedstock material is not stored outdoors. The receipt and use of these feedstock materials is not the subject of this variance request.

The feedstock material is received at the Chicago Plant by truck or railcar directly into the Conditioning and Blending ("C&B") Building.[3] A photo of the C&B Building is attached as Exhibit D. The C&B Building provides full enclosure for the receipt and handling of the feedstock material. From the C&B Building, the feedstock material is measured in proper

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[2] The United States Environmental Protection Agency ("U.S. EPA") has encouraged, and looks upon favorably, the production of IRM because it (i) recovers metals from materials that would otherwise become a waste and allows them "to be used in a beneficial and environmentally sound way;" and encourages the recycling of scrap metal by helping reduce the costs that result from the treatment and disposal of the EAFD. See "Standards for the Management and Use of Slag Residues Derived from HTMR Treatment of K061, K062 and F006 Wastes," Proposed Rules, 59 Fed.Reg. 67256 (December 29, 1994), a copy of which is attached as Exhibit C. Similarly, the Illinois Pollution Control Board has found that: "Horsehead changes EAF dust, a product with negative value [because "generators of EAF dust pay for it to be either disposed or recycled"], into Waelz Oxide and IRM, products with substantial positive values. *In the Matter of Petition of Horsehead Resource and Development Company, Inc. for an Adjusted Standards Under 35 Ill. Adm. Code 720.131(c),* AS 00-2 (February 17, 2000), at p. 12. Horsehead's "recycling of EAF dust conserves natural resources by decreasing the need to mine non-renewable zinc ores. In addition, Horsehead's recycling process means that less EAF dust is sent to landfills." (*Id.* at p. 15).

[3] Illinois EPA approved the design of the C&B Building pursuant to a permit revision dated October 30, 1992.

proportion with a carbon source, which currently consists of a mixture of petroleum coke ("petcoke") and metallurgical coke ("metcoke"), and then transferred via enclosed conveyor to the feed bins. Feed bin feedstock material is conveyed to the pelletizer where water is added and the feedstock material is converted into pellets. The pellets are then conveyed via fully enclosed conveyors to the two Waelz kilns.[4]

The petcoke and metcoke are currently stored outside in separate piles and then conveyed by front end loader to the Coke Hopper Feed Pile where the petcoke and metcoke are mixed together before being adding to the process by loading into the Coke Process Hopper. (See Master Site Diagram (Exhibit B) for the location of the coke storage areas and coke hopper feed pile.) Accordingly, the current outdoor storage of petcoke and metcoke is subject to the requirements of Part D of the City's Rules until the two-year deadline for completing enclosure of these materials under Part C of the City's Rules.

The feed mixture consisting of EAFD and coke is rotated and tumbled as the mixture moves through the kiln, where reduction and re-oxidation take place. Via a high temperature metals recovery process, the Waelz kilns convert the feedstock and coke materials into the WOX and IRM products. The WOX is extracted from the kilns' exit gas stream by means of a product collection system, which draws the oxidized reduction product through fabric filter product collectors.[5]

Horsehead conveys the WOX from the product collectors via an enclosed conveyor to a loading chute that extends into closed pressure differential rail cars for off-site shipment. These railcars also are in an enclosed building.[6] The WOX is never exposed to the outdoors. Horsehead carefully manages it in an environmentally protective manner from the time it is produced through its off-site shipment. The WOX is shipped to Horsehead's Mooresboro, North Carolina facility as a feedstock for the production of Special High Grade zinc metal. It also may be sold to other zinc producers as a raw material feedstock.

The IRM is discharged from the other end of the Waelz kilns and transferred by an enclosed conveyor into silos (see "Process Silos" on the Master Site Diagram (Exhibit B.) After analytical testing of the IRM contained in the silos, the IRM is moved by a pay loader from the silos to one of three areas. If barge shipments are scheduled to occur, the IRM is moved to a nearby stockpile area in close proximity to the barge loading conveyor system for loading onto barges. (See "IRM Product from Silos" on the Master Site Diagram (Exhibit B)). For barge

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[4] The two Waelz kilns are process units regulated by the terms and conditions of Horsehead's existing Clean Air Act Title V Permit issued by the Illinois Environmental Protection Agency ("Illinois EPA").

[5] These product collectors also are regulated by Horsehead's existing Clean Air Act Title V Permit.

[6] "Horsehead has 24-hour opacity monitors to measure if any gases escape from the product collectors. Alarms alert plant personnel if there is a release, and the affected part of the product collector can be shut down for repairs to minimize further losses." See Attachment 1, *In the Matter of Petition of Horsehead Resource and Development Company, Inc. for an Adjusted Standards Under 35 Ill. Adm. Code 720.131(c),* AS 00-2 (February 17, 2000), at p. 13, citations omitted)

shipments scheduled in the near future, the IRM is moved to the a staging area located approximately 150 feet south of the barge loading conveyor system. (See "IRM Product Staging Area (for Loading)" on the Master Site Diagram (Exhibit B)). IRM inventory for future customer shipments is stored in the IRM storage piles area located on the southern portion of the facility. (See "IRM Storage Bunkers" and "IRM Product Storage Area" on the Master Site Diagram (Exhibit B)).

The location of these IRM storage areas is intended to minimize the level of equipment and truck traffic at the Chicago Plant. The Chicago Plant ships IRM to customers either by barge or truck. Because the process silos and the IRM Product Staging Area are located closer both to the barge loading area and to where trucks enter the plant than are the outdoor IRM storage areas on the southern portion of the facility property, the IRM from the silos and from the staging area is used first to fill pending customer orders before removing IRM from the other storage areas. As more IRM is needed to fill customer orders, it is moved from the IRM Product Storage Area with a pay loader either to the staging area or the barge loading area. IRM is also loaded onto trucks for off-site delivery. This approach minimizes internal truck traffic between the barge loading area and the IRM Piles Storage Area to the south over currently unpaved internal roads.

Horsehead's facility has been permitted by both the City of Chicago and the Illinois EPA, including regular inspections by both authorities. The Plant currently operates under a Title V Clean Air Act Permit Program (CAAPP) permit (I.D. No. 031600AAF), also known as the Title V Operating Permit, issued by the Illinois EPA. Horsehead submits annual Title V Operating Permit Compliance Certifications and Annual Emission Reports for regulated sources in accordance with the Title V Operating Permit requirements. In addition, the Horsehead facility is permitted by the Illinois EPA as a solid waste management site (ILD040891368; Permit No. 1986-08-OP, Supplemental Permit No. 2004-077-SP, which contains provisions for the on-site accumulation and storage of product material on the property, namely IRM. In accordance with the requirements of the City of Chicago Rules and Section 11-4-660 of the Municipal Code of Chicago, the facility maintains a Certificate of Operation from the City of Chicago.

The Horsehead recycling operation results in no wastewater discharges."[7] Accordingly, there is no sewer system at the Chicago Plant and there are no wastewater discharges to the adjacent Calumet River. Stormwater is contained on the property through both a stormwater retention basin and a berm along the eastern portion of the property which parallels the river.

[7] *Id.* at p. 5.

III. Quantity and Types of Materials Used in the Process and Activities for which the Variance is Requested (§8.0(2)(c))

A. Petcoke/Metcoke Materials

Horsehead's operations involve the receipt and use of relatively small amounts of petcoke and metcoke materials as a carbon source in the plant's process. The material is delivered to the plant in trucks on an "as needed" basis for its operations. Therefore, at any given time, there are not large piles of either petcoke or metcoke present at the Chicago Plant. The limited quantity of the petcoke and metcoke used by Horsehead also contributes to minimizing the risk of fugitive dust emissions.

Because Horsehead uses petcoke and metcoke in its manufacturing process, the coke materials must meet certain process specifications. The Horsehead process specifications include requirements, such as particle size and moisture content, for petcoke and metcoke which also significantly reduces the risk of fugitive dust emissions and further distinguishes Horsehead's operations from those of a coal or coke bulk terminal.

The type of petcoke/metcoke purchased by the Chicago Plant is dependent on particle size because of the manufacturing process needs. Horsehead purchases petcoke/metcoke material with a particle size of at least approximately 3/8th inch, or slightly bigger than the size of a "pea." The reported typical density of coke is only 23.5 - 31 lbs. per cubic feet (cu.ft.).[8] In contrast, the typical density of the petcoke/metcoke material Horsehead receives at the Chicago Plant is 49 to 57 lbs./cu.ft. Hence, due to its higher than average density, the Horsehead petcoke/metcoke material is less susceptible to windborne dispersion.

In addition to the particle size requirements for its process, the petcoke and metcoke used by the Chicago Plant must have a minimum moisture content which is significantly higher than the 3% by weight definition of "moist material" specified in Section 2.0(15) of the City's Rules. Upon delivery of petcoke or metcoke to the Chicago Plant, samples of the material are collected and analyzed for moisture content. For all the petcoke/metcoke materials delivered, the typical moisture content, as determined from on-site analysis, is at or above 7%. Based on Horsehead's experience, fugitive emissions typically do not occur from coke piles with moisture content above 7% at the time of delivery. Coke material does not remain outside for an extended period of time. On average, approximately 3,300 cubic yards of coke is maintained on the property, representing about 2.5 weeks of supply to the operation when it is running at full capacity. On a monthly basis, deliveries of coke material typically do not exceed 4,500 tons (6,700 cubic yards). Hence, the moisture content of the coke material will typically remain above the 3% standard specified in the City's Rules for "moist material."

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[8] See: http://www.engineeringtoolbox.com/fuels-densities-specific-volumes-d_166.html (last checked May 23, 2014).

As mentioned above, the petcoke/metcoke is stored in three outdoor storage locations, one for petcoke, one for metcoke, and a third area near the coke process hopper in which the petcoke and metcoke are mixed together before the material is added to the process. The petcoke storage area is a rectangular pad area of 125 ft. x 75 ft. and is located toward the eastern side of the facility. The metcoke storage area is approximately 60 ft. in diameter and is located toward the western side of the facility. The Coke Hopper Feed Pile area is approximately 50 ft. by 50 ft. The coke material is only disturbed when the material is removed for use in the manufacturing process. The height of the coke material in each of these three locations does not exceed the thirty (30) feet limit contained in the Bulk Solid Material Rules. Photographs of the coke storage areas and the coke hopper loading activity are contained in Exhibit E.

There is an off-specification coke material pile of approximately 1600 tons located in the southwest area of the Chicago Plant. This coke material is not suitable for use in current operations. Horsehead is planning to remove this material from the Chicago Plant before the end of the year. The coke pile has vegetation on it and is not susceptible to windborne dispersion.

B. Iron Rich Material (IRM)

Horsehead's IRM is very different from coal or coke materials. The IRM is about 50% iron by weight. As compared to coal or coke, IRM has a much higher density and weight (weighing upward of 100 lbs. per cu.ft). When the IRM is exposed to the atmosphere, its surface hardens and forms a concrete-like crust (due to the lime content in the EAFD ingredient used to make it). The hard crust that forms on IRM stored outside is typically about 4-5 inches thick. The crust is so hard that the IRM surface cannot be broken through with a shovel. This naturally occurring crust on the surface of IRM stored outside prevents fugitive dust emissions due to outside storage. A photo of the IRM showing its crusted surface is attached as Exhibit F. The IRM is sold for use in asphalt aggregate, cement production, or construction aggregate.[9] Horsehead produces approximately 76,000 cu. yds. of IRM annually.

As stated above, the IRM produced at the Chicago Plant is initially stored in silos upon exiting the Waelz kilns. There are four silos used for IRM production. When a silo is full, the IRM is tested to confirm it meets the product specifications. Upon testing confirmation, the IRM is removed from the silo to one of the outdoor IRM storage areas, depending upon the schedule for customer shipments, as previously explained above. Photos showing IRM storage areas at the Chicago Plant are attached as Exhibit G.

Because IRM can vary in size, there is a need to screen out the larger IRM pieces before shipment. In the IRM Product Storage Area, there is a screening area in which IRM particle sizing takes place for customers. Larger IRM particles are segregated. (See "IRM Screening Operations" on the Master Site Diagram (Exhibit B)).

[9] IPCB Opinion, Attachment 1, at p. 6.

When IRM is unloaded from the silos to the IRM Product from Silos Area, Horsehead uses its dust suppression system to apply water to the IRM. The application of water accelerates the formation of the crust on the surface of the IRM and also ensures that fugitive dust emissions are controlled during IRM loading or transfer activities. A photo showing a water spray truck applying water to IRM as part of Horsehead's dust suppression system is included in Exhibit G.

Since the effective date of the City's Rules, in accordance with the requirements of Section 3.0(13), the conveyor used to load the IRM onto barges has been covered and is equipped with an enclosed chute that extends down from the covered conveyor to transfer the IRM onto a barge. Photos showing the covered IRM conveyor and enclosed chute are attached as Exhibit H.

At present, there is approximately 67,000 cu. yds. of IRM in the IRM Product Storage Area. The Horsehead facility is regulated by an operating permit, Permit No. 1986-08-06 and Supplemental Permit 2004-077- SP, issued by the Illinois EPA's Bureau of Land. Pursuant to the requirements of this operating permit, Horsehead maintains inventory records of the total quantities of WOX and IRM accumulated on-site prior to shipment off-site and also maintains inventory logs of the total quantities of these materials transported off-site. It is required to submit annual reports of these inventory records to the Illinois EPA.

Due to increased sales of IRM, Horsehead's inventory of IRM in the storage piles has been decreasing over the past several months and this is expected to continue in the near future. Since the effective date of the City's Rules, Horsehead has been working to reduce the height of its IRM piles by re-grading them. However, the 90-day deadline for compliance did not allow sufficient time to complete this work for two IRM piles that still exceed the height restriction. Horsehead is requesting a variance to extend the 90 day deadline for compliance with the 30 ft. height restriction for an additional 90 days in order to complete its efforts to achieve and maintain compliance with the height restriction in the City's Rules.

C. Off-specification Coke Pile

There is a single pile of coke material that is not suitable for use in the Horsehead manufacturing process. This pile is in compliance with the 30 feet height limitation. Horsehead intends to remove this material from the Chicago Plant.

IV. The Requested Variance will not create a Public Nuisance or Adversely Impact the Surrounding Area, Surrounding Environment, or Surrounding Property uses (§8.0(2)(d)).

The Horsehead systems and methods for protecting against unacceptable fugitive dust emissions have prevented windborne emissions that would cause a nuisance to the surrounding community. Horsehead's regulation by, and compliance with, existing federal, state and City of

Chicago requirements to control emissions and any discharge runoff from its facility has protected against such off-site fugitive dust emissions.

A. The Nature and Quantity of the Bulk Solid Materials Used by Horsehead Minimizes the Risk of Fugitive Emissions.

The coke materials received and processed at the Chicago Plant present a low risk of fugitive dust emissions because of the limited quantity on site, the protected location of the storage piles, their high moisture content and particle size. Because Horsehead's process requires that it purchase coke material with a minimum 7% moisture content, the petcoke/metcoke material delivered to the Chicago Plant is not as susceptible to windborne dispersion as may be typical of other coke material. Because Horsehead only purchases enough coke material to service its production needs for approximately a two-three week period, the petcoke/metcoke quantity it handles is a small fraction of the quantity handled by bulk terminals. Also, given the high moisture content of the petcoke/metcoke material and the fact that it is not exposed to the outdoors for long periods of time, it is not as susceptible to drying. However, to ensure that fugitive emissions from its coke storage areas are properly controlled, Horsehead uses a hydrant and hose water suppression system to apply water to the coke material when transfer activities occur from the outdoor storage piles, in the event of high winds, and during extended periods of dry conditions. Because the size of these piles is relatively small, the water suppression system adequately controls any fugitive dust emissions. In addition, the three coke storage areas are centrally located within the Chicago Plant (see Master Site Diagram in Exhibit B) so that adjacent buildings and structures serve to reduce their exposure to wind. The central location of the coke storage areas also contributes to reducing the threat of windborne dispersion.

IRM by its very nature is not susceptible to windborne dispersion. It is very different from petcoke/metcoke. It is a much heavier material – due to its "iron-rich" nature. Its iron content causes a dense crust to form on the surface of IRM within a matter of days. The IRM piles in the IRM Product Staging Area and in the IRM Piles Storage Area located in the southern portion of the facility all have this dense crust formed on their surface which prevents unacceptable fugitive dust emissions. Even when IRM is handled during truck loading or barge loading operations, the heavy weight of the IRM alone prevents windborne dispersion over any an extended area. Further, Horsehead minimizes the amount of IRM transfers by first using the IRM from the two areas located in closer proximity to the barge loading covered conveyor system. To ensure that fugitive emissions are minimized, Horsehead applies water to its IRM prior to removing it from any of the staging or storage areas. The addition of water to IRM also serves to accelerate the formation of the crust on the IRM. The nature of the IRM and Horsehead's fugitive dust controls prevent unacceptable fugitive emissions at or from the Horsehead facility.

The potential for airborne releases of IRM from storage piles has been studied by the U.S. EPA and the study findings support Horsehead's position that its IRM storage piles do not

present an unacceptable risk of fugitive emissions. The IRM produced by Horsehead falls into a category of materials which the U.S. EPA refers to generally as "high temperature metals recovery" slag residue or "HTMR." In the 1990's, the U.S. EPA conducted a risk assessment on HTMR materials to determine the potential human and ecological health impacts from placing HTMR materials on land.[10] The risk assessment specifically included an evaluation of Horsehead's IRM, because Horsehead is one of the major producers of this material.[11] The U.S. EPA's risk assessment evaluated a number of potential release and exposure scenarios associated with the generation and management of storage piles of HTMR, including the potential for particulate emissions, releases to groundwater, releases that are deposited onto a neighboring residential area, and releases deposited into neighboring surface waters from : (1) outdoor pile storage directly on the ground; (2) the process of adding HTMR slag residuals to the outdoor storage pile; and (3) loading/unloading operations associated with transport of the HTMR slag.[12] The U.S. EPA reported on the results of this assessment as follows:

> The results from EPA's very conservative risk assessment for the relevant management practices and uses of HTMR slags indicate that constituents of concern in HTMR slags pose little or no risk to human health or the environment. Based on this assessment, no significant risks were found for storage, transport, disposal, and encapsulated uses of HTMR slags (use as subbase, as an ingredient in cement or concrete/asphalt) that meet the [proposed "generic exclusion levels" in the U.S. EPA rules].

59 Fed. Reg. 67256, 67261 (December 29, 1994) (copy attached as Exhibit C).

Horsehead's predecessor, Horsehead Resource Development Co., also commissioned a complete evaluation of the U.S. EPA's HTMR risk assessment by an independent company, Gradient Corporation ("Gradient"), with results similar to those of the U.S. EPA study.[13] Gradient evaluated the U.S. EPA's methodology, assumptions and conclusions, in addition to assessing HTMR product applications not assessed by the U.S. EPA. It concluded that the U.S. EPA was correct in its determination that the HTMR slag products poses "little or no risk to human health or the environment," even though U.S. EPA had employed generally conservative

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[10] See Proposed Rules, "Standards for the Management and Use of Slag Residues Derived from HTMR Treatment of K061, K062, and F006 Wastes," 59 Fed.Reg. 67256 (December 29, 1994) ("1994 Proposed HTMR Rules"), a copy of which is attached as Exhibit C; See also "Assessment of Potential Risks to Human Health and the Environment from Management and Uses of HTMR Slag," Draft Report, U.S. EPA, November 30, 1994 ("1994 HTMR USEPA Report"). .

[11] 1994 HTMR USEPA Report at p. 25.

[12] 1994 HTMR USEPA Report at pp. 25-27

[13] Gradient Corporation, "Critical Evaluation of EPA's Risk Assessment in the Proposed HTMR Slag Product Rulemaking (Fed. Reg. 59:67256: December 29, 1994)," Revised April 26, 1995 ("Gradient Corp. HTMR Assessment Report"). Because the Gradient Corp. HTMR Assessment Report is over 200 pages in length, only a copy of the Executive Summary is attached here as Exhibit I.

assumptions to predict media concentrations and for deriving health-based reference concentrations.[14] The results of Gradient's analysis similarly concluded that the storage and loading of IRM piles "pose an insignificant threat to human health and the environment."[15]

B. Existing Horsehead Dust Suppressant and Truck Cleaning Operations have Proven Adequate to Prevent Unacceptable Fugitive Emissions and Nuisance Conditions.

Horsehead's Dust Control Plan contains a detailed description of the fugitive dust control measures employed at the Chicago Plant to prevent vehicle traffic from causing fugitive dust emissions and the track out of material onto the public way. Horsehead submits that these measures are adequate to maintain compliance with the requirements in Section 3.0(8)(d) of the City's Rules. Therefore, pursuant to Section 3.0(8)(d), a wheel wash station and rumble strips should not be required. As the Department of Public Health has not yet had an opportunity to review and approve Horsehead's Dust Control Plan, Horsehead's variance request from the Section 3.0(8)(d) provisions relating to a wheel wash station and rumble strips is conditional pending the City's approval of its Dust Control Plan. If the Department finds the existing control measures adequate, which Horsehead believes it should, then Horsehead will withdraw this portion of its variance request. Horsehead requests that the Department of Public Health confirm the Horsehead Fugitive Dust Plan measures regarding truck cleaning provide acceptable alternatives to a wheel wash station and rumble strips to prevent track-out of materials onto the public way.

A significant portion of the Horsehead Chicago Plant is already paved. (The Master Site Diagram (Exhibit B) depicts both the paved and unpaved roads at the Chicago Plant). All of the trucks which deliver the feedstock material to the facility remain on paved roads the entire time they are on the property. Upon entrance, the feedstock trucks enter a scale house for weighing of the truck's contents. The trucks then proceed to enter the C&B Building where the feedstock material is unloaded within this enclosed structure. Before these trucks exit the C&B Building, they are swept cleaned and their tires are washed. Upon exiting the C&B Building, the trucks remain on paved roads until they exit the facility. Photos showing truck traffic on the paved roads at the Chicago Plant are attached as Exhibit J.

The main vehicle traffic which occurs on unpaved Internal Roads, as defined in the City's Rules, are those trucks which are loading IRM from the IRM Product Storage Area for transport off-site and the pay loaders which move the IRM from the IRM Staging and Product Areas to the barge loading area. The distance traveled on unpaved road from the IRM Product Storage Area on the southern portion of the property to the paved barge loading dock area is approximately 500 feet. The distance traveled on unpaved road between the IRM Product Staging Area and the barge loading dock area is approximately 140 feet. These unpaved roads

[14] Gradient Corp. HTMR Assessment Report at p. ES-1 to ES-2.
[15] Gradient Corp. HTMR Assessment Report at p. 178.

are not like dirt roads which are more prone to generating fugitive dust. The Horsehead Internal Roads are composed of compacted IRM, which is used in the production of asphalt. Hence, as shown in the photos attached as Exhibit K, the unpaved roads at the Chicago Plant look similar to the paved roads. Horsehead's fugitive dust controls include spraying its unpaved roads with water using a water truck, as depicted in the photos in Exhibit K.

The truck material receipts or dispatches at the Chicago Plant do not exceed a volume of 100 trucks per day. Pursuant to the requirements of Section 3.0(15)(b) of the City's Rules, Horsehead will be subject to the "not less than one time daily when the Facility is open for business" street sweeping frequency, "unless the roads are free and clear of any material transported to or from the Facility." Horsehead uses a street sweeper equipped with a water spray, for use during non-freezing weather, and a vacuum system, to clean paved roads used to transport material inside the facility and within one quarter mile of the perimeter of the facility. A photo of the street sweeper vehicle is attached as Exhibit L. Horsehead is not asking for a variance from this requirement of the City's Rules.

Further, before IRM trucks exit the Chicago Plant, they travel on paved Internal Roads for several hundred feet. This allows an opportunity for loose material which may have collected on truck wheels from the unpaved portion of the roadways to be deposited on the paved roadway where the material is swept clean by the street sweeping machine. Horsehead also inspects the wheels of trucks leaving the Chicago Plant. If material is observed on the truck wheels, the wheels are hosed down with water before leaving the facility. Horsehead's existing practice of checking outgoing trucks that have traveled on unpaved Internal Roads and cleaning truck wheels as necessary has proven to be an effective means of preventing track-out of materials from trucks exiting the Chicago Plant. It should also be noted that Horsehead plans to pave the currently unpaved Internal Roads before the one-year compliance deadline under the City's Rules. Accordingly, Horsehead is not requesting a variance from the paving requirement in Section 3.0(14) of the City's Rules.

A portion of the City of Chicago road (114th Street) leading to and from the Horsehead Plant from Torrence Avenue is not paved. (See photo attached as Exhibit M). After trucks leave the Horsehead facility and cross over the railroad tracks on 114th Street, the section of 114th Street between the railroad tracks and Torrence Avenue is not paved. Thus, it is not possible for trucks to leave the Horsehead Plant without traveling for approximately ¼ mile on this unpaved portion of 114th Street leading to Torrence Avenue. Even if Horsehead were to install a wheel wash station and add rumble strips (City Rules' Section 3.0(8)(d)) at the Chicago Plant, any "outgoing material transport truck" (per Section 3.0(8)(d) of the City's Rules) will travel over unpaved roads after exiting the Horsehead Plant where it may pick up dirt and other material. This situation has existed for years. It has not caused nuisance conditions to, or otherwise adversely affected, the surrounding vicinity. Horsehead periodically redresses the unpaved portion of 114th Street with limestone chips to minimize any dust emissions. Horsehead also monitors the road conditions during those times when travel over the unpaved portion of 114th

Street may result in dirt collected on truck wheels being deposited onto Torrence Avenue. On occasion, and as part of its commitment to the surrounding community, Horsehead also has arranged for its street sweeping machine to operate on Torrence Avenue, even though it questioned whether the material deposited there originated from vehicular traffic exiting from Horsehead's Chicago Plant. Horsehead will continue this practice in the future.

C. Granting Horsehead a Variance from the PM-10 Monitoring Requirements of Section 3.0(4)(a)-(e) will not Cause a Nuisance or Adversely Affect the Surrounding Community.

The bulk solid materials handling and transport which are conducted by Horsehead's Chicago Plant do not warrant the imposition of continuous PM-10 monitoring at its facility boundaries. The limited quantity and high moisture content of Horsehead's petcoke/metcoke material and the density and "crusting" characteristics of its IRM do not present any significant risk of exceeding acceptable levels of PM-10 emissions. With the assistance of a nationally recognized environmental engineering and consulting firm, Mostardi-Platt, Horsehead also has revised its Fugitive Dust Plan to ensure that it satisfies all of the requirements of the City's Rules as well as the conditions of Horsehead's existing Clean Air Act Title V Permit.

Horsehead is not requesting a variance from the quarterly opacity testing requirement in the City's Rules. In fact, Mostardi-Platt already has conducted extensive opacity testing at the Chicago Plant in order to provide the City with objective test data clearly showing that PM-10 monitoring is not necessary to ensure that unacceptable fugitive emissions are prevented.

To date, Mostardi-Platt has conducted opacity testing at the Horsehead Plant on two occasions. The first testing date, May 19, 2014, was selected because the weather forecast called for windy conditions. During the testing, which was conducted from approximately 10 am to 4 pm, wind speeds were recorded at levels ranging from 10 mph to 15 mph. The National Weather Service (NWS) data for Chicago Midway Airport on May 19 shows wind conditions ranging from 14 mph to 17 mph, with gusts ranging from 21 mph to 31 mph during this time period. A total of fourteen locations were tested by a certified observer in accordance with Method 9 (for internal locations) and Method 22 (for property line locations). The opacity testing locations included five locations along the property boundary line: east, south, southwest corner, west and north. Based on the south, southeast wind direction at the time of the opacity testing, the west and north property line locations were downwind. In addition to the property boundary line locations, several internal locations also were tested. These included bulk solid materials storage area locations (*i.e.,* various IRM and petcoke/metcoke storage areas). In addition, an opacity test was conducted during a truck loading operation at an IRM storage pile. With only limited exception, the opacity testing results were 0% opacity all locations. The highest opacity measured was 5% and this occurred only at one location, the eastern coke storage area, for a very limited time period. There were no visible emissions at the property lines. A

copy of the Mostardi-Platt May 19, 2014 Opacity Testing Report, which includes the NWS data for the testing period, is attached as Exhibit N.

A second round of opacity testing was conducted by Mostardi-Platt on May 23, 2014, with similar results. This round of opacity testing was scheduled to coincide with IRM barge loading operations, including both the transfer of IRM from the front-end loader vehicle into the conveyor hopper and the conveyor barge loading operations, an activity which was not occurring at the time of the May 19, 2014 opacity testing. Wind conditions ranged from 0 to 10 mph during this activity. Opacity readings also were taken at multiple unpaved roadway locations as various vehicles (*e.g.,* car, van, tractor trailer, front end loader) traveled over the Chicago Plant Internal Roads. Additional May 23 opacity testing locations included the IRM and coke storage areas (including the off-spec coke pile), and numerous locations along the property boundaries. Consistent with the prior May 19 opacity testing, the results consistently showed 0% opacity levels, with only isolated instances of opacity readings of no more than 5%. A copy of the May 23 Opacity Testing Report by Mostardi-Platt is attached as Exhibit O.

Horsehead submits that the opacity test results provide objective data confirming that the risk of unacceptable fugitive dust emissions from Horsehead's operations is either nonexistent or extremely low. These recent opacity test results are consistent with the results obtained from ambient air monitoring conducted in the 1990's. Pursuant to its then existing air permit, the Chicago Plant was required to conduct ambient air monitoring for lead at the plant over an extended period of time. After submitting the results to the Illinois EPA showing that the monitoring did not detect any noncompliant air emissions, the Illinois EPA notified Horsehead in 1997 that it could cease its ambient air monitoring program. Accordingly, those air monitoring stations have since been removed. A copy of the Illinois EPA's July 8, 1997 letter to Horsehead Resource Development Company, Inc. in which it provided its formal approval for the termination of the required ambient air monitoring is attached as Exhibit P.

The recent opacity test data, along with the previous successfully completed ambient air monitoring for lead, support the conclusion that continuous PM-10 monitoring at the Chicago Plant's property boundaries is not necessary to prevent either nuisance conditions or any adverse effect to the surrounding community. Further, Horsehead will be making additional changes in the near future that will even further reduce the existing limited potential for fugitive PM emissions from the Chicago Plant. The remaining unpaved Internal Roads will be paved in less than a year. As described further below, Horsehead is also planning to expand and enhance its water suppressant operations to add water cannons for the IRM Product Storage Area in order to achieve compliance with the requirement for continued outdoor storage in Section 5.0(5)(a) that its dust suppressant system shall be operable "at all times." Accordingly, requiring the Horsehead Chicago Plant to comply with Section 3.0(4) by installing and operating the PM-10 monitors is not necessary to ensure that its operations do not cause a nuisance condition or adversely affect the community.

D. Limited Areas of Pooling Water at the Chicago Plant Following Wet Weather Events do not pose a Nuisance Condition or Adversely Affect the Community.

Horsehead's Chicago Plant has operated as a "zero discharge" wastewater and storm water facility since the time it was built. Under the terms of its solid waste management operating permit, Horsehead has no process discharge to water of the State or to a sanitary sewer. Accordingly, the Chicago Plant does not have a NPDES discharge permit because there are no process wastewater or stormwater discharges from the facility. Stormwater discharges to the adjacent Calumet River are prevented by both a berm which runs parallel to the Calumet River along the eastern side of the facility and an on-site stormwater retention basin. There are no City sewer connections at the Horsehead facility and hence, there are no entry points to the City sewer system to which stormwater may be discharged. Because of these stormwater controls and the absence of sewer connections, there is no threat of off-site stormwater discharges from the Chicago Plant. In accordance with Section 5.0(6) of the City's Rules, runoff from all bulk solid materials piles to neighboring parcels, public ways or any water body is prevented and no runoff enters public sewers or any entry points into the stormwater collection system.

The Chicago Plant site includes a stormwater retention basin that collects stormwater runoff at the facility. The stormwater retention basin can be seen in the photo of the C&B Building which is attached as Exhibit D. The main area of the site is graded to direct stormwater to this basin. However, Section 5.0(6)(d) of the City's Rules requires that the grading "prevent pooling of water." Subsequent to rain events, there are areas of pooling water in areas of the facility that are located farther away from the main plant area in the southern portion of the property. These pooled water areas are temporary and isolated, occurring upon heavy or prolonged rainfall events. One such area can be seen in the photo included on the last page of Exhibit K. Pooled water after heavy rainfall events or periods of sustained wet weather has historically occurred. It is not due to any changed conditions at the Chicago Plant. However, no nuisance conditions have been observed from these temporary areas of pooled water. Because these isolated areas of pooled water are contained onsite, no adverse effect is caused to the surrounding community or the adjacent Calumet River.

E. Authorization to Use Method 9 for Opacity Testing Within the Property Line of the Horsehead Chicago Plant is Consistent with the Methods Specified in the Illinois Air Regulations and will not pose a Nuisance Condition or Adversely Affect the Community.

Section 3.0(c) of the City's Rules provides that "[o]pacity shall be determined based on a visual reading in accordance with the measurement method specified in 35 Ill. Admin. Code 212.107." Section 212.107 of the Illinois Air Regulations specifies the method for determining "the presence or absence of visible emissions from emissions units" for both fugitive and nonfugitive particulate matter emissions. It specifies that Method 22, 40 CFR part 60, Appendix A shall be used. Horsehead agrees that Method 22 is the appropriate method for determining

Figure 1: Horsehead Chicago Plant Aerial Photo

whether there are visible emissions beyond the property line at the Chicago Plant to monitor compliance with Section 3.0(2)(a) of the City's Rules.

However, Section 3.0(2)(b) of the City's Rules also applies an opacity limit (*i.e.*, 10% opacity or other applicable opacity standard") at various points "within the property line of the Facility," such as Bulk Solid Material storage piles and Transfer Points, as those terms are defined in the City's Rules. Horsehead submits that for purposes of monitoring compliance with the opacity limit provisions of Section 3.0(2)(b) of the City's Rules, it is more appropriate to use Method 9, not Method 22, to perform the opacity testing. This approach is consistent with the provisions of Section 212.109 of the Illinois Air Regulations. See 35 Ill. Admin. Code §212.109. Section 212.109 provides, in relevant part, that "measurements of opacity shall be conducted in accordance with Method 9, 40 CFR part 60, Appendix A." Horsehead submits that Method 9 is the preferred and accepted test method for measuring opacity levels within its facility. Accordingly, the use of this more suitable opacity test method will not pose a nuisance condition or adversely affect the community, but rather will provide more accurate and reliable opacity test results. Therefore, Horsehead requests a variance from the provisions of Section 3.0(2)(c) of the City's Rules to allow the use of Method 9 to measure opacity within the boundaries of the Chicago Plant. Consistent with Section 3.0(2)(c), Horsehead will continue to use Method 22 to monitor compliance with the prohibition against visible dust set forth in Section 3.0(2)(a) of the City's Rules.

V. For the Requirements for Which a Variance is Requested, Compliance either Imposes an Arbitrary or Unreasonable Hardship or Additional Time to Comply is Needed.

A. PM-10 Continuous Monitoring Imposes an Arbitrary and Unreasonable Hardship.

The City's Rules requirement to install and operate continuous PM-10 monitors would be an arbitrary and unreasonable hardship for the Horsehead Chicago Plant. As described above, the nature and type of bulk solids materials handling and storage at the Chicago Plant does not create a threat of unacceptable fugitive PM-10 emissions from the facility's operations. Opacity testing both at the boundaries and within the facility, including at "Transfer Points," as defined in the City's Rules, has consistently shown that the fugitive emissions are either 0% or well below the 10% standard referenced in the City's Rules. Earlier ambient air monitoring for lead in the mid-to-late 1990's was conducted for the Illinois EPA's review and the Agency approved the cessation of this monitoring in 1997. There is simply no need for continuous PM-10 monitoring at the Chicago Plant's boundaries because there is no threat of unacceptable fugitive particulate matter emissions emanating from the Chicago Plant's operations. Thus, the imposition of such a requirement is arbitrary as applied to Horsehead's Chicago Plant operations.

Further, the requirement to conduct the continuous PM-10 continuous monitoring would impose an unreasonable hardship upon Horsehead. Horsehead would either need to purchase or

lease the PM-10 monitoring equipment. Horsehead does not have employees who are qualified technicians to operate and maintain the PM-10 monitoring equipment. Therefore, Horsehead either will need to hire additional staff to do so or contract out these services. Under the City's Rules, four site locations for continuous Federal Equivalent Method (FEM) PM-10 monitors are required at least for the first year of monitoring. The necessary infrastructure includes providing an electrical power supply to each of the monitors and constructing a meteorological tower base. The estimated cost of this infrastructure work is $150,000.

In addition to the cost of the monitors themselves, all-weather enclosures are necessary to protect them against damage from the elements. A meteorological monitoring station and a data logger are also necessary. Personnel must be assigned to download and review data each business day to meet the requirements in Sections 3.0(3)(h) and 4(d) of the City's Rules for responding to any events or interruptions in monitoring, as well as to comply with the reporting requirements under the City's Rules. In addition, U.S. EPA continuous FEM requirements include quarterly quality assurance audits performed by dedicated auditors not otherwise affiliated with the routine project operations. Based on an actual quote received for the Chicago Plant, under a leasing arrangement, the estimated cost for the first year of PM-10 air quality and meteorological monitoring is $152,000. Alternatively, the cost of mobilization, installation and purchase of the equipment is $157,741. The purchase price does not include any of the personnel time to download and review data or the quarterly auditing costs. The cost of the second and subsequent years of monitoring are somewhat lower, because they will not include the mobilization and installation costs, but they are still significant. However, over a three year period, assuming the continued operation of four monitors and outside contractor assistance with the monitoring and reporting requirements (estimated at $68,000/year), the quoted cost of compliance with the PM-10 monitoring requirement is estimated to be $361,741 (with upfront purchase of the equipment) or $392,000 (with leasing of the equipment). These estimates do not include any additional time spent by Horsehead personnel regarding oversight of the PM-10 monitoring and reporting work.

Horsehead submits that the given the absence of any reasonable basis to expect unacceptable levels of fugitive dust emissions from its facility, as confirmed by independent opacity test data and ambient air monitoring, the cost of compliance with the PM-10 monitoring requirement imposes an unreasonable economic hardship upon its operations, particularly when the other ongoing compliance costs imposed by the City's Rules are considered. Horsehead has already incurred the following costs to ensure compliance with the City's Rules: (i) consulting fees to Mostardi-Platt for a revised Horsehead's Fugitive Dust Plan to satisfy the new requirements in the City's Rules; (ii) costs of opacity testing; and (iii) added costs to obtain a covered barge loading conveyor system with enclosed chute. In addition, Horsehead will be expending additional funds to enclose its coke piles; to enhance its existing dust suppression system; to provide for street sweeping capabilities on weekends when reduced operations may still require the availability of such equipment based on City Rules Sections 3.0(15)(b) and (16);

to remove or reduce the height of certain bulk material piles; and to pave Internal Roads. Horsehead submits that given its significant compliance efforts with respect to the other requirements of the City's Rules, it is an unreasonable hardship to require PM-10 continuous monitoring at the Chicago Plant.

B. An Extension of Time to Comply with Section 5.0(5)(a) and a Variance from Section 5.0(5)(b) during Freezing Weather will not cause Non-Compliance with the Opacity Limit in Section 3.0(2)(b).

Horsehead is seeking an extension of time for its IRM outdoor storage piles to comply with the requirement in Section 5.0(5)(a) that its Dust Suppressant System "shall be operable and able to dispense water…at all times unless all bulk storage material piles are covered." Also, due to the location and size of the IRM piles, the requirement in Section 5.0(5)(b) to use Chemical Stabilizers and/or water heating systems when temperatures fall below 32° F is either not feasible or would impose an unreasonable hardship upon Horsehead's operations. Therefore, Horsehead is requesting a variance from the requirements of Section 5.0(5)(b).

The Chicago Plant currently has a hydrant and water hose system which is capable of supplying water to the central portion of the plant where the coke materials are stored and handled as well as in the IRM barge loading area. However, there are no water hydrants in the southern area of the Chicago Plant where the other IRM storage areas are located. In these areas, Horsehead uses a water spray truck to apply water to the IRM. Horsehead contracts with an outside company to supply an operator for the water spray truck. Hence, while the water spray truck is always present at the Chicago Plant, there is not an operator available "at all times" to operate and dispense water from the water spray truck. Horsehead is working with a contractor to design and install a water cannons dust suppressant system that can be operable at all times without being dependent on the availability of an outside operator. The installation of this new dust suppressant system requires that utility lines be installed to service the new dust suppressant system. Horsehead is requesting an extension until December 31, 2014 to allow sufficient time to complete the installation of the utility lines and the dust suppressant system.

The existing water suppressant system, both the water hydrant/hose system and the water spray truck system, are adequate to cover all normal hours of operation of the facility. Accordingly, there is very little risk that during the requested extension of time to install the water cannons dust suppression system, the existing dust suppression system will not be adequate "to ensure compliance with the opacity limit" as required by the City's Rules.

Turning to Horsehead's request for a variance from Section 5.0(5)(b) of the City's Rules, based on Horsehead's investigation of available dust suppressant systems for its facility, it is not feasible to use the new water cannon system either to apply Chemical Stabilizers or to have this system include a water heating system for operation during below 32° F temperatures. Horsehead submits that due to the fact that IRM generates no fugitive dust while it is undisturbed in the outdoor storage piles and very little fugitive dust during handling, it is unnecessary to

require the use of chemical stabilizers or water heating system during freezing temperatures for the IRM storage piles. For the off-specification coke pile, Horsehead will schedule its removal during a time of the year when the temperatures are not reasonably expected to fall below freezing. Hence, Horsehead is only asking for a variance from the requirement to use chemical stabilizers or to have a water heating system for its IRM storage piles. The added cost of adding either of these systems imposes an unreasonable hardship because a fugitive dust problem does not exist, particularly during freezing temperatures, given the high density of IRM.

Horsehead recognizes that another alternative is to construct an enclosure for the IRM. But due to the volume of the IRM that would need to be enclosed, the cost of total enclosure to accommodate the IRM inventory would be prohibitive. It is estimated that an 80,000 sq. ft. building at an estimated cost of $1 million would be necessary to enclose all of the IRM stored on-site.

C. Wheel Wash Station/Rumble Strips Requirements Impose an Arbitrary or Unreasonable Hardship.

Horsehead's recently submitted Dust Control Plan provides adequate alternative measures to prevent track out of material onto off-site roads. Therefore, Section 3.0(8)(d) of the City's Rules should not require Horsehead to install a wheel wash station and rumble strips. However, because the Department of Public Health has not yet had sufficient time to review and approve Horsehead's Dust Control Plan, Horsehead is conditionally requesting a variance from the wheel wash and rumble strips requirement of the City's Rules pending the Department's approval of the Dust Control Plan.

Further, until and unless the City is able to pave the road leading to Horsehead's Chicago Plant, it would impose an arbitrary hardship to require Horsehead to install a wheel wash station and rumble strips. These requirements are primarily targeted at preventing off-site nuisance conditions. However, Horsehead has demonstrated in this variance request that its existing operations not only do not generate unacceptable fugitive dust emissions, but they have not caused nuisance conditions to the surrounding community. Further, there is no rational purpose served by running trucks through a wheel wash station and rumble strips when upon exiting the facility they must travel over railroad tracks and an unpaved portion of 114th Street before reaching the paved roadway on Torrence Avenue. In some instances, wetting down the wheels of trucks before they exit the Chicago Plant onto the unpaved portion of the City road may actually make the situation worse as wet truck wheels are more likely to pick up dirt from the offsite unpaved road and then deposit it upon the paved roadway that begins again on Torrence Avenue. Horsehead has done its part to address any dirt that may fall off truck wheels upon entering Torrence Avenue, even when Horsehead questioned whether its trucks were the cause, by sending its street sweeping equipment onto Torrence Avenue to clean it. This has occurred very infrequently and Horsehead will continue this practice under the requested variance.

Similarly, Horsehead will continue its practice of periodically adding limestone chips to the unpaved portion of 114th Street to minimize the potential for dust.

Horsehead is complying with the other requirements of the City's Rules which serve to prevent the accumulation of any dirt or other material on truck wheels, including vehicle covering, covered conveyor system, street sweeping and applying water to its unpaved roads. Horsehead will be paving the remaining portion of unpaved Internal Roads at the Chicago Plant within the one-year deadline provided in the City's Rules. Therefore, there will be limited opportunity in the future for truck wheels to accumulate any dirt or other material while on the Horsehead property. Horsehead's existing system of inspecting the condition of truck wheels before they exit the facility and hosing off any visible accumulated material has proven to be an adequate system for achieving the purpose of the City's Rules. To require Horsehead to install the wheel wash station/rumble strips is an unreasonable economic hardship under these circumstances.

D. The 90-Day Compliance Deadline for Reducing the Height of all of the IRM Storage Piles and to install a Wind Monitoring Station did not Provide Sufficient Time for the Completion of this Work.

Despite its best efforts, and because of the many simultaneous 90-day deadline requirements under the City's Rules, the 90-day compliance deadline for installing and operating a wind monitoring station or other permanent device and for reducing the height of the IRM storage piles at the Chicago Plant did not provide Horsehead sufficient time to complete all of the work necessary to achieve timely compliance. Horsehead is requesting a 90-day extension to complete this work.

Horsehead completed the grading of the IRM storage areas on time to meet the 30 ft. height requirement for all but two of its IRM piles. Neither of the two remaining piles currently exceeds a height of approximately 45 feet. The reduction in the height of the IRM piles is performed with a pay loader working from the top of the pile. A roadway first needs to be graded on the pile to allow the pay loader to reach the top of the pile. The IRM must be scraped down from the top of the pile and moved to its outer edge to drop the IRM down to a lower elevation. In order to ensure the safety of the payload operator, this work must be done slowly and working only in small sections of the IRM pile. The hard crust and heavy weight of the IRM also contribute to the slow pace at which these piles are re-graded. Finally, the work can only be performed by experienced personnel. The pay load operators also must perform the work necessary to move IRM to the barge loading area to fill customer orders. For these reasons, the requested additional time is necessary to complete the re-grading of all of the IRM that was on-site as of the effective date of the City's Rules.

Due to the hard crust on the surface of the IRM, and the application of water before any IRM is moved from the storage area, the minimal additional time that the remaining two piles will exceed the 30 feet height limitation does not present any significant risk of causing

unacceptable levels of fugitive dust emissions or any nuisance condition. Horsehead also will attempt to use the IRM from these two storage piles to fulfill customer IRM orders in an attempt to accelerate the amount of additional time necessary to reduce their height.

Horsehead also needs additional time to complete the process of acquiring and installing a wind monitoring station. Horsehead has researched and evaluated available wind monitoring stations and the identification of an appropriate location at the Chicago Plant for installing the station. It also has met with the selected contractor to review and identify the wind monitoring station to be purchased and installed.

Horsehead will make every reasonable effort to complete both of these projects in less than 90 days. However, the nature of the IRM storage piles work and accompanying safety concerns makes it difficult to conduct this work quickly. Horsehead cannot control the contractor's schedule for supplying and installing the wind monitoring station.

E. The Elimination of all areas of Pooled Water after Significant Wet Weather Events is not necessary to Protect the Adjacent Calumet River or the Surrounding Community.

As discussed above, stormwater does not runoff the Chicago Plant into the adjacent Calumet River. It is either directed to the on-site stormwater retention basin or it is prevented from entering the river by a berm that runs continuously along the eastern edge of the property. There is no sewer system that could allow stormwater runoff to enter a City sewer system. Thus, the environment is protected through the existing stormwater controls at the Chicago Plant.

Subsequent to significant wet weather events, there are some areas of "pooled water" present at the Chicago Plant, as can be seen in some of the photographs attached to this variance request. These limited areas of pooled water are not new. They have occurred for years after significant wet weather events. However, Horsehead has never observed any nuisance conditions or other problems associated with the temporary presence of pooled water until it evaporates and dissipates into the underlying soil. Local government periodically sprays the area for mosquito abatement purposes, which would be the only potential cause of any nuisance condition.

Moreover, Horsehead's ability to re-grade its property to reduce the areas where pooled water occurs is hampered by both the very flat elevation of its property and the railroad lines that traverse the plant. The need to keep storm water from inundating the railroad tracks requires that the ground around the tracks be somewhat lower than the tracks themselves. These areas are more prone to the accumulation of pooled water after a significant wet weather event. Horsehead has not been able to identify a feasible and reasonable means of preventing these areas of pooled water.

VI. Proposed Methods to Achieve Compliance with the Regulations

Horsehead is and will be in timely compliance with all but a small number of the extensive requirements of the City's Rules. For the limited portions of the City's Rules for which Horsehead is seeking a variance, the efforts it has made prior to the enactment of these

rules and the post-enactment additional compliance steps it has taken all serve to protect against unacceptable fugitive dust emissions and to prevent nuisance conditions. Horsehead already has enclosed all of its EAFD and WOX operations. Horsehead will enclose the coke materials it uses as a fuel source in its manufacturing operations within the two-year period allowed under the City's Rules. In the meantime, the limited quantity of coke material it stores outside is controlled through the use of its dust suppression system. Horsehead is utilizing an enclosed barge loading system for its IRM as required by the City's Rules. All but two of Horsehead's IRM storage piles have been reduced to below the maximum height limitation of 30 feet. Most of Horsehead's Internal Roads are paved, with only a portion unpaved and Horsehead's procedures for staging IRM serve to minimize the use of unpaved roads. The remaining unpaved roads will be paved within the one-year period allowed under the City's Rules.

Horsehead meets the setback requirements under the City's Rules and prevents offsite stormwater discharges through its existing stormwater management controls. Horsehead has conducted, and will continue to conduct opacity testing under the City's Rules' requirements, to demonstrate that its operations do not cause opacity levels that exceed the standard in the City's Rules. Quarterly opacity tests which should continue to demonstrate compliance with the opacity standard are a reasonable substitute for the requirement to conduct continuous PM-10 monitoring at the facility's boundaries. Further, during the additional ninety-day extension of the wind monitoring station compliance deadline, Horsehead Chicago Plant personnel will monitor weather conditions by daily review of the forecasted weather conditions in the area during each shift at the Chicago Plant in order to be aware of forecasted High Wind Conditions which may require suspension of material handling operations.

Similarly, given that Horsehead has already paved the bulk of its Internal Roads, and will be paving the remainder of them within the one-year period allowed under the City's Rules, leaving the area on which trucks travel to and from the IRM storage piles unpaved will not cause unacceptable dust emissions. The remaining unpaved Internal Roads generate little or no dust and do not cause opacity levels at the facility's boundaries to exceed the standard in the City's Rules. Because of the alternative measures provided for in the Dust Control Plan for the Chicago Plant for preventing track out of material, including Horsehead's practice of inspecting and washing down the wheels of trucks exiting the facility, Horsehead should not be required to install a wheel wash station and rumble strips because its existing operations will not cause or contribute to offsite nuisance conditions. The use of a wheel wash station and rumble strips is also ill-suited to the Chicago Plant given the unpaved condition of the portion of 114th Street between the Chicago Plant and Torrence Avenue.

For the few remaining requirements of the City's Rules for which Horsehead is seeking a variance, they are primarily associated with the IRM storage piles that due to the heavy density of IRM and the formation of a hard crust on its surface, the requested variance relief will not cause fugitive dust emissions to exceed acceptable levels. Horsehead has not caused any adverse effects on the surrounding community. It has not been the source of any resident complaints regarding fugitive dust emissions that interfere with their enjoyment of their property. Granting Horsehead the variance relief requested here will not cause the purpose or goal of the City's Rules to protect the environment or the community to be thwarted in any way.

VII. Alternative Methods and Factors Influencing the Choice of Applying for a Variance.

Horsehead has already adequately controlled its operations so that the Chicago Plant does not cause fugitive dust emissions above the opacity standard and does not create any nuisance conditions to the surrounding community. Other factors influencing Horsehead's decision to apply for a variance include: that IRM's characteristics (*i.e.,* heavy density and self-forming surface crust) do not make this material susceptible to windborne dispersion; the efforts it has already taken and will take in the near future which eliminate or minimize the risk of unacceptable fugitive dust emissions or nuisance conditions; and that the nature of its operations are not anything like those of a bulk solids material terminal. Under these circumstances, and given all of the work that has been necessary to achieve timely compliance with the bulk of the requirements in the City's Rules, the limited additional time being requested to achieve compliance with only a very limited portion of these new requirements is a reasonable request. For the limited extensions of time requested for reducing the height of the two remaining IRM storage piles, installing a wind monitoring station and to improve its existing dust suppressant system capabilities to ensure operability at all times, Horsehead simply could not complete the work within the limited time allowed under the City's Rules while still completing its other compliance efforts taken to date and those which are in progress to meet future deadlines under the City's Rules.

Horsehead brought in the assistance of outside contractors, such as Mostardi-Platt, and personnel from its home office, to help it to timely address all of the requirements of the City's Rules from which it has not sought a variance. The City needs to recognize that the relatively quick enactment of the City's Rules and the extensive scope of their requirements simply did not allow Horsehead sufficient time to accomplish everything required by these rules.

VIII. Statement Regarding the Person's Current Status as Related to the Subject Matter of the Variance Request.

Horsehead believes that it has provided above the requested statement concerning its current status of compliance related to the subject matter of this variance request. The above information provides the City with Horsehead's current status regarding the requirements of the City's Rules from which it is seeking a variance. If necessary, Horsehead is willing to provide monthly updates of its further efforts to comply with the requirements for which it has requested an extension of the compliance deadline.

IX. Conclusion and Request for Stay.

Horsehead believes that it has provided all of the information required to obtain a variance from the specified requirements of the City's Rules pursuant to the variance provisions of Section 8.0 of those rules. However, in the event that the Department of Public Health determines that any additional information is needed, Horsehead requests that the Department so notify it and allow it the opportunity to provide any such additional information. In this regard, Horsehead represents that it has not intentionally avoided providing any required information and asks the Department to consider that the City's Rules and their requirements are without precedent. Further, there has not been an extensive amount of time prior to the compliance deadlines at issue here to evaluate existing operations, comply with the requirements that reasonably could be complied with and then to prepare the information necessary to present this

variance request. Horsehead has proceeded to do so with all deliberate speed and attention. However, Horsehead recognizes that it will require some time for the Department to provide the requisite thirty-day public notice of this request under the City's Rules, to carefully consider this variance request and to advise Horsehead of its decision. Accordingly, Horsehead requests that the Department exercise its discretion to consider the requirements which are the subject of this variance request to be stayed pending the City's decision on the variance request and to afford Horsehead a reasonable amount of additional time to comply should the Department deny any part of the variance relief requested herein.

Respectfully submitted,

HORSEHEAD CORPORATION

By: John A. Marta

John Marta

Horsehead Chicago Plant Manager

Horsehead Corporation

Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials

EXHIBIT A

AERIAL PHOTO OF HORSEHEAD CHICAGO PLANT

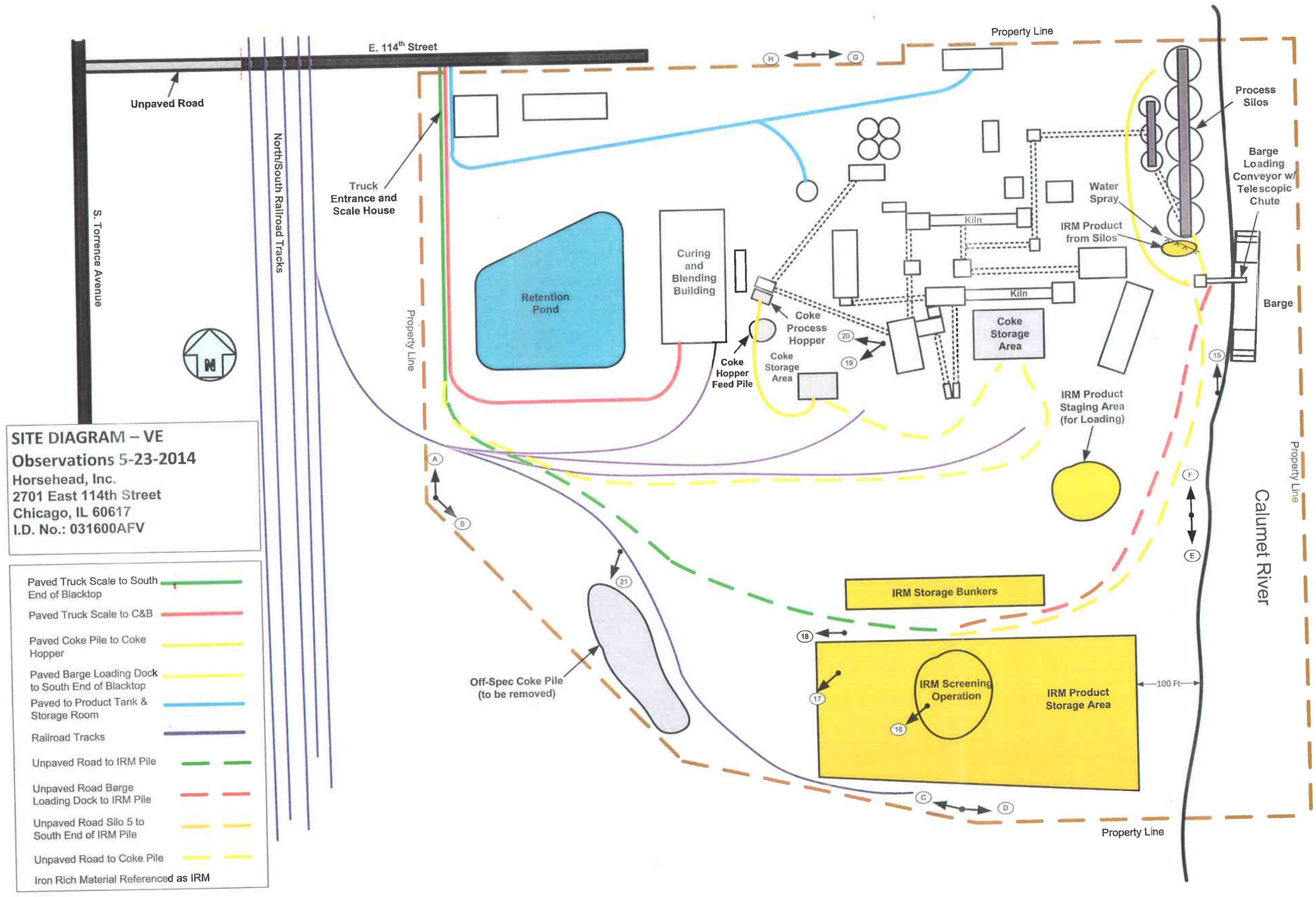
Horsehead Corporation

Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials

EXHIBIT B

MASTER SITE DIAGRAM

HORSEHEAD CHICAGO PLANT


E. 114th Street
Unpaved Road
North/South Railroad Tracks
S. Torrence Avenue
Property Line
Truck Entrance and Scale House
Retention Pond
Curing and Blending Building
Coke Hopper Feed Pile
Coke Process Hopper
Coke Storage Area
Kiln
Water Spray
IRM Product from Silos
Process Silos
Barge Loading Conveyor w/ Telescopic Chute
Barge
Coke Storage Area
IRM Product Staging Area (for Loading)
Property Line
Calumet River
IRM Storage Bunkers
IRM Screening Operation
IRM Product Storage Area
100 Ft
Off-Spec Coke Pile (to be removed)
Property Line
N
SITE DIAGRAM – VE
Observations 5-23-2014
Horsehead, Inc.
2701 East 114th Street
Chicago, IL 60617
I.D. No.: 031600AFV
Paved Truck Scale to South End of Blacktop
Paved Truck Scale to C&B
Paved Coke Pile to Coke Hopper
Paved Barge Loading Dock to South End of Blacktop
Paved to Product Tank & Storage Room
Railroad Tracks
Unpaved Road to IRM Pile
Unpaved Road Barge Loading Dock to IRM Pile
Unpaved Road Silo 5 to South End of IRM Pile
Unpaved Road to Coke Pile
Iron Rich Material Referenced as IRM

Horsehead Corporation

Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials

EXHIBIT C

STANDARDS FOR THE MANAGEMENT AND USE OF SLAG RESIDUES DERIVED FROM HTMR TREATMENT OF K061, K062 AND F006 WASTES PROPOSED RULES

59 FED. REG. 67256
(DECEMBER 29, 1994)

List of Subjects in 40 CFR Part 170

Administrative Practice and Procedures, Occupational Safety and Health, Pesticides and Pests.

Dated: December 16, 1994.

Daniel M. Barolo,

Director, Office of Pesticide Programs.

[FR Doc. 94-32116 Filed 12-28-94; 8:45 am]

BILLING CODE 6560-50-F

40 CFR Parts 261, 266, and 268

[SW-FRL-5127-2]

RIN 2050-AE15

Standards for the Management and Use of Slag Residues Derived From HTMR Treatment of K061, K062, and F006 Wastes

AGENCY: Environmental Protection Agency.

ACTION: Proposed rule and request for comment.

SUMMARY: The Environmental Protection Agency (EPA or the Agency) is proposing to allow materials resulting from the treatment of certain hazardous wastes to be used as a product in road construction and as an anti-skid/deicing material on road surfaces. These materials are residues ("slags") generated from the treatment of pollution control dusts resulting from scrap metal recycling (electric arc furnace dust). The Agency evaluated the potential risks that might arise from the use of these "slags" and determined that these uses do not present a significant risk. This action would reclassify these treated materials as nonhazardous and allow these uses, but only if the toxic metals in the waste are reduced to safe levels by treatment.

The Agency is proposing this action to clarify two seemingly inconsistent parts of the regulations governing residual materials generated from the treatment of hazardous wastes. This rule clarifies what uses of the treatment residues are allowed, and specifies what conditions must be met for these materials to be used in this manner. Furthermore, this action partially fulfills a settlement agreement entered into by the Agency with the Natural Resources Defense Council (NRDC) and the Hazardous Waste Treatment Council (HWTC) to resolve the apparent inconsistency in the regulations.

The Agency believes these proposed actions will promote recycling and resource recovery in two ways. This action will directly encourage the recovery of metals from the hazardous electric arc furnace dust and other metal wastes by allowing the "slag" residuals to be used in a beneficial and environmentally sound way. Furthermore, this proposed rule will encourage the recycling of scrap metal by helping to reduce the costs that result from the treatment and disposal of the electric arc furnace dust. The Agency believes that this rule would satisfy the goals of resource recovery, while also ensuring protection of human health and the environment.

DATES: EPA will accept public comments on this proposed rule until February 13, 1995. Comments postmarked after this date will be marked "late" and may not be considered.

ADDRESSES: The public must send an original and two copies of their comments to EPA RCRA Docket Number F-94-SRTP-FFFFF room 2616 (Mail Code 5305), 401 M Street S.W., Washington, DC 20460. The docket is open from 9:00 a.m. to 4:00 p.m., Monday through Friday, except on Federal holidays. The public must make an appointment to review docket materials by calling (202) 260-9327 A maximum of 100 pages may be copied at no cost. Additional copies cost $0.15 per page.

FOR FURTHER INFORMATION CONTACT: For general information contact the RCRA Hotline, toll free at (800) 424-9346, or at (703) 412-9810. For specific questions concerning this notice, contact Narendra Chaudhari, Office of Solid Waste (Mail Code 5304), U.S. Environmental Protection Agency 401 M Street, S.W., Washington, DC 20460, (202) 260-4787

SUPPLEMENTARY INFORMATION:

I. Background

A. Existing Regulations for Hazardous Wastes Used in a Manner Constituting Disposal

Currently, hazardous wastes that are used in a manner constituting disposal (applied to or placed on land), including waste-derived products that are produced in whole or in part from hazardous wastes and used in a manner constituting disposal, are not subject to hazardous waste disposal regulations provided the products produced meet two conditions. First, the hazardous wastes must undergo a chemical reaction in the course of becoming products so as to be inseparable by physical means (see § 266.20(b)). A second condition for exemption is that the waste-derived products must meet best demonstrated available technology (BDAT) treatment standards under the land disposal restrictions program for every prohibited hazardous waste that they contain before they are placed on land (see § 266.20(b)).

The exemption in § 266.20 is used for slag residues (slags) generated from the treatment of hazardous waste K061 (and, to a limited extent, K062 and F006) using high temperature metal recovery (HTMR) processes. Section 266.20 is applicable because the majority of this slag is used in highway construction materials (e.g., as road subbase), and a limited amount is also used by directly applying it to road surfaces (i.e., top grade and as an anti-skid or deicing agent). (See 56 FR 15020, April 12, 1991.)

On August 19, 1991 and August 18, 1992 (see 56 FR 41164 and 57 FR 37194), EPA finalized "generic exclusions" for nonwastewater slag residues generated from the HTMR treatment of several metal-bearing hazardous wastes (K061, K062, and F006). These HTMR slag residues are excluded from the hazardous waste regulations provided they meet designated concentration levels (generic exclusion levels) for 13 metals, are disposed of in Subtitle D units, and exhibit no characteristics of hazardous waste (see § 261.3(c)(2)(ii)(C)). The generic exclusion levels for the metals were based on the use of the EPA Composite Model for Landfills (EPACML), which predicts the potential for groundwater contamination from wastes that are placed in a landfill. EPA limited the generic exclusion to residues disposed of in a Subtitle D unit because, at that time, the Agency could not properly evaluate concerns over potential releases to other media resulting from uses of the HTMR slag as product, especially as an anti-skid material on road surfaces (see 56 FR 41164, August 19,1991).

As EPA noted in the final rule for the initial generic exclusion for K061 residues (see 56 FR 41164, August 19, 1991), the use of HTMR residues as anti-skid material was not prohibited, provided the residue meets the exemption conditions given in § 266.20. EPA also noted in the same notice that it would further evaluate the uses of K061 HTMR residues that constitute disposal, and would consider amendments to § 266.20 for HTMR slags that might require further controls on such uses.

B. Summary of Petition and Settlement Agreement

The Natural Resources Defense Council (NRDC) and the Hazardous Waste Treatment Council (HWTC) filed a petition for review challenging EPA's

decision not to apply "generic exclusion levels"—levels at which K061 slags are deemed nonhazardous—to K061 slags used as waste-derived "products" and applied to or placed on land. The generic exclusion levels established for some metals in the K061 HTMR slags are lower than the BDAT standards that apply to K061. Therefore, while the generic exclusion requires that the nonhazardous K061 slag that meets exclusion levels be disposed of in a Subtitle D unit, K061 HTMR slag that may exhibit metal levels above the exclusion levels (but below BDAT) may be used as a product in a manner constituting disposal under the exemption in § 266.20(b). The petitioners pointed out the seeming anomaly of the slag used in an uncontrolled manner being effectively subject to lesser standards than slag disposed in a controlled landfill.

On August 13, 1993, EPA entered into a settlement agreement with these petitioners which would address their concerns through two separate notice-and-comment rulemakings. EPA agreed to propose the first rule within 6 months of the settlement date (and issue a final rule within 12 months) to either establish generic exclusion levels for "non-encapsulated" uses of K061 slags, or effectively prohibit such uses of K061 slags on the land. EPA also agreed to propose a second rule within 16 months of the settlement date (and issue a final rule within 28 months), to establish generic exclusion levels for encapsulated uses of K061 slags on the land. The agreement specified that the generic exclusion levels for K061 slags will be based on an evaluation of the potential risks to human health and the environment from the use of K061 slags as waste-derived products, taking into account all relevant pathways of exposure.

C. Implementation of Settlement Agreement

This action represents the second proposed rule required under the settlement agreement. EPA has promulgated the first rules required under the settlement agreement. (See 59 FR 8583, February 23, 1994 (proposed) and 59 FR 43496, August 24, 1994 (final)). The final rule will effectively prohibit, beginning on February 24, 1995, anti-skid/deicing uses of HTMR slags derived from K061, K062, and F006, as waste-derived products placed on land. Today's proposal contains EPA's risk-based determinations for all major K061, K062, and F006 HTMR slag uses, including anti-skid/deicing uses, and thus implements the remaining portion of the agreement.

II. Overview of Production, Processing, and Uses

A. Production of HTMR Slags

According to information available to EPA, HTMR slags are by-products of metal recovery operations (which involve recovery of metals from metal-bearing hazardous wastes) produced primarily at two facilities, Horsehead Resource Development Company Inc. (HRD) and International Metal Reclamation Company (Inmetco). HRD is currently the major generator of HTMR slags which are at issue in this proposed rule. In 1992, HRD processed 376,000 tons of electric arc furnace (EAF) dust, which is reportedly 68 percent of the EAF dust generated domestically. From this amount of EAF dust, HRD produced 120,000 tons of zinc calcine, 19,000 tons of lead concentrate, and 237,000 tons of slag (see EPA's Report to Congress on Metal Recovery, Environmental Regulation & Hazardous Waste; EPA 530–R–93–018). Inmetco provided information that it processed a total of 58,100 tons of wastes in 1993, recovering 22,196 tons of metals and producing 15,000 tons of slag (See docket for information submitted by Inmetco at a meeting with EPA on March 10, 1994).

B. Process Description

There are a number of HTMR processes, all of which are multi-step processes. The rotary kiln is the HTMR process primarily used to recover metals from K061, K062, and F006 wastes. The process steps are generally these: (1) wastes are mixed with coal or coke and fluxes to prepare feed materials, (2) high temperature processing is used to reduce metal oxides to their metallic form, 3) volatile metals (primarily cadmium, zinc, and lead) are recovered by collection systems, and 4) residual materials are discharged from the process and cooled to form a slag (see BDAT Background Document for K061). It should be noted that not all metal-bearing hazardous wastes are amenable to recovery by HTMR processes, possibly because their metal content is too low or because of significant quantities of impurities or contaminants that cannot be removed due either to economic or technical limitations. Therefore, metal reclaimers usually set specifications for materials that they will accept for processing (see EPA's Report to Congress on Metal Recovery Environmental Regulation & Hazardous Waste; EPA 530–R–93–018).

C. Properties and Uses of HTMR Slags

According to information provided by the generators on the physical/chemical properties of HTMR slags (see RCRA docket), these slags are highly dense, chemically stable (inert), and highly durable (resistant to breakdown). These are all properties which the generators claim make HTMR slags desirable construction materials.

HTMR slags are primarily used as subbase materials (e.g., in construction of roads, parking lots, and driveways) and as additive ingredients in cement or concrete/asphalt mixtures. Because the subbase is covered by a relatively hard/impermeable material and cement or concrete/asphalt mixtures lock in any additive ingredients, EPA considers these uses of HTMR slags to be "encapsulated" uses. A smaller portion of HTMR slags (believed to be less than 25 percent) are used as anti-skid/deicing materials, as top grade or surfacing materials (e.g., in construction of roads), and for other similar uses. Because anti-skid/deicing materials are dispersed freely on roads (during icy or snowy conditions to provide traction for vehicles) and top grade materials result in uncovered (unpaved) roads, parking lots, driveways, and the like, EPA considers these uses of HTMR slags to be "non-encapsulated" uses.

III. Proposed Standards for the Management and Use of HTMR Slags

EPA is proposing that risk-based generic exclusion levels in § 261.3(c)(2)(ii)(C), in addition to being exclusion standards for disposing HTMR slags derived from hazardous wastes K061, K062, and F006 in a Subtitle D unit, also become exclusion standards for managing these slags and for using these slags as follows: 1) covered subbase materials (e.g., in construction of paved roads, parking lots, and driveways), 2) additive ingredients in cement or concrete/asphalt mixtures, 3) top grade or surfacing materials (e.g., in construction of roads, parking lots, and driveways), and 4) anti-skid/deicing materials.

The Agency is proposing this action for the following reasons. Based on the results of a very conservative risk assessment completed by EPA for the relevant management practices and end-uses of HTMR slags (see Section IV for details), EPA has tentatively determined that the wastepile, transport, road subbase, and landfill waste management scenarios for HTMR-derived slags do not require regulation in order to protect human health and the environment, if these slags meet the generic exclusion levels. In addition, EPA is proposing that use of HTMR slags as additive ingredients in cement or concrete/asphalt mixtures would also not require regulation, if these slags meet the

generic exclusion levels. This is primarily because the cement or concrete/asphalt mixtures would mix with and chemically bind or encapsulate the portion of HTMR slags that are added, and any significant releases of slag constituents into the environment are unlikely. Finally, the risk assessment results, which are based on very conservative release and exposure assumptions, indicated little potential risk for the top grade and anti-skid/deicing end-uses of HTMR slags that meet the generic exclusion levels. Therefore, EPA is also proposing that uses of HTMR slags as top grade and anti-skid/deicing materials would also not require regulation, if these slags meet the generic exclusion levels.

As a consequence of the above proposed changes, EPA is also proposing to amend the existing regulations under § 266.20 that conditionally exempt hazardous waste-derived products used in a manner constituting disposal from RCRA Subtitle C regulation. Specifically the language of § 266.20 would be revised to prohibit the uses of products containing HTMR slags derived from hazardous wastes K061, K062, and F006 when these slags are still hazardous wastes, i.e., contain hazardous constituents at concentrations exceeding the exclusion levels. This prohibition implements RCRA section 3004(g)(5) and 3004(m), which require EPA to prohibit land disposal of hazardous wastes that have not been pre-treated so as to minimize the short-term and long-term threats posed by their land disposal. In addition, EPA is including a cross-reference in the table "Treatment Standards for Hazardous Wastes" in § 268.40 (the Land Disposal Restriction treatment standards) which notes the changes concerning utilization of HTMR slags in §§ 261.3 and 266.20.

As described in section IV.C, the Agency is also taking this opportunity to update the generic exclusion levels to reflect the changes in the drinking water Maximum Contaminant Levels (MCLs) for some of the metals of concern. Therefore, the Agency is proposing to amend the generic exclusion levels for antimony beryllium, and nickel.

EPA requests comments on the proposed changes. EPA also requests comments on the data used in the risk assessment, the methodology and assumptions used in the risk assessment, and other analysis supporting the proposed rule. Further, EPA requests comments on whether the uses of HTMR slags identified in this proposal are the only uses in practice or whether there are other uses practiced or planned. If EPA is alerted to other significant uses, the Agency could use the information to determine whether or not further analysis of those uses would be required.

IV Overview of Risk Assessment Supporting This Proposal

EPA performed a very conservative assessment of the potential risks to human health and the environment from the relevant management practices and uses of K061, K062, and F006 HTMR slags. This section summarizes the methods and results of EPA's risk assessment. A more detailed presentation of the risk assessment and uncertainties involved is provided in a technical background document entitled "Assessment of Potential Risks to Human Health and the Environment from Management and Uses of HTMR Slags," which is included in the docket for this proposed rulemaking.

A. Methodology of Risk Assessment

EPA's methodology consisted of four primary steps. First, a lifecycle analysis for the HTMR slags was performed, starting from the point of manufacture and ending at the point of disposal, to identify potential contaminant release scenarios (air, ground water, surface water, and soil) associated with slag management, use, and disposal practices. Second, based on the release scenarios, exposure pathways and receptor locations relevant to contaminants in HTMR slags were identified. Third, appropriate release, fate, and transport models were used to compute contaminant concentrations at receptor points for each release and exposure pathway. Finally the media-specific concentrations for air, ground water, surface water, and soil were compared to the appropriate human health and ecological effects reference concentrations to determine the quantitative risks from exposures to contaminants in HTMR slags.

EPA focused on selecting high-end values for use in the models to estimate the individual risk for those persons at the upper end (>90th percentile of the population distribution) of the risk distribution. The Agency chose this very conservative approach in order to identify any pathways or chemicals which would warrant a more in depth risk assessment and characterization. A summary of the data sources and risk assessment methodology for HTMR slags is provided below.

1. Sources of Constituents Data for HTMR Slags

The constituents of concern in HTMR slags were identified in the Land Disposal Restrictions for Electric Arc Furnace Dust (K061) Final Rule (56 FR No. 160, p 41164) and supported by the Best Demonstrated Available Technology (BDAT) Background Document for K061 (US EPA, 1988). Specifically the K061 Final Rule identified fourteen metals requiring BDAT treatment standards for K061, including: antimony arsenic, barium, beryllium, cadmium, chromium, lead, mercury nickel, selenium, silver, thallium, vanadium, and zinc. However for various reasons discussed in the K061 Final Rule, EPA promulgated the standard for vanadium as "reserved.

For the purposes of the risk assessment, total concentrations of constituents of concern in HTMR residuals were based on the EPA-collected data base presented in the BDAT Background Document for K061 (US EPA, 1988). For each constituent of concern, the 95th percentile upper confidence limit of the mean (95th UCLM) was calculated for the total metal concentration (in ppm or, equivalently mg constituent per kg HTMR residual). EPA selected this value to represent a reasonable high-end measure of constituent concentrations in HTMR residuals. Table 1 presents the total concentrations and summary statistics for that data set, including maximum concentration, mean, and the range of concentrations.

For exposure scenarios involving HTMR leachate (e.g., landfilling of HTMR-derived slag), the leachate concentration was assumed to be equal to the maximum levels allowed under the generic exclusion established in the K061 final rule. Table 1 also presents the generic exclusion levels (in mg/L).

TABLE 1 —SUMMARY STATISTICS FOR CONSTITUENT CONCENTRATIONS FOR HTMR RESIDUALS

Constituent	Total constituent concentrations in HTMR residuals from rotary kiln incinerator			Generic exclusion levels for leachate (mg/L)
	Range (ppm)	Mean (ppm)	95% UCLM (ppm)	
Antimony	111–405	195	266	0.10

TABLE 1.—SUMMARY STATISTICS FOR CONSTITUENT CONCENTRATIONS FOR HTMR RESIDUALS—Continued

Constituent	Total constituent concentrations in HTMR residuals from rotary kiln incinerator			Generic exclusion levels for leachate (mg/L)
	Range (ppm)	Mean (ppm)	95% UCLM (ppm)	
Arsenic	75–113	86	98	0.50
Barium	331–467	374	408	7.6
Beryllium	1.7–4	2	3	0.01
Cadmium	<15	<15	<15	0.05
Total Chromium	205–978	612	797	0.33
Lead	365–4270	1926	2863	0.15
Mercury	<0.1	<0.1	<0.1	0.009
Nickel	422–952	588	727	1.0
Selenium	2.5–8.8	5	6	0.16
Silver	32–59	39	46	0.30
Thallium	<0.5–<1.0	<1	<1	0.02
Zinc	4550-27400	14634	22117	70

Note: Concentration of chromium VI was estimated to be 1% of total chromium, based on leaching data for total chromium.

2. Release, Fate, and Transport Models

To assess the risks from relevant management practices and uses of HTMR slags, EPA used fate and transport models to compute contaminant concentrations at exposure points for each release and exposure scenario. EPA used the appropriate algorithms from the MMSOILS model, a multimedia contaminant fate, transport, and exposure model, to simulate fate and transport of metals in HTMR slags through overland and subsurface transport. The overland transport of metals in HTMR slags incorporated transport to nearby soils and surface water (including dissolved contaminants and contaminants sorbed to slag particles). EPA used the Fugitive Dust Model (FDM) to compute dispersion and transport of particulates in air from ground-based sources. FDM is a computerized air quality model which was specifically designed to calculate air concentrations from fugitive dust sources. The model is based on the Gaussian plume algorithm for computing air concentrations, adapted to incorporate a gradient-transfer deposition algorithm. The MINTEQ metals speciation model was used to estimate soil adsorption coefficients for the metal constituents in HTMR slags whenever possible. The MINTEQ model is an aqueous speciation geochemical model which estimates metal adsorption as a function of Ph, metal concentrations in the dissolved phase, iron oxide content of potential sorbents, organic matter content of potential sorbents, pore water chemistry, and temperature. Further details of the models used are provided in the docket for this proposed rulemaking.

3. Sources of Environmental Releases

EPA identified the potential sources of metals releases from HTMR slags based on known management practices and end-uses of HTMR slags: disposal in landfills, storage in wastepiles, transportation in trucks, use as road construction material underlying pavement (subbase or base material), use as additive ingredient in cement or aggregate in concrete/asphalt mixtures, use as road surface material (top grade), and use as anti- skid/deicing agent on road surfaces. Potential releases under these scenarios are described below.

a. Wastepile—Four practices associated with the generation and management of wastepiles of HTMR slags may result in potential releases to the environment: (1) outdoor storage of an uncovered wastepile, (2) adding HTMR slags to the wastepile, (3) loading/unloading operations associated with transport of the wastepile, and (4) transport of slags from the facility to points of use.

The HTMR slags generated at the manufacturing facility may be stored outside in an uncovered wastepile at the facility until it is transported offsite. Since the wastepiles are uncovered, air releases may occur if particulates from the wastepile become entrained in the atmosphere. The slag particulates also may be eroded from the wastepile as a result of wind and rain. In addition, since the slags could be stored directly on top of the soil (i.e., no liner), release to the ground water may occur if metals from the slags leach as a result of precipitation.

As slags are added to the wastepile, the resulting disturbance may cause particles to become entrained in the atmosphere. Particulate emissions of slag material may also be caused by the loading/unloading operations associated with transport vehicles. Finally, particulate emissions of slag material may result from the transport of the wastepile, assuming that the transport vehicles are not fully covered.

b. Road Subbase—The HTMR slags may be transported from the manufacturing facility to a site for use as a road subbase material. The subbase layer is then covered by a relatively impermeable road surfacing material, typically asphalt. Although there is potential for environmental releases from the subbase material prior to road surfacing and when road surfaces are broken up for repair, such releases are expected to be short- term, temporary events, and any releases would be relatively minor. Therefore, atmospheric and erosion releases were not modeled for the use of HTMR slags as a road subbase material. However, even while the subbase is covered, the metals in the slag could potentially be released during a high water table event. In this circumstance, the water table may become elevated to the extent that it contacts and saturates the road subbase layer. The metals in the slag could leach from the road subbase, pass through the unsaturated soil zone, and discharge into the groundwater.

c. Additives in Cement or Concrete/Asphalt Mixtures—HTMR slag material may also be used as an ingredient in the production of cement (as a source of iron in cement kilns). Alternatively, the slag may be used as aggregate in the production of concrete or asphalt. In these uses, the cement or concrete/asphalt mixtures would mix with and chemically bind or encapsulate the portion of HTMR slags that are added. Therefore, there is not likely to be any significant releases from this use by any scenario. There is the possibility, if pieces of cement or concrete/asphalt are ultimately disposed in a landfill, that environmental releases may occur. This

type of scenario was considered under disposal of HTMR slags directly in a landfill; this represents a "worst case" for the concrete/asphalt mixtures because the landfill was assumed to contain the HTMR slags, and not slags mixed with or encapsulated in concrete or asphalt.

d. Top Grade—The HTMR slags may be used as a top grade material, as the surface material for an unpaved road. Atmospheric releases of the slag particulate as a result of vehicular traffic, particulate releases resulting from both wind erosion and surface runoff, and contaminant releases from the top grade layer resulting from leaching processes are all possible release pathways, and were considered in the Agency's assessment.

e. Anti-Skid/Deicing—The HTMR slags can be used as anti- skid/deicing agents on ice and/or snow covered roads. A thin layer of the slag material is spread over the road surface in an effort to provide better traction for vehicle tires. During warm periods in which the snow and ice melt, the metals present in the slag material may leach from an unpaved road through the unsaturated zone and into the surficial aquifer. In addition, the slag material may erode from the site by wind and rain and be deposited on adjacent property. Lastly, slag particulates may become entrained in the atmosphere as a result of vehicle traffic, and may result in atmospheric emissions similar to that of the top grade scenario.

f. Disposal in Landfill—One of the lifecycle phases considered in this analysis involves disposal of slag in a solid waste landfill. The potential leaching of constituents from the slag in the landfill into groundwater was evaluated previously in the rulemaking that established the generic exclusion levels for HTMR slag (see August 18, 1992, 57 FR 37194). Other potential release scenarios from the landfill that were identified include: (1) erosion of particulates from the landfill, and (2) air releases and deposition to nearby soils. Particulates from slag may be eroded from the landfill as a result of the forces of wind and rain. The eroded material may ultimately be deposited onto a nearby residential plot of land or into a nearby surface water body. Particulates entrained in the atmosphere as a result of waste management activities at the landfill may also be transported to off-site receptors.

4. Exposure Pathways

EPA considered various direct and indirect exposure pathways for HTMR slag materials and believes that the potential for risk from most indirect pathways (e.g., food chain pathways) would not be significant. The comparison of risks associated with direct and indirect exposure pathways for metals suggested that the direct pathways typically present higher risks due to the: (1) weak uptake of soil-bound metals in plants, (2) limited ability of metals to bioaccumulate on a whole-body basis (with the exception of mercury· however levels of mercury in HTMR slags, as presented in table 1, are not significant), and (3) tendency of metals to remain bound in the slag matrix in a form that further reduces their bioavailability.

Therefore, EPA evaluated four direct exposure pathways that were identified as being relevant based on the presence of metal contaminants in HTMR slags and the uses of the material. The four direct exposure pathways of concern are:

air pathway· emission and dispersion of respirable particulates (<10 microns in size);

groundwater pathway· release of contaminants to subsurface soils and subsequent leaching into groundwater;

surface water pathway· overland transport (via runoff and soil erosion) of contaminants to surface water; and

soil pathway· overland transport of contaminants via soil erosion to offsite residential soils.

In addition to these direct exposure pathways, EPA identified one indirect exposure pathway with respect to potential release scenarios, i.e., release of nonrespirable particulates (30 microns in size) followed by deposition to soil.

EPA did not model each of these four pathways for every source of HTMR slags. The exposure pathways evaluated by EPA for each exposure source/scenario are summarized in matrix form in Table 2. Only those pathways relevant to a given source scenario were modeled for that scenario. For example, as noted previously, direct air pathways for the road subbase scenario were not evaluated because the subbase is essentially a covered source that is not subject to wind erosion, overland transport, or air dispersion. Similarly EPA did not explicitly include HTMR slags contained in cement or concrete/asphalt mixtures for any of the exposure scenarios of concern.

TABLE 2.—EXPOSURE PATHWAYS EVALUATED FOR SOURCES/SCENARIOS ASSOCIATED WITH THE USE OR DISPOSAL OF HTMR SLAG

Exposure pathway	Exposure source/scenario				
	Wastepile	Top grade and anti-skid	Slag landfill	Subbase	Transportation
Ground Water Ingestion	X	X	X	X	
Surface Water	X	X	X		
Soil Ingestion	X	X	X		
Air Deposition to Soil and Ingestion	X	X	X		
Particulate Inhalation	X	X	X		X

[1] Evaluated previously (see 57 FR 37194; August 18, 1992)

5. Evaluation Criteria

EPA used human health and ecological (aquatic) effects criteria to evaluate levels of hazardous constituents in various media.

a. Human Health—The human health reference values for the constituents of concern includes carcinogenic slope factors (CSFs), reference doses (RfDs), and reference concentrations (RfCs). The CSFs, a measure of carcinogenic potency were used for both the inhalation and ingestion routes of exposure. The RfD is an estimate of the daily intake of a substance, within an order of magnitude, to which the adult human population (including sensitive subgroups) may be exposed without any adverse noncarcinogenic effects. The RfC is the analog to the RfD for inhalation exposure, although the RfC units are typically converted to concentration (mg/m^3), using default exposure assumptions for breathing rate

and body weight. Virtually all the reference values (i.e., CSFs, RfDs, and RfCs) were obtained from the Integrated Risk Information System (IRIS), EPA's primary source for verified human health reference values. Reference values were also identified in the Health Effects Assessment Summary Tables (HEAST). When no verified RfC values were available, the RfC values were extrapolated from RfDs, assuming that a 70 kg adult inhales 20 m^3 of air per day. Based on the human health reference values, the Agency calculated the reference concentrations in Table 3 for soil, drinking water, and air. The table includes Maximum Contaminant Levels (MCLs) for drinking water, when available. The human health reference values, and the methods used to calculate the reference concentrations, are summarized in the docket for today's rule. Two constituents of concern, thallium and lead, did not have reference values for ingestion or inhalation in either IRIS or HEAST. The reference value (i.e., RfD) for thallium was estimated from the lowest reference value of the thallium salts (e.g., thallium sulfate, thallium nitrate). A reference value for lead is not available at this time since Agency consensus has not been reached on how an RfD or RfC should be calculated for lead. However, EPA has established regulatory and recommended levels for lead in the various media, and these are included in Table 3.

b. Ecological (Aquatic) Receptors—A comparison of chemical concentrations in surface water to their aquatic benchmarks was used to determine if any given constituent would pose a threat to aquatic organisms. Those chemicals whose surface water concentrations exceeded their aquatic water quality criteria would be identified as constituents of concern. The National Ambient Water Quality Criteria (NAWQC) were selected as the ecological reference concentrations for the protection of aquatic organisms (e.g., fish and daphnids). Since NAWQC were not available for all constituents, alternate criteria or advisory values were identified in the open literature. A complete description of the methods used to estimate the advisory NAWQC may be found in *Toxicological Benchmarks for Screening of Potential Contaminants of Concern for Effects on Aquatic Biota on the Oak Ridge Reservation, Oak Ridge, Tennessee* (Suter et al., 1992). Table 3 provides the NAWQC and advisory NAWQC for aquatic organisms for each of the constituents of concern.

6. Characterization of Risk

The modeling results for the groundwater, surface water, soil, and air pathways were compared to the reference concentrations for the different media to assess the potential risk to human health and aquatic receptors. The resulting risk ratios (i.e., media concentration divided by reference concentration) were then evaluated to determine whether any of the metals of concern in HTMR slag would pose significant risks to humans or aquatic receptors for any of the exposure scenarios evaluated.

TABLE 3.—REFERENCE CONCENTRATIONS FOR SOIL, WATER, AND AIR FOR THE HTMR CONSTITUENTS OF CONCERN

Constituent	Reference Soil Concentration (mg/kg)[1]	Reference Drinking Water Concentrations[2] (mg/L)	Reference Air Concentrations[3] (ug/m^3)	Reference Surface Water Concentrations[4] (mg/
Antimony	3.2E+01	0.006	1.4E+00	0.018
Arsenic	9.7E-01	0.05	5.7E-04	0.190
Barium	5.6E+03	2	5.0E-01	0.109
Beryllium	4.0E+02	0.004	1.0E-03	0.00061
Cadmium	8.0E+01	0.005	1.4E-03	0.0011
Chromium III	8.0E+04	0.1	3.5E+03	0.210
Chromium VI	4.0E+02	0.1	2.0E-04	0.011
Lead	4.0E+02	0.015	1.5E-01	0.0032
Mercury	2.4E+01	0.002	3.0E-01	0.000012
Nickel	1.6E+03	0.1	7.0E+01	0.160
Selenium	4.0E+02	0.05	1.8E+01	0.035
Silver	4.0E+02	0.18	1.8E+01	0.00039
Thallium	6.4E+00	0.002	2.8E-01	0.0025
Zinc	2.4E+04	10	1.1E+03	0.110

[1] RfDs and CSFs were used to calculate reference soil values, except for lead; the value for lead is a recommended screening level for lead in soil for residential land use which is contained in the Agency's interim soil lead guidance (this guidance suggests use of this screening level to identify sites that do not require further study, and not as a clean up goal).

[2] Reference values for drinking water are MCLs, when available; the values for thallium and zinc are based on RfDs, and the value for lead is the action level.

[3] Air reference values are based on CSFs or RfCs, when available; other values extrapolated from oral RfDs, except for lead, which is based on 10% of the existing National Ambient Air Quality Standard.

[4] Reference values are National Ambient water Quality Criteria (NAWQC) for aquatic toxicity, except for antimony, barium, beryllium, silver, and thallium, which are based on advisory NAWQC (see Section IV.A.5.b.)

B. Results of Risk Assessment

The results from EPA's very conservative risk assessment for the relevant management practices and uses of HTMR slags indicate that constituents of concern in HTMR slags pose little or no risk to human health or the environment. Based on this assessment, no significant risks were found for storage, transport, disposal, and encapsulated uses of HTMR slags (use as subbase, as an ingredient in cement or concrete/asphalt) that meet the generic exclusion levels. The non-encapsulated uses of HTMR slags (top grade and anti-skid uses) that meet the generic exclusion levels showed the potential for some excess risk (i.e., risk above $1x10^{-6}$). The risk analysis indicates that direct inhalation exposure to arsenic from non-encapsulated uses may present an excess risk of cancer of $2.9x10^{-6}$. In other words, a maximum of approximately 3 additional cases of cancer would be predicted per million people exposed to the arsenic in the slag used in this manner. The results also suggest that areal deposition of arsenic from these non-encapsulated uses and subsequent ingestion of contaminated

soil may also present a comparable excess risk of cancer ($2.7x10^{-6}$). None of the other metals evaluated posed any significant increase in risk for these uses.

These risks (from non-encapsulated uses) are at the low end of EPA's risk range of $1x10^{-4}$ to $1x10^{-6}$. Furthermore, for this assessment, EPA selected very conservative values for use in fate and transport models and for exposure scenarios. If the risk assessment had used a central tendency value (instead of a high-end value) for one of the high-end exposure assumptions, then the calculated risks from these uses would drop below the $1x10^{-6}$ level. For example, had the Agency used a 9 year exposure period for an individual exposed instead of the 30 year exposure period used in this risk calculation, the risk from non-encapsulated uses would have dropped to $8.7x10^{-7}$ cancer risk. This risk level is below the typical level of concern used by the Agency.

C. Changes to the Generic Exclusion Levels

The generic exclusion levels promulgated for HTMR slags derived from K061, K062, and F006 were based on the health-based levels and MCLs in effect when the rule was put into place. Since then, the drinking water standards (i.e., MCLs) for some constituents have changed somewhat (see July 17 1992; 57 FR 231776). Therefore, the Agency is taking this opportunity to propose to update the exclusion levels to reflect these changes. The original exclusion levels were calculated by multiplying the MCLs by a dilution-attenuation factor of 10 (see August 18, 1992, 57 FR 37194). This factor is based on the EPACML model (see July 18, 1991, 56 FR 32993 for a description of the model used). Using this same factor, the new MCLs for antimony (0.006 mg/L) and beryllium (0.004 mg/L) would result in new generic exclusion levels of 0.06 mg/L and 0.04 mg/L for antimony and beryllium, respectively. Therefore, the Agency is proposing to replace the existing exclusion levels in § 261.3(c)(2)(ii)(C) for antimony and beryllium with these values as part of today's rule. The Agency promulgated an MCL for nickel in 1992. That regulatory standard was challenged by a coalition of industry groups in a lawsuit filed in September, 1992. See *Nickel Development Institute et al.* v. *EPA*, No. 92–1407 1410, 1416 (D.C. Cir.). For the past two years, the Agency has been involved in discussions with these industry parties in an effort to resolve this litigation. Because of the uncertainties that currently surround the outcome of this litigation over the nickel MCL, EPA believes it is appropriate to consider alternative criteria to establish the generic exclusion level for nickel. EPA considered using the health-based level for nickel (0.7 mg/L) which is derived from the existing RFD for nickel of 0.02 mg/kg/day (see IRIS). Based on the calculations described in the above paragraph, this would result in a generic exclusion level of 7 mg/L for nickel. The existing BDAT treatment standard for nickel contained in the slags derived from HTMR processing of K061, K062, and F006 wastes is 5 mg/L. Between these two alternative criteria, EPA believes that it is appropriate to use the lower (more conservative) BDAT standard at this time. Therefore, EPA is proposing to replace the existing exclusion level in § 261.3(c)(2)(ii)(C) for nickel with the nickel BDAT treatment standard of 5 mg/L.

V. Conclusions

Based on the results of the risk assessment, EPA is proposing that HTMR slags that meet the generic exclusion levels in § 261.3(c)(2)(ii)(C) will be classified as nonhazardous waste, and also allowed to be managed or used as described in this proposal.

Furthermore, the Agency is also proposing to amend § 266.20 so that all uses constituting disposal of hazardous HTMR slag (i.e., HTMR slag that does not meet the generic exclusion levels) are no longer exempt from RCRA Subtitle C regulation. Because it is highly unlikely that users of hazardous HTMR slag will choose to meet the stringent requirements of Subtitle C, this change would effectively prohibit all uses of slags that do not meet the generic exclusion levels. As a consequence of the proposed changes to the generic exclusion in § 261.3(c)(2)(ii)(C), HTMR slags that are used as described in this proposal would not be affected by the changes in § 266.20, because the HTMR slags used in these ways would not be hazardous waste (provided the slags meet the generic exclusion levels and all of the other requirements specified in § 261.3(c)(2)(ii)(C)).

Finally as described in section IV.C above, the Agency is also proposing to update the generic exclusion levels for changes in MCLs for antimony, beryllium, and nickel.

VI. Effective Date

The Agency is proposing that this rule be effective six months after the date of publication of the final rule. (See RCRA section 3010(a)). The Agency believes that this would provide sufficient time for affected parties to comply with the proposed changes.

VII. State Authority

A. Applicability of Rule in Authorized States

Under section 3006 of RCRA, EPA may authorize qualified States to administer and enforce the RCRA program within the State. Following authorization, EPA retains enforcement authority under sections 3008, 3013, and 7003 of RCRA, although authorized States have primary enforcement responsibility. The standards and requirements for authorization are found in 40 CFR part 271.

Prior to the Hazardous and Solid Waste Amendments (HSWA) of 1984, a State with final authorization administered its hazardous waste program in lieu of EPA administering the Federal program in that State. The Federal requirements no longer applied in the authorized State; and EPA could not issue permits for any facilities that the State was authorized to permit. When new more stringent Federal requirements were promulgated or enacted, the State was obliged to enact equivalent authority within specified time frames. New Federal requirements did not take effect in an authorized State until the State adopted the requirements as State law.

In contrast, under RCRA section 3006(g), new requirements and prohibitions imposed by HSWA take effect in authorized States at the same time that they take effect in nonauthorized States. EPA is directed to carry out these requirements and prohibitions in authorized States, including the issuance of permits, until the State is granted authorization to do so. While States must still adopt HSWA-related provisions as State law to retain final authorization, HSWA applies in authorized States in the interim.

B. Effect on State Authorization

EPA views today's proposed rule as a HSWA regulation. The proposed rule can be viewed as part of the process of establishing land disposal prohibitions and treatment standards for K061, K062, and F006 hazardous wastes. (See 56 FR 41175). The ultimate goal of the land disposal prohibition provisions is to establish standards which minimize short-term and long-term threats to human health and the environment posed by hazardous waste land disposal. (See RCRA section 3004(m)(1)). In addition, EPA must ensure that land disposal of hazardous wastes K061, K062, and F006 are ultimately protective. (See RCRA § 3004(g)(5)). The

proposed exclusion levels would implement these provisions by assuring that these types of land disposal are ultimately protective and establish levels at which pretreatment minimizes the threats to human health and the environment posed by these types of land disposal.

Today's proposed rule will result in more stringent Federal standards under § 266.20, since it prohibits uses of hazardous HTMR slags. Section 271.21(e)(2) requires that States that have final authorization must modify their programs to reflect Federal program changes and must subsequently submit the modifications to EPA for approval.

Authorized States are only required to modify their programs when EPA promulgates Federal regulations that are more stringent or broader in scope than the existing Federal regulations. For those Federal program changes that are less stringent or reduce the scope of the Federal program, States are not required to modify their programs. This is a result of section 3009 of RCRA, which allows States to impose regulations in addition to those in the Federal program. EPA has determined that the proposed changes to the generic exclusion are less stringent or reduce the scope of the Federal program. Therefore, authorized States are not required to modify their programs to adopt regulations that are equivalent or substantially equivalent.

States with authorized RCRA programs may already have requirements similar to those in today's proposed rule. These State regulations have not been assessed against the Federal regulations being proposed today to determine whether they meet the tests for authorization. Thus, a State is not authorized to implement these requirements in lieu of EPA until the State program modifications are approved. Of course, States with existing standards could continue to administer and enforce their standards as a matter of State law. In implementing the Federal program, EPA will work with States under agreements to minimize duplication of efforts. In many cases, EPA will be able to defer to the States in their efforts to implement their programs rather than take separate actions under Federal authority.

VIII. Regulatory Impact

A. Executive Order 12866

Under Executive Order 12866 (see 58 FR 51735, October 4, 1993), EPA must determine whether the regulatory action is "significant" and therefore subject to OMB review and the requirements of the Executive Order. The order defines "significant regulatory action" as one that is likely to result in a rule that may:

(1) have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy a sector of the economy productivity competition, jobs, the environment, public health or safety or State, local, or tribal governments or communities;

(2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, it has been determined that this rule is a "significant regulatory action" because it raises novel policy issues in terms of defining when products used in a manner constituting disposal should be regulated. As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations will be documented in the public record.

B. Regulatory Flexibility Act

Under the Regulatory Flexibility Act, 5 U.S.C. 601 et seq., whenever an Agency is required to issue a general notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the impact of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions). No regulatory flexibility analysis is required, however, if the head of the Agency certifies that the rule will not have any impact on any small entities.

This proposed rule will not have any impact on any small entities, since the regulated community will continue to have readily available options for using and managing HTMR slags. Therefore, pursuant to section 605(b) of the Regulatory Flexibility Act, the Administrator certifies that this regulation will not have a significant economic impact on a substantial number of small entities. This regulation, therefore, does not require a regulatory flexibility analysis.

C. Paperwork Reduction Act

The Agency has determined that there are no additional reporting, notification, or recordkeeping provisions associated with this proposed rule. Such provisions, were they included, would be submitted for approval to OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*

List of Subjects

40 CFR Part 261

Environmental protection; Hazardous waste, Recycling, Reporting and recordkeeping requirements.

40 CFR Part 266

Energy Hazardous waste, Recycling, Reporting and recordkeeping requirements.

40 CFR Part 268

Hazardous waste, Reporting and recordkeeping requirements.

Dated: December 16, 1994.

Carol M. Browner,

Administrator.

For the reasons set forth in the preamble, 40 CFR Chapter I is amended as follows:

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

1. The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, 6922, and 6938.

2. Section 261.3 paragraphs (c)(2)(ii)(C)(*1*) and (c)(2)(ii)(C)(*2*) are revised as follows:

§ 261.3 Definition of hazardous waste.

(c)

(2)

(ii)

(C)(*1*) Nonwastewater residues, such as slag, resulting from high temperature metals recovery (HTMR) processing of K061, K062, and F006 waste, in units identified as rotary kilns, flame reactors, electric furnaces, plasma arc furnaces, slag reactors, rotary hearth furnace/electric furnace combinations or industrial furnaces (as defined in paragraphs (6), (7), and (13) of the definition for "Industrial furnace" in 40 CFR 260.10)—provided that these residues meet the generic exclusion levels identified in the tables in this paragraph for all constituents, and exhibit no characteristics of hazardous waste and are disposed in Subtitle D units, or used as covered subbase materials (e.g., in construction of paved roads, parking lots, and driveways) or as additive ingredients in cement or concrete/asphalt mixtures, or as top-grade (e.g., surfacing material for roads, parking lots, and driveways), or as anti-skid/deicing materials. Testing

requirements must be incorporated in a facility's waste analysis plan or a generator's self-implementing waste analysis plan; at a minimum, composite samples of residues must be collected and analyzed quarterly and/or when the process or operation generating the waste changes. Persons claiming this exclusion in an enforcement action will have the burden of proving by clear and convincing evidence that the material meets all of the exclusion requirements.

Constituent	Maximum for any single composite sample-TCLP (mg/l)
Generic exclusion level for K061 and K062 nonwastewater HTMR residues	
Antimony	0.06
Arsenic	0.50
Barium	7.6
Beryllium	0.04
Cadmium	0.05
Chromium (total)	0.33
Lead	0.15
Mercury	0.009
Nickel	5.
Selenium	0.16
Silver	0.30
Thallium	0.02
Zinc	70
Generic exclusion level for F006 nonwastewater HTMR residues.	
Antimony	0.06
Arsenic	0.50
Barium	7.6
Beryllium	0.04
Cadmium	0.05
Chromium (total)	0.33
Cyanide (total) (mg/kg)	1.8
Lead	0.15
Mercury	0.009
Nickel	5
Selenium	0.16
Silver	0.30
Thallium	0.02
Zinc	70

(2) A one-time notification and certification must be placed in the facility's files and sent to the EPA region or authorized state for K061, K062, or F006 HTMR residues that meet the generic exclusion levels for all constituents and do not exhibit any characteristics that are sent to Subtitle D units, or used as described in paragraph (c)(2)(ii)(C)(1). The notification and certification that is placed in the generators or treaters files must be updated if the process or operation generating the waste changes and/or if the subtitle D unit receiving the waste changes. However, the generator or treater need only notify the EPA region or an authorized state on an annual basis if such changes occur. Such notification and certification should be sent to the EPA region or authorized state by the end of the calendar year, but no later than December 31. The notification must include the following information: The name and address of the subtitle D unit receiving the waste shipments; the EPA Hazardous Waste Number(s) and treatability group(s) at the initial point of generation; and, the treatment standards applicable to the waste at the initial point of generation. The certification must be signed by an authorized representative and must state as follows: "I certify under penalty of law that the generic exclusion levels for all constituents have been met without impermissible dilution and that no characteristic of hazardous waste is exhibited. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

*

PART 266—STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES

3. The authority citation for part 266 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, and 6934.

Subpart C—Recyclable Materials Used in a Manner Constituting Disposal

4. Section 266.20 is amended by revising paragraph (c) to read as follows:

§ 266.20 Applicability.

* *

(c) Slags generated from high temperature metals recovery (HTMR) processing of hazardous waste K061, K062, and F006, that are used in a manner constituting disposal are not covered by the exemption in paragraph (b) of this section and remain subject to regulation. However, these slags are not hazardous wastes if they meet the concentration levels as specified in § 261.3(c)(2)(ii)(C) and are used or disposed of as specified in § 261.3(c)(2)(ii)(C);

PART 268—LAND DISPOSAL RESTRICTIONS

5. The authority citation for part 268 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, and 6924.

6. Table "Treatment Standards for Hazardous Wastes" in § 268.40 is amended by adding a footnote "8" at the end of the table and in the second column in the table, "Waste Description and Treatment/Regulatory Subcategory" for waste codes F006, K061, and K062 to read as follows:

§ 268.40 Applicability of treatment standards.

[8] See also restrictions on use of slags in § 261.3(c)(2)(ii)(C) and § 266.20(c).

[FR Doc: 94-31617 Filed 12-28-94; 8:45 am]
BILLING CODE 6560-50-P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Health Care Financing Administration

42 CFR Chapter IV

[BPD-822-N]

Medicare Program; Hospice Wage Index

AGENCY: Health Care Financing Administration (HCFA), HHS.

ACTION: Notice of Establishment of a Negotiated Rulemaking Advisory Committee.

SUMMARY: The Health Care Financing Administration announces the establishment of the Negotiated Rulemaking Advisory Committee on the Medicare Hospice Wage Index. The Committee will negotiate the wage index used to adjust payment rates for hospice care under the Medicare program to reflect local differences in area wage levels. A new wage index is needed because the index currently used is based on 1981 wage and employment data.

FOR FURTHER INFORMATION CONTACT: Janice Flaherty, (410) 966-4637

SUPPLEMENTARY INFORMATION: Under the authority of the Negotiated Rulemaking Act of 1990 (Pub. Law. 101-648, 5 U.S.C. 581-590), the Secretary of the Department of Health and Human Services has established the Negotiated Rulemaking Advisory Committee on the Medicare Hospice Wage Index. The Committee will provide advice and make recommendations with respect to the content of a proposed rule on the wage index used to adjust payment rates for hospice care under the Medicare program to reflect local differences in area wage levels. The Committee consists of representatives of interests that are likely to be significantly affected by the proposed rule.

Hospice care was included as a Medicare benefit in the Tax Equity and Fiscal Responsibility Act of 1982, and implemented effective November 1, 1983. The statutory authority for payment of hospice care under

Medicare is contained in section 1814(i) of the Social Security Act.

On October 14, 1994, we published a notice of intent in which we requested public comment on use of the negotiated rulemaking process to develop a wage index for hospice care (59 FR 52129). As a result, we received 8 public comments. The commenters supported our decision to establish a negotiating committee and utilize the negotiated rulemaking process for this purpose.

All Committee meetings are open to the public. The dates, locations, and agendas for the meetings will be announced in the **Federal Register** in accordance with the requirements of the Federal Advisory Committee Act and 45 CFR 11.4(c)(3).

(Section 9(a) of Public Law 92-463 (5 U.S.C. App 2, section 9(a)); 45 C.F.R. Part 11)

(Catalog of Federal Domestic Assistance Program No. 93.773 Medicare—Hospital Insurance Program)

Dated: December 21, 1994.

Bruce C. Vladeck,

Administrator, Health Care Financing Administration.

[FR Doc. 94-32069 Filed 12-28-94; 8:45 am]

BILLING CODE 4120-01-P

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42 CFR Chapter IV

[BPD-823-N]

Medicare Program; Hospice Wage Index

AGENCY: Health Care Financing Administration (HCFA), HHS.

ACTION: Notice of meeting.

SUMMARY: In accordance with section 10(a) of the Federal Advisory Committee Act (FACA), this notice announces a meeting of the Negotiated Rulemaking Advisory Committee on the Medicare Hospice Wage Index. The meeting is open to the public.

DATES: The meeting is scheduled for January 17-18, 1995, from 9 a.m. until 5 p.m. e.s.t.

ADDRESSES: The meeting will be held at the Comfort Inn, 6921 Baltimore-Annapolis Blvd., Baltimore, MD 21225.

FOR FURTHER INFORMATION CONTACT: Janice Flaherty, (410) 966-4637

SUPPLEMENTARY INFORMATION: Under the authority of the Negotiated Rulemaking Act of 1990 (Pub. Law 101-648, 5 U.S.C. 581-590), the Secretary of the Department of Health and Human Services has established the Negotiated Rulemaking Advisory Committee on the Medicare Hospice Wage Index. The Committee will make recommendations with respect to the content of a proposed rule on the wage index used to adjust payment rates for hospice care under the Medicare program to reflect local differences in area wage levels. The Committee consists of representatives of interests that are likely to be significantly affected by the proposed rule.

A meeting of the Committee will be held on January 17-18, 1995. The following topics will be discussed:

- Presentation of information on possible sources of wage and employment data including discussion of the wage indexes currently applied elsewhere in the Medicare program.

Implementation options.

Individuals or organizations who wish to make oral presentations may do so. However, the number of presentations may be limited by the time available. Individuals may also submit written statements for the Committee's consideration. For information on how to do this, please contact the committee facilitator, Judy Ballard at (202) 690-7419.

(Section 10(a) of Public Law 92-463 (5 U.S.C. App. 2, section 10(a)); 45 C.F.R. Part 11)

(Catalog of Federal Domestic Assistance Program No. 93.773 Medicare—Hospital Insurance Program)

Dated: December 21, 1994.

Bruce C. Vladeck,

Administrator, Health Care Financing Administration.

[FR Doc. 94-32068 Filed 12-28-94; 8:45 am]

BILLING CODE 4120-01-P

DEPARTMENT OF THE INTERIOR

Bureau of Reclamation

43 CFR Part 432

RIN 1006-AA34

Fish and Wildlife Service

50 CFR Chapter I

Central Valley Project—Purposes, Uses, and Allocation of Water Supplies

AGENCY: Department of the Interior, Bureau of Reclamation and Fish and Wildlife Service.

ACTION: Advance notice of proposed rulemaking.

SUMMARY: The Bureau of Reclamation (Reclamation) and the Fish and Wildlife Service (Service) have initiated the preparation of proposed rules and regulations concerning implementation of certain provisions of the Central Valley Project Improvement Act (CVPIA). The CVPIA applies to the Central Valley Project (CVP), California, and to the use and allocation of CVP water. Comments are invited at this time on what the substantive content of proposed rules and regulations should be.

DATES: The deadline for receiving written comments is February 1, 1995.

ADDRESSES: Written comments should be sent to Gary Sackett, Attention: MP-400, Mid-Pacific Region, Bureau of Reclamation, 2800 Cottage Way Sacramento, CA 95825.

FOR FURTHER INFORMATION CONTACT: Ron Brockman at (916) 979-2323 or Gary Sackett at (916) 979-2317

SUPPLEMENTARY INFORMATION: The CVPIA (Title XXXIV of P.L. 102-575, 106 Stat. 4706) provides for a number of changes in the purposes and operation of the CVP and in the use and allocation of CVP water. Subsection 3408(a) of the CVPIA authorizes the Secretary of the Interior to promulgate "* such regulations as may be necessary to implement the intent, purposes and provisions *" of the CVPIA. Reclamation and the Service have been authorized by the Secretary to act on his behalf in this regard.

The Service and Reclamation published a notice in the **Federal Register**, 59 FR 39316, Aug. 2, 1994, which stated that they had tentatively concluded that the following provisions of the CVPIA should be considered for rulemaking:

Subsection	Title
3404(c)	Renewal of Long-Term Contracts.
3405(a)	Transfer of CVP Water.
3405(d)	Water Pricing.
3405(e)	Water Conservation Standards.
3406(b)(2)	800,000 Acre-Feet for Fish, Wildlife, and Habitat Restoration.
3406(b)(22) ...	Incentives to Flood Fields for Waterfowl Habitat.
3407(a)-(d) ...	Restoration Fund.
3408(c)-(d) ...	Exchanges, Storage, Conveyance, and Banking.
3408(h)	Land Retirement.
3408(i)	Cost Sharing of Water Conservation Projects.

This notice also announced public meetings, and invited written comment, on the questions of: (1) whether these are appropriate provisions of the CVPIA to address through rulemaking, and (2) whether there are other provisions of the CVPIA that should be addressed.

The public comments received have suggested that, in addition to the above identified provisions of the CVPIA, rules and regulations should be considered for the following seven subsections:

Horsehead Corporation

Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials

EXHIBIT D

PHOTO OF C & B BUILDING

HORSEHEAD CHICAGO PLANT

HORSEHEAD CHICAGO PLANT

C & B BUILDING
(With Stormwater Retention Basin in foreground)

Horsehead Corporation

Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials

EXHIBIT E

PHOTOS OF COKE MATERIAL STORAGE AREAS

HORSEHEAD CHICAGO PLANT

HORSEHEAD CHICAGO PLANT

COKE STORAGE AREA (WEST)

HORSEHEAD CHICAGO PLANT

COKE STORAGE AREA (EAST)

HORSEHEAD CHICAGO PLANT

COKE HOPPER FEED PILE

HORSEHEAD CHICAGO PLANT

COKE HOPPER LOADING ACTIVITY

HORSEHEAD CHICAGO PLANT

COKE HOPPER LOADING ACTIVITY

Horsehead Corporation

Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials

EXHIBIT F
PHOTO OF IRM CRUSTED SURFACE

HORSEHEAD CHICAGO PLANT

HORSEHEAD CHICAGO PLANT

IRM CRUSTED SURFACE

Horsehead Corporation

Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials

EXHIBIT G

PHOTOS OF IRM STORAGE AREAS

&

DUST SUPPRESSION SYSTEM WATER TRUCK

HORSEHEAD CHICAGO PLANT

HORSEHEAD CHICAGO PLANT

IRM PRODUCT STORAGE AREA

HORSEHEAD CHICAGO PLANT

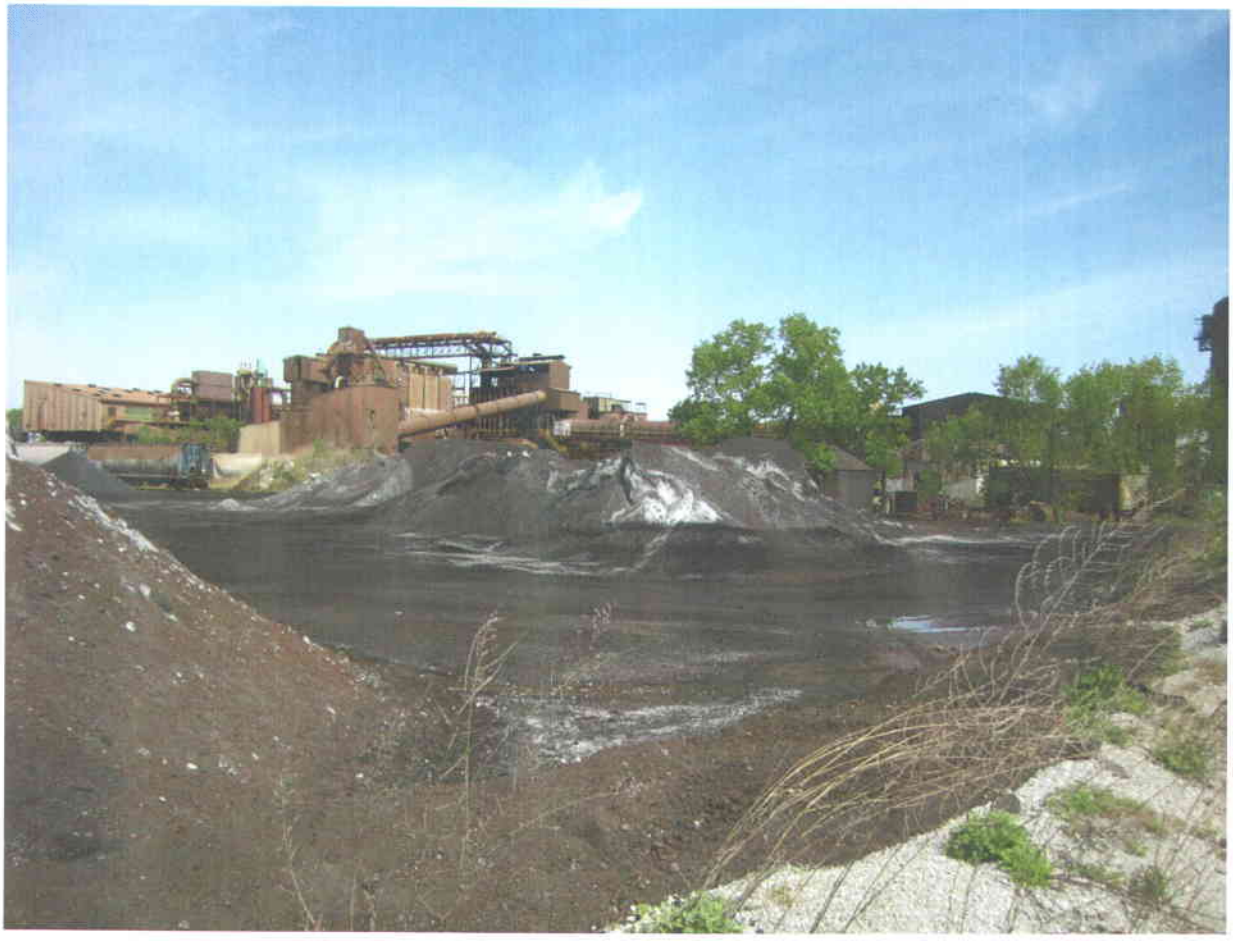
IRM PRODUCT STORAGE AREA

HORSEHEAD CHICAGO PLANT

IRM PRODUCT STORAGE AREA

HORSEHEAD CHICAGO PLANT

IRM PRODUCT STAGING AREA



HORSEHEAD CHICAGO PLANT

DUST SUPPRESSION SYSTEM

WATER SPRAY TRUCK

Horsehead Corporation

Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials

EXHIBIT H

PHOTOS OF IRM BARGE LOADING –

COVERED BARGE CONVEYOR SYSTEM & CHUTE

HORSEHEAD CHICAGO PLANT

HORSEHEAD CHICAGO PLANT

IRM PRODUCT FROM SILOS AREA
AND
COVERED BARGE LOADING CONVEYOR SYSTEM

HORSEHEAD CHICAGO PLANT

IRM BARGE LOADING

FRONT END LOADER PLACING IRM IN HOPPER ON COVERED BARGE LOADING CONVEYOR SYSTEM

HORSEHEAD CHICAGO PLANT

IRM BARGE LOADING

COVERED CONVEYOR SYSTEM AND ENCLOSED CHUTE

HORSEHEAD CHICAGO PLANT

IRM BARGE LOADING

COVERED CONVEYOR SYSTEM AND ENCLOSED CHUTE

Horsehead Corporation

Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials

EXHIBIT I

EXECUTIVE SUMMARY OF GRADIENT CORP. HTMR ASSESSMENT REPORT

Critical Evaluation of EPA's Risk Assessment in the Proposed HTMR Slag Product Rulemaking

(*Fed. Reg.* 59:67256; December 29, 1994)

Prepared for
Horsehead Resource Development Company, Inc.
110 E. 59th Street, 34th Floor
New York, NY 10022

Prepared by
Gradient Corporation
44 Brattle Street
Cambridge, MA 02138

Revised April 26 1995[1]

[1]Subsequent to issuing the original Critical Evaluation of EPA's Risk Assessment in the Proposed HTMR Slag Product Rulemaking dated April 1995 ("Report"), Gradient identified minor typographical, transcriptional, formatting, and numerical corrections in the Report. Consequently Gradient has reissued this Report to include these minor changes. These corrections do not in any way modify, change, or otherwise affect the methodology, analytical interpretations, or conclusions in the April 1995 Report.

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Executive Summary

Introduction

On December 29, 1994, the U.S. Environmental Protection Agency (EPA) proposed regulations governing the management and product applications of HTMR slags (*e.g.*, road subbase, top grade) resulting from the High Temperature Metals Recovery (HTMR) processing of electric arc furnace (EAF) steelmaking dusts (K061), as well as spent pickle liquor sludge (K062) and electroplating wastes (F006) (*Fed. Reg.* 59:67256; December 29, 1994). EPA evaluated the potential risks that may arise from the application of these HTMR slag products, and determined based on their assessment that "... HTMR slags pose little or no risk to human health or the environment" (*Fed. Reg.* 59:67261; December 29, 1994). The EPA went on to propose that HTMR slag products must meet modified "generic exclusion limits" (GELs) based upon Toxicity Characteristic Leaching Procedure (TCLP) results before these products could be used for the applications covered by the proposed regulation.

Since this proposed rulemaking could have a significant impact on the HTMR industry and recycling in general, Horsehead Resource Development Co., Inc. (HRD) requested that Gradient Corporation (Gradient or we) perform a complete evaluation of EPA's risk assessment, including EPA's methodology, assumptions and conclusions, and in addition, derive health-based leach test concentrations as a benchmark to compare with the proposed GELs and the current Best Demonstrated Available Technology (BDAT) treatment standards.

Gradient concludes that EPA is correct in its determination that, based upon the use of the proposed GELs and the HTMR slag product composition (1988 BDAT Background Document for K061, 95% upper confidence limit to the mean (UCLM)), use of HTMR slag products as described in the proposed rulemaking[1] poses "little or no risk to human health or the environment." Gradient also concludes that EPA's risk assessment was generally thorough and usually employed conventional modeling techniques. However, EPA was generally conservative in its fate and transport modeling

[1] Gradient's referral to "HTMR slag product" throughout this document, unless otherwise specified, refers specifically to those applications evaluated by Gradient and EPA in this proposed rulemaking, namely management and use of HTMR slag products, including storage wastepile, road subbase, additives in cement or concrete/asphalt mixtures, top grade, anti-skid/deicing agent, disposal in landfill.

assumptions used to predict media concentrations and in its assumptions for deriving health-based reference concentrations.

Gradient's major conclusions are as follows:

- The five scenarios described by EPA (*e.g.*, top grade, road subbase), which represent the mechanism for release of HTMR slag constituents into the environment, were either reasonable or, in some cases, conservative and not very likely. Gradient also performed an assessment of release scenarios for HTMR slag product applications not considered by EPA (*e.g.*, railroad ballast, wastewater treatment). Gradient concludes that these additional product uses would pose less risk than one or more of the five scenarios evaluated by EPA. Thus, these additional uses also pose insignificant risks to human health and the environment.

- EPA's own risk assessment demonstrates that the use of the proposed GELs and the 1988 BDAT treatment standards for K061 both pose insignificant risks to human health and the environment, generally with a large margin of safety. That is, the "risk ratios" (predicted constituent concentration in relevant medium / health-based reference concentration) were all less than 1, satisfying EPA's risk management criteria.

- For the ground water direct exposure pathway, after correcting for EPA's conservative assumptions to produce adjusted risk ratios, maximum safe health-based leach test levels were calculated. Comparing these levels to the proposed rulemaking's GELs and also to existing 1988 BDAT treatment standards shows that the GELs are unnecessarily stringent, and that the BDAT standards, while somewhat less stringent, are fully protective of human health and the environment. Furthermore, the Synthetic Precipitation Leaching Procedure (SPLP) is a more realistic assay for evaluating potential release from HTMR slag than the Toxicity Characteristic Leaching Procedure (TCLP).

- Regarding the surface water ingestion, soil ingestion, air deposition to soil and ingestion, and air inhalation direct exposure pathways whose risks assessments are based on HTMR slag composition (1988 BDAT study, 95% UCLM), Gradient recalculated risk ratios for

these pathways after correcting for EPA's conservative assumptions. Gradient determined that these revised ratios are all less than 1, confirming the safety of the HTMR slag product applications.

- Gradient also considered an additional direct pathway of public concern today, the tracking of exterior dust into the house and subsequent ingestion as a constituent of house dust. Gradient determined that this pathway also poses insignificant risks to human health, because EPA implicitly accounted for it in their soil ingestion analysis.

- While EPA performed no quantitative analysis on the indirect pathways, Gradient considered it important to perform a comprehensive analysis of these pathways. Risk ratios were calculated for soil containing HTMR slag constituents, considering ingestion of vegetables and ingestion of animal products (*i.e.*, beef and dairy). Gradient used highly conservative EPA methodology, primarily derived from sources described in EPA's Hazardous Waste Identification Rule (HWIR) documentation (November 1994). All of the calculated risk ratios were found to be less than 1, demonstrating that the uses of HTMR slag products covered in this rulemaking pose insignificant risks to human health and the environment *via* indirect exposure pathways.

Analysis of EPA's Risk Assessment

Gradient reviewed and analyzed EPA's risk assessment methodology, and found it to generally follow established conventions. First, EPA performed a life-cycle analysis of the HTMR slag products, and on that basis selected constituent pathways and release scenarios. Next, EPA modeled the transfer of HTMR slag product constituents (BDAT list metals) from the source of release through the relevant pathway and to the receptor medium, generally using appropriate mathematical models. Then, additional assumptions and modeling were used to determine the predicted concentration of the constituents in the medium for purposes of comparison to health-based reference concentrations. The health-based reference concentrations were developed by EPA from EPA-derived media intake values and toxicity criteria, and represent receptor location concentrations for the different constituents in the relevant media (air, water, and soil) that meet EPA's risk management criteria. For these calculations, EPA relied on existing reference doses (RfDs), cancer slope factors (CSFs), maximum contaminant limits for drinking water

(MCLs), and media intake assumptions from other EPA regulations and independent health-effects studies. Finally, EPA calculated constituent risk ratios by dividing the predicted concentration by the reference concentration. A risk ratio of 1 or less means that the exposure is at or below EPA's permissible risk level. In every case, the risk ratios were all less than 1. Therefore, EPA demonstrated that all of these scenarios for HTMR slag product uses meet EPA's risk management criteria for protecting human health and the environment. The following paragraphs provide more detail on EPA's approach to the analysis.

EPA selected five direct exposure pathways for analysis: 1) ground water ingestion, 2) soil ingestion, 3) surface water ingestion, 4) particulate inhalation, and 5) air deposition to soil and ingestion. For each of these pathways, EPA assumed one or more release scenario(s) for the HTMR slag product uses during a 200-year time horizon, including a storage wastepile, road top grade, anti-skid, road subbase, disposal in a landfill, and transportation/handling of material. For each release scenario / pathway combination, EPA performed separate calculations and produced a table of constituent risk ratios.

It should be noted that EPA's choice of release scenarios was not evaluated comprehensively for accuracy or plausibility in our direct pathway analysis. Nonetheless, while no detailed analytical review was performed, Gradient concludes that some scenarios were plausible, whereas others were unrealistically conservative. For example, use of HTMR slag as top grade product (*e.g.*, gravel surface for a dirt road), assumes: (1) 200 years of continuing use of HTMR slag on the same road in the same amount, (2) there are no mounds or ditches between the road and the receptor location which would impede the overland transport of slag constituents. This represents an implausible scenario.

For input data to the risk assessment, EPA utilized the 1988 BDAT treatment standards HTMR slag composition data (95% UCLM), plus the GELs derived in 1991 in a related BDAT treatment standards regulation.

EPA used release, fate, and transport models to predict media constituent concentrations. The models first estimated constituent releases (*e.g.*, from a specific pathway and scenario, such as the soil ingestion pathway and the top grade application) and then calculated the transfer of constituents to the pathway medium, such as soil. For example, an erosion model (the Universal Soil Loss Equation or

USLE) was used to project soil erosion to water run-off; this material in turn was used to calculate overland transport to soil, using an overland transport model.

EPA did not perform an analysis of indirect exposure pathways; their reasoning was that these pathways generally pose less risk than direct pathways. While we agreed in principle with EPA's reasons for not considering indirect exposure pathways, we considered it a critical part of this evaluation to consider a wide range of potential indirect pathways, which we ultimately narrowed down to two foodchain indirect exposure pathways and dust tracking for further analysis.

In the remainder of the Executive Summary, we divide our discussion into two main topics: Direct Pathway Analysis and Indirect Pathways Analysis.

Direct Pathway Analysis

Media Modeling Critical Evaluation

Our critical review of EPA's modeling of HTMR slag constituent transport to media included comparing EPA's release, fate and transport models and assumed conditions with the real physical situations, independently verifying model calculations, comparing model parameters with other known sources, and, in some cases, correcting computational or structural errors. These analyses generated "correction or adjustment factors" which could be divided into EPA's predicted media constituent concentrations to yield more realistic media constituent concentrations.

While we present a detailed critique of the models, assumptions, and data used by EPA in the main body of this report, some examples of the over-conservative and anti-conservative factors identified in this critical review are summarized below (in the report, over-conservative findings outweigh anti-conservative ones):

Conservative Correction Factors

- EPA's soil erodibility factor in the "Soil Ingestion" and the "Air Deposition to Soil and Ingestion" pathways is higher than for soils known to have similar physical properties to HTMR slag, thus inappropriately inflating predicted soil concentrations by a factor of 2.5.

- EPA assumed the most conservative meteorological parameters for each release scenario, *i.e.*, the parameters that produced the highest atmospheric constituent concentration, which inflated these concentrations by a factor of 1.2.

- The TCLP test used to assess compliance of HTMR slag material with GELs restricts particle size to <3/8", which overstates particle surface area, and therefore leaching rate, by a factor of 1.5 relative to the actual particle sizes for the HTMR slag products, such as top grade aggregate.

Anti-Conservative Correction Factors

- EPA assumes extremely high leaching rates for HTMR slag product deposited onto residential soil; correction to more realistic lower leaching rates results in higher predicted soil concentrations and lower ground water concentrations.

Overall, the adjustments to EPA's modeling resulted in generally lower predicted medium concentrations than those calculated by EPA in its risk assessment, and therefore lower risk ratios based solely on recalculated receptor location concentrations. That is, EPA's modeling results are, in general, conservative and overestimate the HTMR slag product constituent concentrations in relevant media.

Media Intake and Reference Dose Critical Evaluation

We evaluated the basis of EPA's reference concentrations. We critically reviewed EPA's constituent and media intake assumptions, plus the Maximum Contaminant Level (MCL) and toxicological values assigned to antimony and arsenic. We determined adjustment factors to the reference

concentrations for media intake for the direct exposure pathways, as a result of both over-conservative or anti-conservative assumptions used by EPA to estimate daily doses in their risk assessment. It should be noted that, since factors are not constituent-specific, they apply across several of the exposure pathways. Antimony was selected for the MCL evaluation, and arsenic and antimony were selected for the toxicological review, because these two metals yielded many of the risk ratios closest to 1 in EPA's direct pathways assessment.

Examples of the over-conservative and anti-conservative assumptions which lead to the necessary adjustment factors are presented below (in our report, the over-conservative findings outweigh the anti-conservative ones):

Over-Conservative Correction Factors

- EPA's estimates of carcinogen risks inflate the lifetime average dose for certain constituents by factors of approximately 5.0 for soil ingestion, 4.5 for water ingestion and 2.5 for particulate inhalation, based on corrections for body weight, intake rate and duration assumptions.

- The MCL for antimony is low by a factor of about 2.0 because EPA incorrectly assumes the relative source contribution (RSC) for drinking water and non-drinking water are always in the same proportion. EPA also applies several conservative uncertainty factors to develop the health-based reference dose, consideration of which would further deflate the MCL by at least a factor of 10. Overall, the MCL for antimony is conservative by a factor of at least 19.

- The carcinogenic toxicity criterion for arsenic is overestimated by EPA due to inaccurate estimates of typical intake of ingested arsenic in the Taiwan study used by EPA for its cancer slope factor, yielding a correction factor of 1.5.

Anti-Conservative Correction Factors

- EPA's non-carcinogen risk assessments for drinking water exposures may depress the chronic dose estimates by a factor of 1.5 for some, but not all, constituents due to the use of adults rather than children as the target population for the daily dose estimates.

In summary, our critical review of the media intake and toxicological reference values resulted in constituent-specific and intake adjustment factors that, in turn, produced risk ratios that were lower than EPA's risk ratios; that is, in general, EPA overstated the risks of exposure due to conservative assumptions about intake rates, exposure-related parameters and health-based reference doses.

Critical Review of Ecological Risks

Although EPA did not perform a rigorous assessment of the aquatic or other ecological risks of the HTMR slag product uses, we compared the predicted surface water metals concentrations with the Ambient Water Quality Concentration (AWQC) limits. This comparison showed, without the need for sophisticated modeling, that the predicted surface water concentrations resulting from the HTMR slag product risk analysis were all less than the acute and chronic AWQC values protective of aquatic life. Furthermore, we showed that the bases for setting the AWQC limits are conservative. Therefore, HTMR slag products pose insignificant ecological risk based on EPA's criteria for concern.

Summary of Direct Pathways Analysis

Gradient's correction factors for predicted media concentrations, media intake and health-effects assumptions are combined to yield overall adjustments to EPA's risk ratios. The revised constituent risk ratios are then used: 1) for the ground water pathway, to back-calculate the maximum acceptable health-based leach test levels for HTMR slag constituents, and 2) for the non-ground water pathways, to recalculate risk ratios. The major conclusions regarding HTMR slag product risk uses with respect to the direct pathways are:

1) Generic Exclusion Levels

Based upon our critical evaluation and a comparison of back-calculated maximum safe health-based leach test levels with the proposed GELs and existing BDAT treatment standards, the GELs are excessively conservative and also unrelated to HTMR slag product applications. Furthermore, existing BDAT treatment standards promulgated in 1991 are well below (*i.e.*, within) the maximum acceptable health-based levels for all constituents, demonstrating that the BDAT standards are completely sufficient for protecting human health and the environment. Furthermore, use of the more realistic (relative to the TCLP test) SPLP test results in an even larger margin of safety for the ground water/drinking water exposure pathway. Gradient recommends the use of the SPLP test in place of the TCLP test as the standard leach test for HTMR slag products.

2) Slag Constituent Concentrations

EPA's own risk assessment has shown that HTMR slag products whose composition is at or below the 95% UCLM of the 1988 BDAT composition data pose insignificant risks to human health and the environment for the non-ground water (soil ingestion, surface water ingestion, particulate inhalation, air deposition to soil and ingestion) direct exposure pathways. Accounting for all adjustment factors, Gradient calculated corrected risk ratios for these same pathways. Using the most restrictive corrected risk ratio across the four pathways for each constituent, Gradient demonstrated that even the highest risk ratios were all below 1. This provides strong evidence of a large margin of safety in the product uses and pathways considered in EPA's risk assessment.

Indirect Pathways Analysis

EPA considered indirect pathways and concluded that the "potential for risk from most indirect pathways (*e.g.*, foodchain pathways) would not be significant," (59 *Fed. Reg.* 67260; December 29, 1994), on which basis EPA performed no detailed analysis of these pathways. However, we believed a rigorous risk assessment was necessary to substantiate EPA's conclusions and we performed a highly conservative comprehensive analysis. We initially considered a wide range of potential pathways. The

foodchain pathways were determined to be the most relevant for metals, based on our own work and the highly conservative HWIR risk assessment, from which we derived our source material for the methodology for our indirect pathway analysis.

Foodchain Pathways

Two foodchain indirect pathways of human exposure (ingestion of vegetables and ingestion of animal products) which were identified as "relevant" in the HWIR, were considered for this HTMR slag product risk assessment. These included ingestion of:

1) Above Ground Plants
2) Below Ground Plants
3) Dairy Products
4) Beef Products

As input data for soil concentration, we used predicted agricultural soil concentrations calculated from Gradient's soil ingestion and air deposition to soil and ingestion direct pathway analysis. We adopted HWIR equations and, in many cases, EPA's highly conservative assumptions used in the HWIR. Assumptions and input data were obtained from several sources. In some cases, when using HWIR as a source for input assumptions and data, we found errors in the HWIR assumptions and input data which were corrected. Gradient's methodology included: (i) back-calculating the intake associated with the target risk from exposure parameters, (ii) back-calculating the concentration in the ingested medium from the intake, (iii) back-calculating the reference soil concentration from the medium concentration, and (iv) comparing the predicted soil concentration with this reference soil concentration as a risk ratio.

As a result of this assessment, we conclude that all of the risk ratios for the indirect foodchain pathways are less than 1. Therefore, on the basis of a detailed indirect pathway evaluation, we agree with EPA's conclusion that the indirect pathways pose insignificant risks to human health and the environment.

Horsehead Corporation

Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials

EXHIBIT J

PHOTOS OF PAVED ROADS

HORSEHEAD CHICAGO PLANT

HORSEHEAD CHICAGO PLANT

PAVED ROADWAYS

HORSEHEAD CHICAGO PLANT

PAVED ROADWAYS

Horsehead Corporation

Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials

EXHIBIT K

PHOTOS OF UNPAVED ROADS
&
WATER APPLICATION TRUCK

HORSEHEAD CHICAGO PLANT

HORSEHEAD CHICAGO PLANT

UNPAVED INTERNAL ROAD

HORSEHEAD CHICAGO PLANT

UNPAVED INTERNAL ROAD

HORSEHEAD CHICAGO PLANT

UNPAVED ROADWAYS WATER APPLICATION TRUCK

HORSEHEAD CHICAGO PLAN

UNPAVED ROADWAYS WATER APPLICATION TRUCK

Horsehead Corporation

Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials

EXHIBIT L

PHOTO OF STREET SWEEPER TRUCK

HORSEHEAD CHICAGO PLANT

HORSEHEAD CHICAGO PLANT

STREET SWEEPER TRUCK

Horsehead Corporation

Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials

EXHIBIT M

PHOTO OF UNPAVED PORTION OF 114TH STREET CITY OF CHICAGO

HORSEHEAD CHICAGO PLANT

UNPAVED PORTION OF 114TH STREET - CITY OF CHICAGO
(VIEW IS TO THE WEST TOWARDS TORRENCE AVENUE)

Horsehead Corporation

Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials

EXHIBIT N

MAY 19, 2014
OPACITY TEST REPORT
HORSEHEAD CHICAGO PLANT

Visible Emissions and Opacity Observations Report

Prepared For
Horsehead Corporation (Chicago Plant)
2701 E. 114th St
Chicago, IL 60617
IEPA ID No. 031600AFV

Project No. M141714

May 19, 2014

mostardi platt

mostardi platt

EXECUTIVE SUMMARY

Subject: Opacity Observations at Horsehead Corporation (Chicago Plant)

Observation Date: May 19, 2014

Personnel:

Nicholas Silvestri	Certified Visible Emission Reader, Mostardi Platt
Joseph Macak	Principal Consultant, Mostardi Platt
Nate Dine	EHS Specialist, Horsehead
John Marta	Plant Manager, Horsehead

V.E. Certificate for Nicholas Silvestri can be found in Appendix A.

Test Program:

Visible emissions (V.E.) observations were conducted for the test locations itemized in Table 1. The location of the V.E. reader for each test is shown in the site drawing in Figure 1. The raw data sheets from the V.E. readings can be found in Appendix B. All opacity tests were conducted in accordance with USEPA Reference Method 9. All property line visible emissions tests were also conducted with USEPA Reference Method 9 in lieu of Method 22.

Table 1. Horsehead Corporation (Chicago Plant) Test Locations for May 19, 2014.

Test #	Description	Test #	Description
1	Temporary IRM Storage Pile	8	Coke Reclaim Hopper
2	East Property Line (upwind, SSE wind direction)	9	West Coke Pile (transfer taking place)
3	IRM Storage Pile (main pile)	10	East Coke Pile
4	South Property Line (upwind, SSE wind direction)	11	IRM Storage Pile Bunkers
5	Off Spec Coke Pile	12	North Property Line (downwind)
6	Southwest Corner Property Line	13	North Property Line (segment 2)
7	West Property Line (downwind)	14	Temporary Stock Pile Truck Loading

Table 2 is a summary of the results from the test program. For informational purposes, photographs from each test location have been included in Appendix C.

Meteorology:
Meteorological data summaries from Midway and Lansing, Illinois are included in Appendix D. There was no precipitation on the day of testing.

888 Industrial Drive
Elmhurst, Illinois 60126
630-993-2100

Table 2. Horsehead Visible Emissions and Opacity Summary for May 19, 2014.

Run #	Location	Number of Minutes	Average Opacity (%)
1	Temporary IRM Storage Pile	30	0
2	East Property Line (upwind, SSE wind direction)	30	0
3	IRM Storage Pile (main pile)	30	0
4	South Property Line (upwind, SSE wind direction)	30	0
5	Off Spec Coke Pile	30	0
6	Southwest Corner Property Line	30	0
7	West Property Line (downwind)	30	0
8	Coke Reclaim Hopper	15	0
9	West Coke Pile (transfer taking place)	15	0
10	East Coke Pile	15	<1
11	IRM Storage Pile Bunkers	10	0
12	North Property Line (downwind)	30	0
13	North Property Line (segment 2)	30	0
14	Temporary Stock Pile Truck Loading	5	0

Conclusion:
The Method 9 test results demonstrated that Horsehead Corporation (Chicago Plant) were well below the most stringent 10% opacity standard stated in the City of Chicago's Bulk Solid Materials rules and regulations for transfer operations, material handling, storage areas, and roadways. Further, the visible emissions results for the property line demonstrated that no visible emissions crossed the property lines.

Should you have any questions or require additional information, please contact me at jmacak@mp-mail.com or 630-993-2127.

Respectfully submitted:

MOSTARDI PLATT

Joseph J. Macak III
Principal Consultant

JJM:pfl

APPENDIX A

Visible Emissions Observer Certification

CARL KOONTZ ASSOCIATES

of Nashville, Tennessee

This is to acknowledge that

NICKY SILVESTRI

successfully participated in Visible Emissions training on MAR 26 2014

and is qualified to evaluate Visible Emissions for a period of six (6) months from the date of certification.

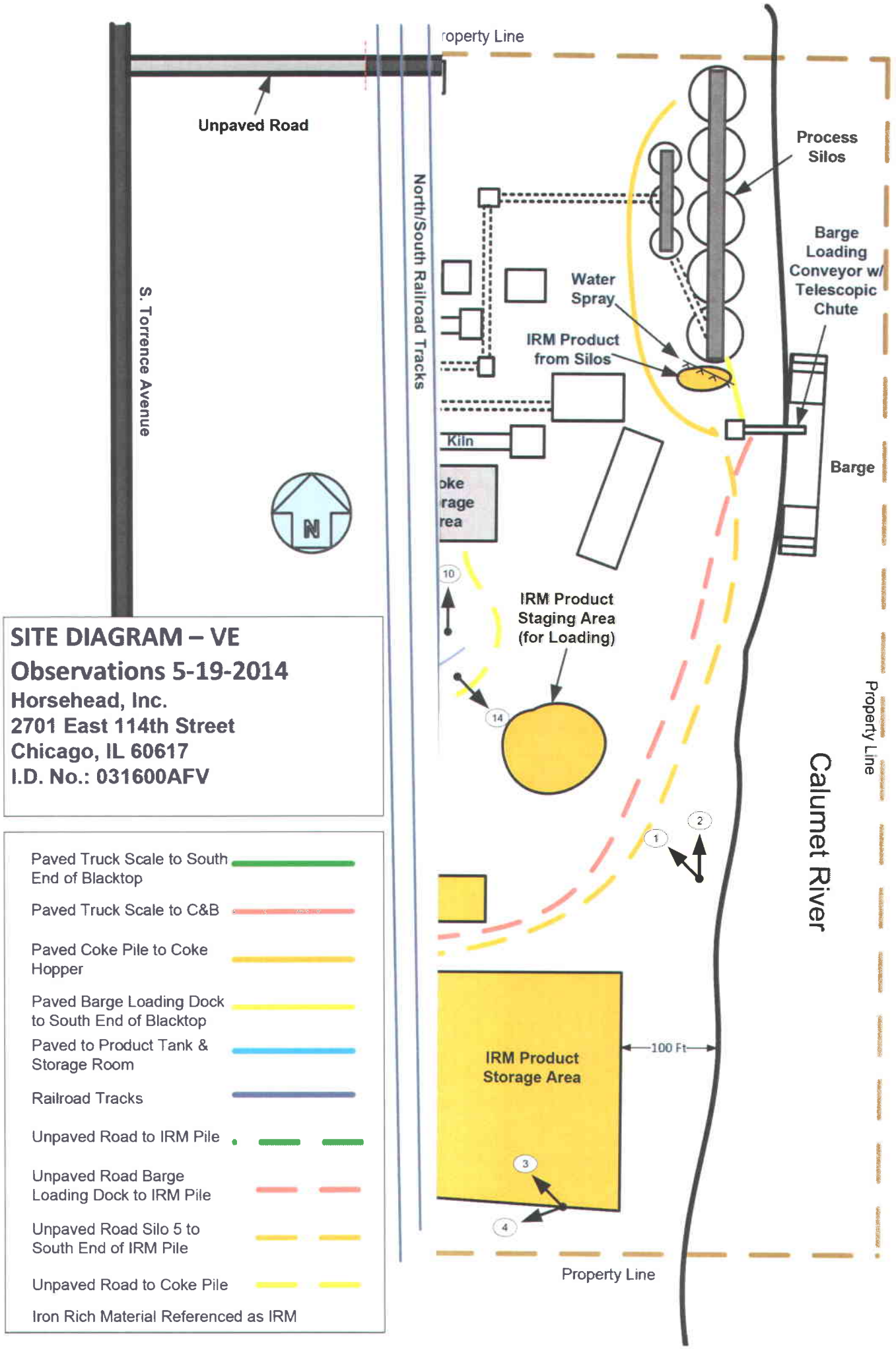
Carl Koontz

Instructor

APPENDIX B

HORSEHEAD DATA SHEETS – May 19, 2014

Official Signed Forms



SITE DIAGRAM – VE Observations 5-19-2014

Horsehead, Inc.
2701 East 114th Street
Chicago, IL 60617
I.D. No.: 031600AFV

- Paved Truck Scale to South End of Blacktop
- Paved Truck Scale to C&B
- Paved Coke Pile to Coke Hopper
- Paved Barge Loading Dock to South End of Blacktop
- Paved to Product Tank & Storage Room
- Railroad Tracks
- Unpaved Road to IRM Pile
- Unpaved Road Barge Loading Dock to IRM Pile
- Unpaved Road Silo 5 to South End of IRM Pile
- Unpaved Road to Coke Pile
- Iron Rich Material Referenced as IRM

MOSTARDI PLATT

Visible Emissions Observation Record Form

Sheet: 1 of _____
Date: 5-19-14
Observer: Nicky Silvestri
Observation Start: 10:15
Observation End: 10:45

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)		t.	Other	Temp Storage Pile X

Observation Point Comments:
Map location - #1

Distance from Source: 100 ft.
Source Height: 15 ft.
Emission Color: NA
Background: Plant Silos/sky
Sky Condition: Clear
Sun Position: 35°
Temperature: 60 °F
Wind Direction: SSE at 10 mph
Reading Conditions: Good

Operating Conditions: Normal

Plume Description: fugitive, Pile

Attached or Detached

Signature: [signature]

Certification Date: 3-26-14

Sec	0	15	30	45	Notes	Sec	0	15	30	45	Notes
0	0	0	0	0		30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
4	0	0	0	0		34					
5	0	0	0	0		35					
6	0	0	0	0		36					
7	0	0	0	0		37					
8	0	0	0	0		38					
9	0	0	0	0		39					
10	0	0	0	0		40					
11	0	0	0	0		41					
12	0	0	0	0		42					
13	0	0	0	0		43					
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22	0	0	0	0		52					
23	0	0	0	0		53					
24	0	0	0	0		54					
25	0	0	0	0		55					
26	0	0	0	0		56					
27	0	0	0	0		57					
28	0	0	0	0		58					
29	0	0	0	0		59					

Comments / Notes:

MOSTARDI PLATT

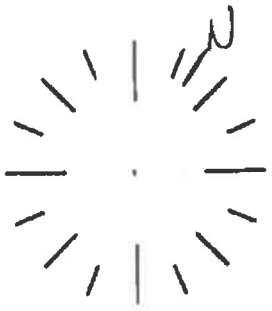
Visible Emissions Record Form

Date 5 / 19 / 14

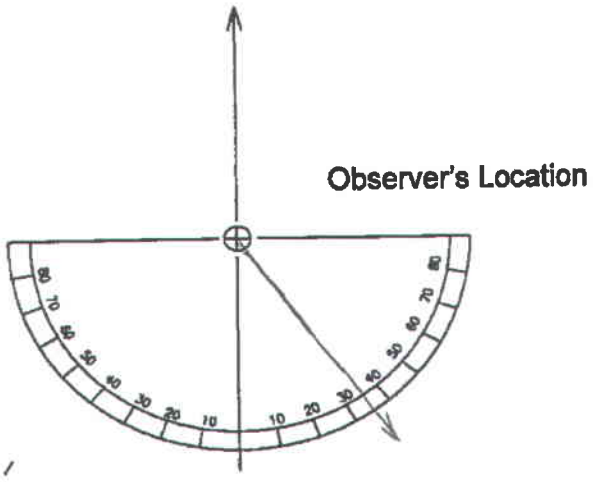
Site Horeshead (Chicago Plant)
2701 East 114th Street
Chicago, IL 60617

USEPA Method 9

Compass Heading



Emission Source



Observer: Nicky Silvestri

Comments: _____

Note:
1. Sun Position 35°
2. Wind Direction SSE
3. Wind Speed
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

Visible Emissions Observation Record Form

Sheet: 2 of _____
Date: 5-19-14
Observer: Nicky Stevens
Observation Start: 10:15
Observation End: 10:45

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	X
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)		t.	Other	

Observation Point Comments:
My location #2
SE Corner of Property
Facing N

Distance from Source: NA ft.
Source Height: NA ft.
Emission Color: NA
Background: Plume S.I. Sky
Sky Condition: Clear
Sun Position: 60°
Temperature: 60° °F
Wind Direction: SSE at 10 mph
Reading Conditions: Good

Operating Conditions: Normal

Plume Description: Fugitive

Attached or Detached

Signature: [signature]

Certification Date: 3-26-14

Min	0	15	30	45	Notes	Min	0	15	30	45	Notes
0	0	0	0	0		30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
4	0	0	0	0		34					
5	0	0	0	0		35					
6	0	0	0	0		36					
7	0	0	0	0		37					
8	0	0	0	0		38					
9	0	0	0	0		39					
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22	0	0	0	0		52					
23	0	0	0	0		53					
24	0	0	0	0		54					
25	0	0	0	0		55					
26	0	0	0	0		56					
27	0	0	0	0		57					
28	0	0	0	0		58					
29	0	0	0	0		59					

Comments / Notes:

MOSTARDI PLATT

Visible Emissions Record Form

Date 5/19/14

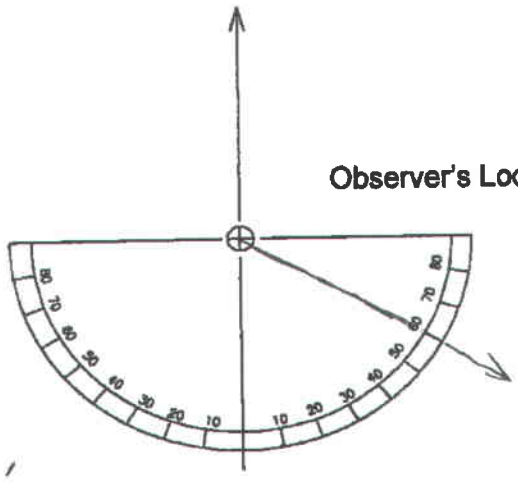
Site Horeshead (Chicago Plant)
2701 East 114th Street
Chicago, IL 60617

USEPA Method 9

Compass Heading

N

Emission Source



Observer: Nicky Silvestri

Comments: _____

Note:
1. Sun Position 60°
2. Wind Direction SE
3. Wind Speed
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form

Sheet: 3 of _____
Date: 5-19-14
Observer: Nicky Sinosich
Observation Start: 10:50
Observation End: 11:20

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	X
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)		t.	Other	

Observation Point Comments:
Map Location - #3
Main Storage Piles from
SE Property Corner

Distance from Source: 75 ft.
Source Height: 40 ft.
Emission Color: NA
Background: Blue Sky

Sky Condition: Clear

Sun Position: 0°
Temperature: 60° °F
Wind Direction: SSE at 10 mph
Reading Conditions: Clear, Good

Operating Conditions: Normal

Plume Description: Fugitive

Attached or Detached

Signature: [signature]

Certification Date: 3-26-14

Min	0	15	30	45	Notes	Min	0	15	30	45	Notes
0	0	0	0	0		30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
4	0	0	0	0		34					
5	0	0	0	0		35					
6	0	0	0	0		36					
7	0	0	0	0		37					
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24	0	0	0	0		54					
25	0	0	0	0		55					
26	0	0	0	0		56					
27	0	0	0	0		57					
28	0	0	0	0		58					
29	0	0	0	0		59					

Comments / Notes:

MOSTARDI PLATT

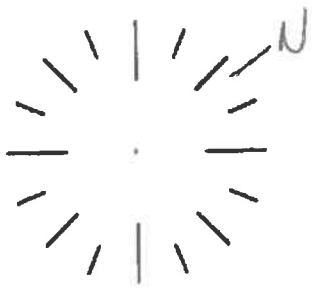
Visible Emissions Record Form

Date 5/19/14

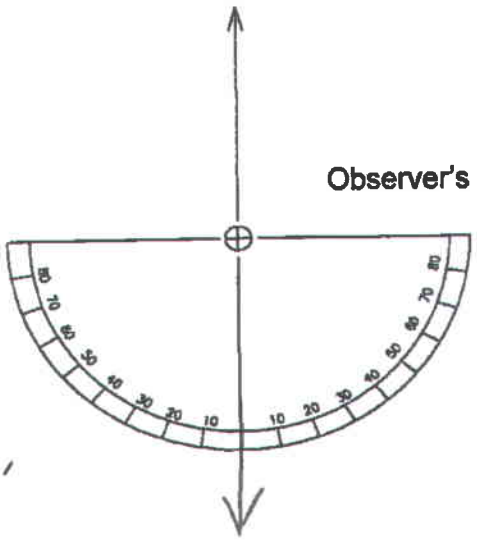
Site Horeshead (Chicago Plant)
2701 East 114th Street
Chicago, IL 60617

USEPA Method 9

Compass Heading



Emission Source



Observer: Nicky Silvestri

Comments: _____

Note:
1. Sun Position 0°
2. Wind Direction SSE
3. Wind Speed
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form

Sheet: 4 of _____
Date: 5-19-14
Observer: Nicky Sciortino
Observation Start: 10:50
Observation End: 11:20

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	X
i.	Coke Pile (W)		s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)		t.	Other	

Observation Point Comments:
Map location #4
SE corner of property facing W
along Property Line

Distance from Source: NA ft.
Source Height: NA ft.
Emission Color: NA
Background:

Sky Condition: Clear

Sun Position: 50°
Temperature: 60° °F
Wind Direction: SSE at 10 mph
Reading Conditions: Good

Operating Conditions: Normal

Plume Description: Fugitive

Attached or Detached

Signature:

Certification Date: 3-26-14

Min	0	15	30	45	Notes	Min	0	15	30	45	Notes
0	0	0	0	0		30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
4	0	0	0	0		34					
5	0	0	0	0		35					
6	0	0	0	0		36					
7	0	0	0	0		37					
8	0	0	0	0		38					
9	0	0	0	0		39					
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25	0	0	0	0		55					
26	0	0	0	0		56					
27	0	0	0	0		57					
28	0	0	0	0		58					
29	0	0	0	0		59					

Comments / Notes:

MOSTARDI PLATT

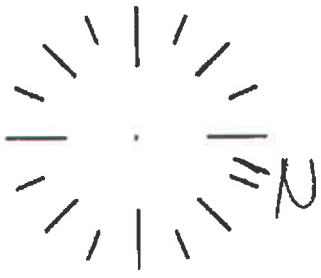
Visible Emissions Record Form

Date 5/19/14

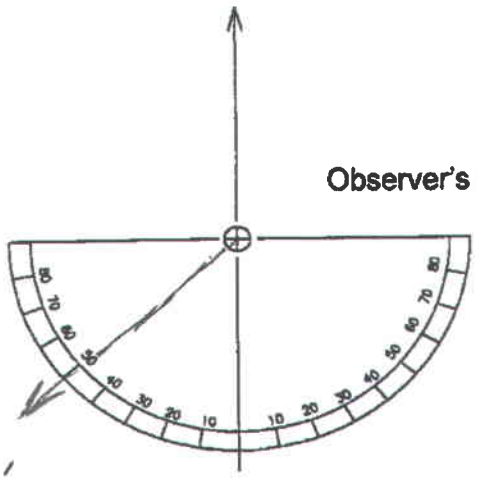
Site Horeshead (Chicago Plant)
2701 East 114th Street
Chicago, IL 60617

USEPA Method 9

Compass Heading



Emission Source



Observer: Nicky Silvestri

Comments: _____

Note:
1. Sun Position 50°
2. Wind Direction SSE
3. Wind Speed
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

DS-011 Method 9 (VE) Cover Protractor Sheet

Visible Emissions Observation Record Form

Sheet: 5 of _____

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Date: 5-19-14
Observer: Nicky Silvestri
Observation Start: 12:45
Observation End: 13:15

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)	X	t.	Other	

Observation Point Comments:
Map location 5
Pile to be Removed

Distance from Source: 100 ft.
Source Height: 30 ft.
Emission Color: NA
Background: Overcast Sky White
Sky Condition: Overcast
Sun Position: NA
Temperature: 60 °F
Wind Direction: SSE at 15 mph
Reading Conditions: Fair, No Sun

Operating Conditions: Normal

Plume Description: Negative

Attached or Detached

Signature: [signature]

Certification Date: 3-26-14

Sec	0	15	30	45	Notes	Sec	0	15	30	45	Notes
0	0	0	0	0		30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
4	0	0	0	0		34					
5	0	0	0	0		35					
6	0	0	0	0		36					
7	0	0	0	0		37					
8	0	0	0	0		38					
9	0	0	0	0		39					
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23	0	0	0	0		53					
24	0	0	0	0		54					
25	0	0	0	0		55					
26	0	0	0	0		56					
27	0	0	0	0		57					
28	0	0	0	0		58					
29	0	0	0	0		59					

Comments / Notes:

MOSTARDI PLATT

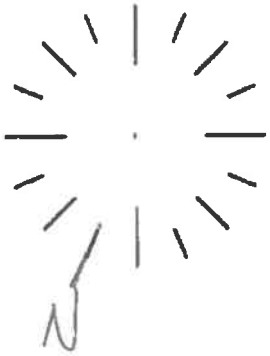
Visible Emissions Record Form

Date 5 / 19 / 14

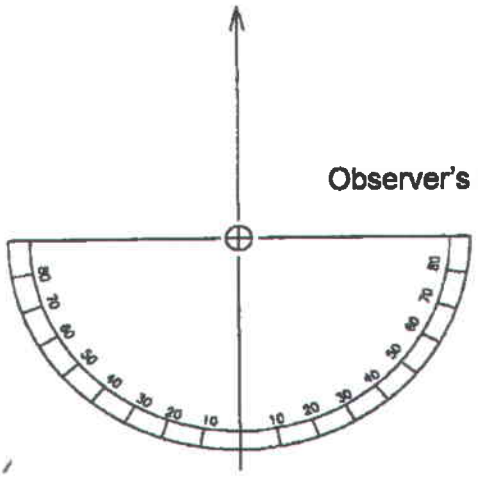
Site Horeshead (Chicago Plant)
2701 East 114th Street
Chicago, IL 60617

USEPA Method 9

Compass Heading



Emission Source



Observer: Nicky Silvestri

Comments: Overcast Skys
Sun not UTSable

Note:
1. Sun Position - NA
2. Wind Direction SSE
3. Wind Speed 15 MPH
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

DS-011 Method 9 (VE) Cover Protractor Sheet

MOSTARDI PLATT

Visible Emissions Observation Record Form

Sheet: 6 of _____
Date: 5-19-14
Observer: Nicky Silvestri
Observation Start: 12:45
Observation End: 13:15

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	X
j.	Coke Pile (1600 Ton Pile)		t.	Other	

Observation Point Comments:
Map location 6
SW corner of Plant Looking N

Distance from Source: NA ft.
Source Height: NA ft.
Emission Color: ~~White~~ NA
Background: ~~Dark~~ White

Sky Condition: Overcast

Sun Position: NA
Temperature: 60 °F
Wind Direction: SSE at 15 mph
Reading Conditions: Fair No Sun

Operating Conditions: Normal

Plume Description: fugative

Attached or Detached

Signature: [signature]

Certification Date: 3-26-14

Min	0	15	30	45	Notes	Min	0	15	30	45	Notes
0	0	0	0	0		30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
4	0	0	0	0		34					
5	0	0	0	0		35					
6	0	0	0	0		36					
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24	0	0	0	0		54					
25	0	0	0	0		55					
26	0	0	0	0		56					
27	0	0	0	0		57					
28	0	0	0	0		58					
29	0	0	0	0		59					

Comments / Notes:

MOSTARDI PLATT

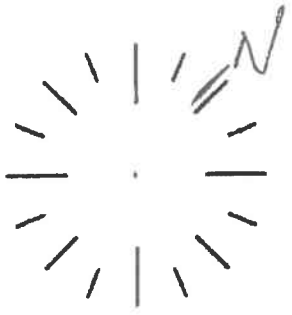
Visible Emissions Record Form

Date 5/19/14

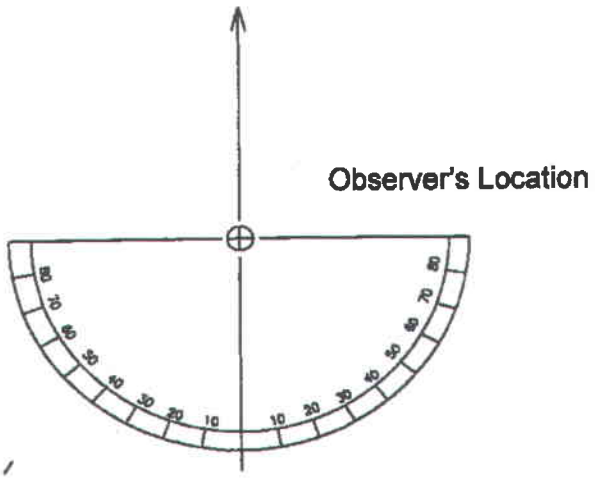
Site Horeshead (Chicago Plant)
2701 East 114th Street
Chicago, IL 60617

USEPA Method 9

Compass Heading



Emission Source



Observer: Nicky Silvestri

Comments: Overcast skys
Sun not visable

Note:
1. Sun Position NA
2. Wind Direction SSE
3. Wind Speed 15 mph
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form

Sheet: 7 of _____
Date: 5-19-14
Observer: Nicky Sigward
Observation Start: 13:20
Observation End: 13:50

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	X
j.	Coke Pile (1600 Ton Pile)		t.	Other	

Observation Point Comments:
Map position 7
West side of Property Line Facing N

Distance from Source: NA ft.
Source Height: NA ft.
Emission Color: NA
Background: White

Sky Condition: Partly Cloudy

Sun Position: 30°
Temperature: 60° °F
Wind Direction: SSE at 15 mph
Reading Conditions: _____

Operating Conditions: Normal

Plume Description: fugitive

Attached or Detached

Signature: [signature]

Certification Date: 3-26-14

Sec	0	15	30	45	Notes	Sec	0	15	30	45	Notes
0	0	0	0	0		30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
4	0	0	0	0		34					
5	0	0	0	0		35					
6	0	0	0	0		36					
7	0	0	0	0		37					
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25	0	0	0	0		55					
26	0	0	0	0		56					
27	0	0	0	0		57					
28	0	0	0	0		58					
29	0	0	0	0		59					

Comments / Notes:

MOSTARDI PLATT

Visible Emissions Record Form

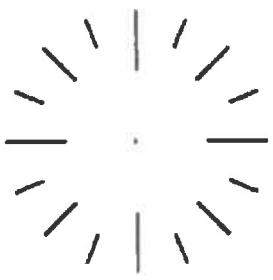
Date 5/19/14

Site Horeshead (Chicago Plant)
2701 East 114th Street
Chicago, IL 60617

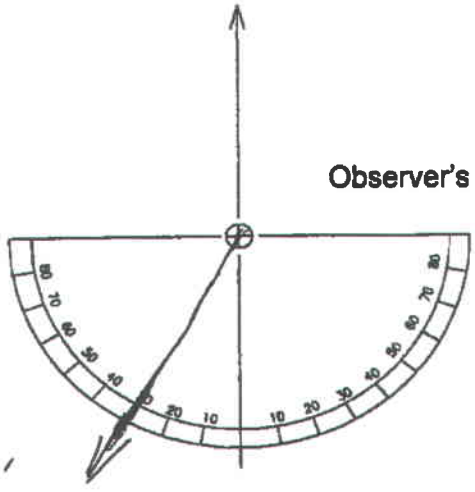
USEPA Method 9

Compass Heading

N



Emission Source



Observer: Nicky Silvestri

Comments: _____

Note:
1. Sun Position 30°
2. Wind Direction SSE
3. Wind Speed 15 mph
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form

Sheet: 8 of _____
Date: 5-19-14
Observer: Nicky Sivesan
Observation Start: 1405
Observation End: 1420

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations unloading	X	o.	IRM Truck Loading	
f.	Coke Reclaim Operations Hopper Loading	X	p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)		t.	Other	

Observation Point Comments:
Map location number 8
Top of staircase looking Down on unloading Hopper.

Distance from Source: 75 ft.
Source Height: 20 ft.
Emission Color: NA
Background:
Sky Condition: Partly Cloudy
Sun Position: 40°
Temperature: 60° °F
Wind Direction: SSE at 15 mph
Reading Conditions: Good

Operating Conditions: Normal
Pile thoroughly wetted, No visable emissions

Plume Description: fugative

Attached or Detached

Signature:

Certification Date: 3-26-14

	0	15	30	45	Notes		0	15	30	45	Notes
0	0	0	0	0		30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
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28						58					
29						59					

Comments / Notes:

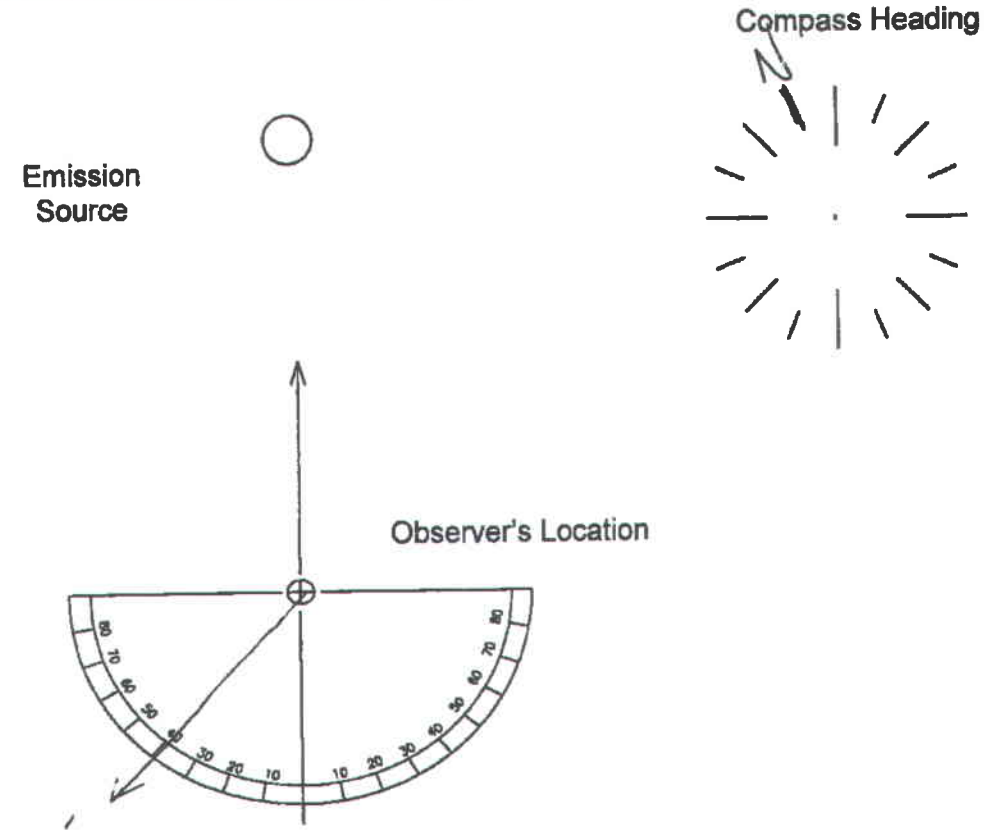
MOSTARDI PLATT

Visible Emissions Record Form

Date 5/19/14

Site Horeshead (Chicago Plant)
2701 East 114th Street
Chicago, IL 60617

USEPA Method 9



Observer: Nicky Silvestri

Comments: _____

Note:
1. Sun Position 40°
2. Wind Direction SSE
3. Wind Speed 15 mph
4. Plume Type fugitive
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form

Sheet: 9 of _____
Date: 5-19-14
Observer: Nicky Silvestri
Observation Start: 1405
Observation End: 1420

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations Loading	X	o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)	X	s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)		t.	Other	

Observation Point Comments:
Map location #9 W coke pile
front end loading

Distance from Source: 100 ft.
Source Height: 30 ft.
Emission Color: NA
Background: _____
Sky Condition: Partly Cloudy
Sun Position: SE°
Temperature: 60 °F
Wind Direction: SSE at 15 mph
Reading Conditions: Good

Operating Conditions: Normal
Pile thoroughly wetted, No
Visable Emissions

Plume Description: fugative

Attached or Detached

Signature: [signature]

Certification Date: 3-26-14

Sec	0	15	30	45	Notes	Sec	0	15	30	45	Notes
0	0	0	0	0		30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
4	0	0	0	0		34					
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28						58					
29						59					

Comments / Notes:

MOSTARDI PLATT

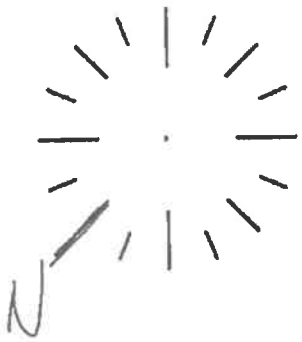
Visible Emissions Record Form

Date 5/19/14

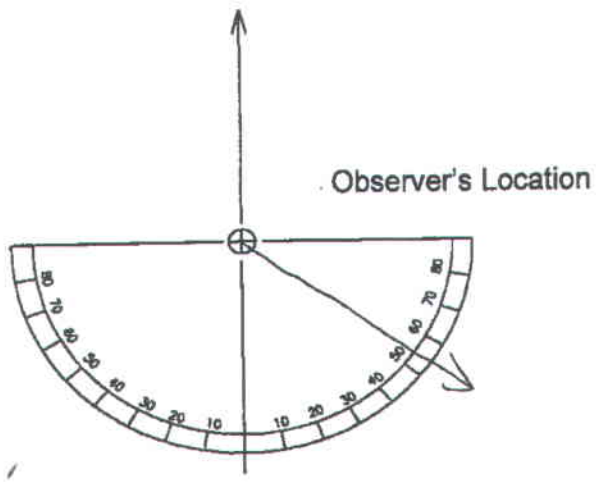
Site Horeshead (Chicago Plant)
2701 East 114th Street
Chicago, IL 60617

USEPA Method 9

Compass Heading



Emission Source



Observer: Nicky Silvestri

Comments: _____

Note:
1. Sun Position 55°
2. Wind Direction SSE
3. Wind Speed 15 mph
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form

Sheet: 10 of _____
Date: 5-10-14
Observer: Nicky Siliquini
Observation Start: 1425
Observation End: 1440

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)	X	r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)		t.	Other	

Observation Point Comments:
Map location 10

Distance from Source: 100 ft.
Source Height: 30 ft.
Emission Color: Grey Black
Background: Plant + Sky
Sky Condition: Partly Cloudy
Sun Position: 45°
Temperature: 60° °F
Wind Direction: SSE at 15 mph
Reading Conditions: Good
Low VE During Heavy gusts

Operating Conditions: Normal
Back of pile not thoroughly Wetted

Plume Description: Fugative
Attached or Detached

Signature: [signature]

Certification Date: 3-26-14

Sec.	0	15	30	45	Notes	Sec.	0	15	30	45	Notes
0	0	0	0	0		30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
4	0	0	5	0		34					
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27						57					
28						58					
29						59					

Comments / Notes:

MOSTARDI PLATT

Visible Emissions Record Form

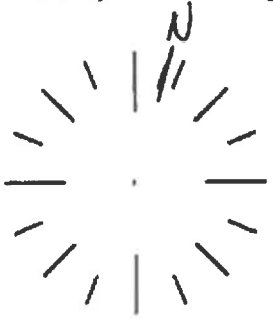
Date 5 / 19 / 14

Site Horeshead (Chicago Plant)
2701 East 114th Street
Chicago, IL 60617

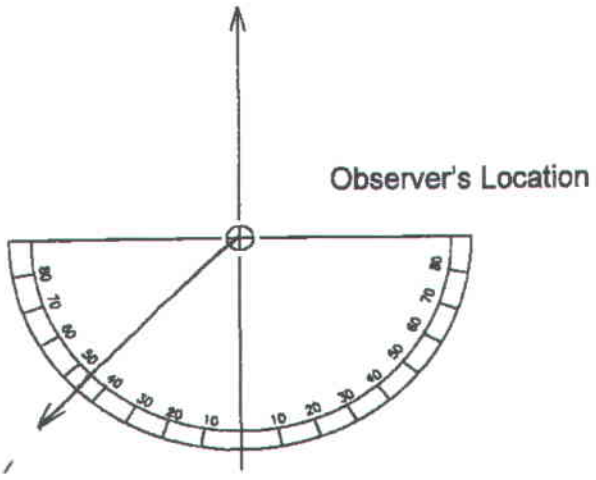
USEPA Method 9

Compass Heading

N



Emission Source



Observer: Nicky Silvestri

Comments: _____

Note:
1. Sun Position 45°
2. Wind Direction SSE
3. Wind Speed 15 mph
4. Plume Type fugitive
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form

Sheet: 11 of _____
Date: 5-12-14
Observer: Nicky Silvestri
Observation Start: 14:45
Observation End: 14:55

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	X
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)		t.	Other	

Observation Point Comments:
Map Location 11

Distance from Source: 30 - 150 ft.
Source Height: 20 ft.
Emission Color: NA
Background: Sky
Sky Condition: Partly Cloudy
Sun Position: 10°
Temperature: 60° °F
Wind Direction: SSE at 15 mph
Reading Conditions: Good

Operating Conditions: Normal

Plume Description: fugitive
Attached or Detached

Signature: [signature]
Certification Date: 3-26-14

SS	0	15	30	45	Notes	SS	0	15	30	45	Notes
0	0	0	0	0		30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
4	0	0	0	0		34					
5	0	0	0	0		35					
6	0	0	0	0		36					
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10						40					
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16						46					
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19						49					
20						50					
21						51					
22						52					
23						53					
24						54					
25						55					
26						56					
27						57					
28						58					
29						59					

Comments / Notes:

MOSTARDI PLATT

Visible Emissions Record Form

Date 5/19/14

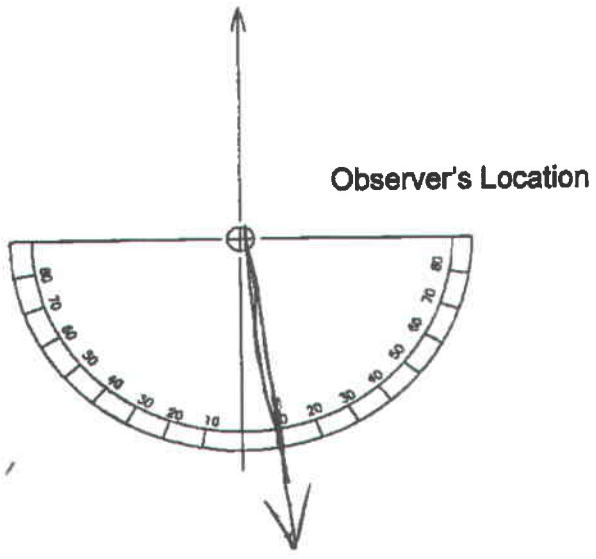
Site Horeshead (Chicago Plant)
2701 East 114th Street
Chicago, IL 60617

USEPA Method 9

Compass Heading

N

Emission Source



Observer: Nicky Silvestri

Comments: _____

Note:
1. Sun Position 10°
2. Wind Direction SSE
3. Wind Speed 15 mph
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

Visible Emissions Observation Record Form

Sheet: 12 of _____
Date: 5-19-14
Observer: Nicky Silvestri
Observation Start: 1506
Observation End: 1530

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	X
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)		t.	Other	

Observation Point Comments:
Map location 12
Mid North Property Line
Looking E

Distance from Source: NA ft.
Source Height: NA ft.
Emission Color: NA
Background:

Sky Condition: Partly Cloudy

Sun Position: 25°
Temperature: 60° °F
Wind Direction: SSE at 15 mph
Reading Conditions: Good

Operating Conditions: Normal

Plume Description: Fugitive

Attached or Detached

Signature: [signature]

Certification Date: 3-26-14

	0	15	30	45	Notes		0	15	30	45	Notes
0	0	0	0	0		30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
4	0	0	0	0		34					
5	0	0	0	0		35					
6	0	0	0	0		36					
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25	0	0	0	0		55					
26	0	0	0	0		56					
27	0	0	0	0		57					
28	0	0	0	0		58					
29	0	0	0	0		59					

Comments / Notes:

MOSTARDI PLATT

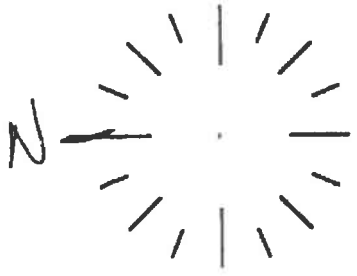
Visible Emissions Record Form

Date 5/19/14

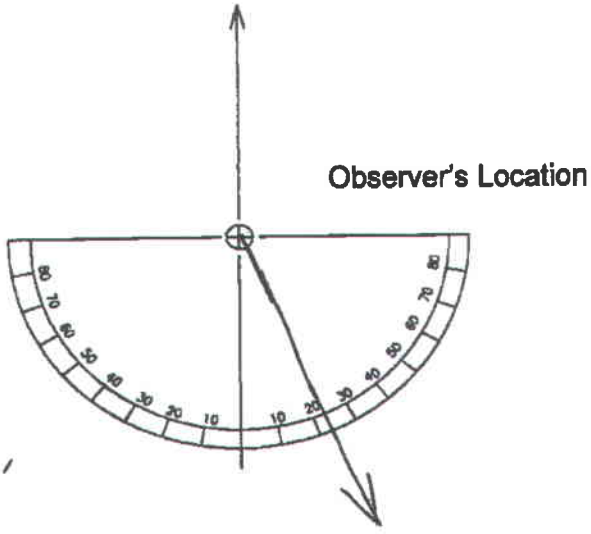
Site Horeshead (Chicago Plant)
2701 East 114th Street
Chicago, IL 60617

USEPA Method 9

Compass Heading



Emission Source



Observer: Nicky Silvestri

Comments: _____

Note:
1. Sun Position 25°
2. Wind Direction SSE
3. Wind Speed 15 mph
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

Visible Emissions Observation Record Form

Sheet: 13 of _____
Date: 5-19-14
Observer: Nicky Silvestri
Observation Start: 15:30
Observation End: 16:00

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	X
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)		t.	Other	

Observation Point Comments:
Map Location 13
NW Corner of plant
facing E

Distance from Source: NA ft.
Source Height: NA ft.
Emission Color: NA
Background:

Sky Condition: partly Cloudy

Sun Position: 30°
Temperature: 60° °F
Wind Direction: SSE at 15 mph
Reading Conditions: Good

Operating Conditions: Normal

Plume Description: fugative

Attached or Detached

Signature:

Certification Date: 3-26-14

Min	0	15	30	45	Notes	Min	0	15	30	45	Notes
0	0	0	0	0		30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
4	0	0	0	0		34					
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8	0	0	0	0		38					
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27	0	0	0	0		57					
28	0	0	0	0		58					
29	0	0	0	0		59					

Comments / Notes:

MOSTARDI PLATT

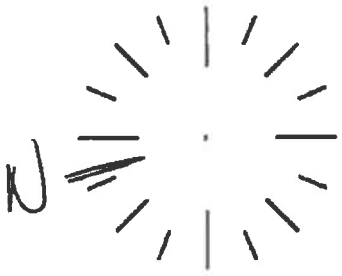
Visible Emissions Record Form

Date 5/19/14

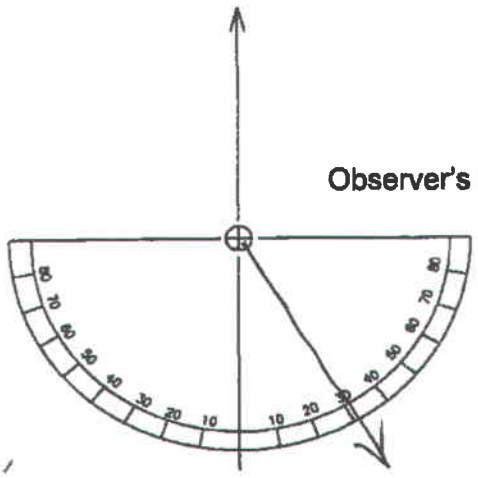
Site Horeshead (Chicago Plant)
2701 East 114th Street
Chicago, IL 60617

USEPA Method 9

Compass Heading



Emission Source



Observer: Nicky Silvestri

Comments: _____

Note:
1. Sun Position 30°
2. Wind Direction SSE
3. Wind Speed 15 mph
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form

Sheet: 14 of _____
Date: 5-19-14
Observer: Nicky Silvestri
Observation Start: 12:35
Observation End: 12:40

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading	X	l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations	X	o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)		t.	Other: Temporary Storage Piles	X

Observation Point Comments: Map location 1

Distance from Source: 75 ft.
Source Height: 15 ft.
Emission Color: NA
Background: sky
Sky Condition: Overcast
Sun Position: NA
Temperature: 60° °F
Wind Direction: SSE at 15 mph
Reading Conditions: fair, no sun

Operating Conditions: Normal

Plume Description: fugitive

Attached or Detached

Signature: [signature]

Certification Date: 3-26-14

Sec	0	15	30	45	Notes	Sec	0	15	30	45	Notes
0	0	0	0	0		30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
4	0	0	0	0		34					
5						35					
6						36					
7						37					
8						38					
9						39					
10						40					
11						41					
12						42					
13						43					
14						44					
15						45					
16						46					
17						47					
18						48					
19						49					
20						50					
21						51					
22						52					
23						53					
24						54					
25						55					
26						56					
27						57					
28						58					
29						59					

Comments / Notes: Piles emit steam during loading operation.
Steam quickly dissipates 2-3ft above activity.
Not to be confused with visible emissions

MOSTARDI PLATT

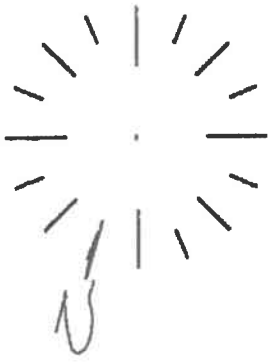
Visible Emissions Record Form

Date 5/19/14

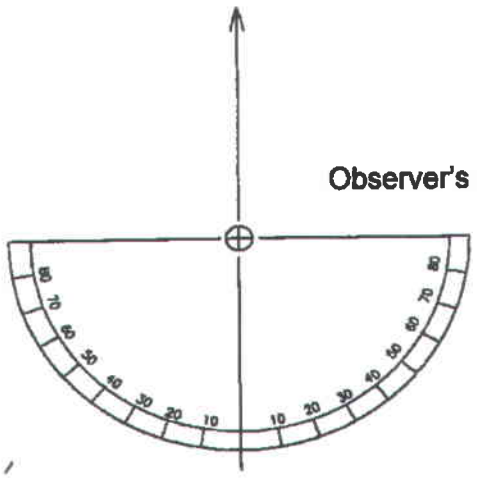
Site Horeshead (Chicago Plant)
2701 East 114th Street
Chicago, IL 60617

USEPA Method 9

Compass Heading



Emission Source



Observer: Nicky Silvestri

Comments: Overcast sky
Sun not visible

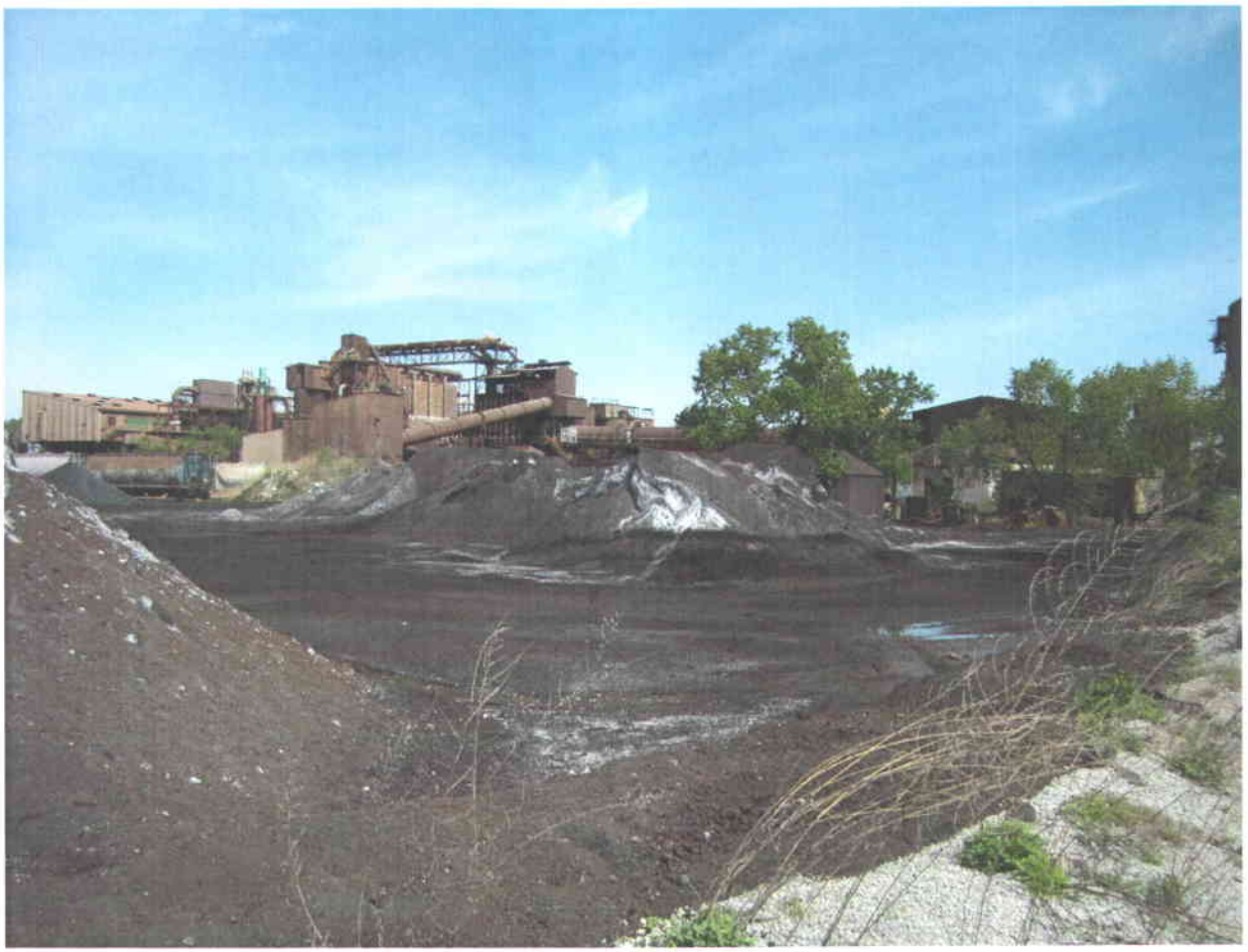
Note:
1. Sun Position NA
2. Wind Direction SSE
3. Wind Speed 15 mph
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

APPENDIX C

HORSEHEAD TEST PHOTOS – May 19, 2014

Informational Purposes Only



Test 1 - Temporary IRM Storage Pile

Test 2 -- East Property Line (upwind, SSE wind direction)

Test 3 – IRM Storage Pile (Main Pile)

Test 5 – Off Spec Coke Pile

Note: Photo not available.

Test 6 - Southwest Corner Property Line

Test 7 -- West Property Line (downwind)

Test 8 – Coke Reclaim Hopper Loading, Reading View

Test 8 – Coke Reclaim Hopper Loading (Informational View 1)

Test 9 -- West Coke Pile (transfer taking place)

Test 10 -- East Coke Pile

Test 11 – IRM Storage Pile Bunkers

Test 12 – North Property Line (Downwind)

Test 13 – North Property Line, Segment 2

Test 14 – Temporary Stock Pile Truck Loading

APPENDIX D

Meteorological Data

Horsehead Chicago Site
MP Project Number: M141714

National Weather Services - Chicago/Midway Hourly Weather Observation

Date	Time	Wind			Visibility (miles)	Weather	Sky Cond.	Temperature (°F)				Relative Humidity	Wind Chill	Heat Index	Pressure		Precipitation (in.)		
		Direction	Speed (mph)	Gust (mph)				Air	Dwpt	6 hour Max.	6 hour Min.				altimeter (in.)	sea level (mb)	1 hr	3 hr	6 hr
5/19/2014	23:51	SE	13	23	10	Overcast	BKN047 OVC080	68	44			42%	NA	NA	29.99	1014.9			
5/19/2014	22:51	SE	9		10	Overcast	BKN049 OVC080	68	44			42%	NA	NA	30.03	1016.3			
5/19/2014	21:51	SE	9		10	Overcast	FEW050 SCT075 OVC150	67	43			42%	NA	NA	30.01	1015.8			
5/19/2014	20:51	SE	15		10	Light Rain	BKN055 OVC090	67	44			44%	NA	NA	29.97	1014.2			
5/19/2014	19:51	E	9		10	Overcast	BKN140 OVC200	69	42			38%	NA	NA	30.01	1015.9			
5/19/2014	18:51	SE	13	21	10	Overcast	SCT070 BKN140 OVC200	70	41	71	68	35%	NA	NA	29.99	1015			
5/19/2014	17:51	S	21	32	10	Overcast and Breezy	SCT070 BKN140 OVC200	70	40			34%	NA	NA	29.98	1015.1			
5/19/2014	16:51	S	20	35	10	Overcast	BKN150 OVC200	71	37			29%	NA	NA	30.02	1016.3			
5/19/2014	15:51	SE	17	31	10	Overcast	FEW100 BKN150 OVC200	70	40			34%	NA	NA	30.06	1017.7			
5/19/2014	14:51	S	14	25	10	Overcast	BKN140 OVC250	70	39			32%	NA	NA	30.11	1019.2			
5/19/2014	13:51	S	17		10	Mostly Cloudy	FEW070 SCT110 BKN250	71	41			34%	NA	NA	30.13	1019.8			
5/19/2014	12:51	S	18	24	10	Mostly Cloudy	BKN120 BKN250	69	40	70	55	35%	NA	NA	30.15	1020.8			
5/19/2014	11:51	S	16	24	10	Mostly Cloudy	FEW095 BKN150 BKN250	69	40			35%	NA	NA	30.17	1021.4			
5/19/2014	10:51	S	15	24	10	Mostly Cloudy	FEW110 SCT160 BKN250	68	38			33%	NA	NA	30.19	1022.1			
5/19/2014	9:51	S	15	21	10	Mostly Cloudy	FEW150 BKN250	66	40			39%	NA	NA	30.21	1022.7			
5/19/2014	8:51	S	13	17	10	Mostly Cloudy	FEW150 BKN250	62	39			43%	NA	NA	30.23	1023.3			
5/19/2014	7:51	S	9		10	Mostly Cloudy	FEW150 BKN220	59	39			48%	NA	NA	30.23	1023.2			
5/19/2014	6:51	S	7		10	Mostly Cloudy	FEW150 BKN250	55	39	57	53	55%	NA	NA	30.24	1023.7			
5/19/2014	5:51	S	6		10	Mostly Cloudy	FEW200 BKN250	53	39			59%	NA	NA	30.24	1023.6			
5/19/2014	4:51	S	6		10	Mostly Cloudy	BKN250	53	39			59%	NA	NA	30.23	1023.6			
5/19/2014	3:51	S	5		10	Mostly Cloudy	BKN250	54	39			57%	NA	NA	30.23	1023.5			
5/19/2014	2:51	S	5		10	Mostly Cloudy	BKN250	54	40			59%	NA	NA	30.22	1023			
5/19/2014	1:51	S	3		10	Mostly Cloudy	BKN250	55	40			57%	NA	NA	30.22	1023			
5/19/2014	0:51	S	6		10	Mostly Cloudy	BKN250	57	40	68	57	53%	NA	NA	30.2	1022.5			

SKY CONDITION: Cloud amount and height: CLR (no clouds detected below 12000 feet); FEW (few); SCT (scattered); BKN (broken); OVC (overcast); followed by 3-digit height in hundreds of feet; or vertical visibility (VV) followed by height for indefinite ceiling, e.g. BKN015 -(broken cloud coverage at 1500 feet).

BKN - Broken CLR - Clear FEW - Few OVC - Overcast SCT - Scatter

Horsehead Chicago Site
MP Project Number: M141714

National Weather Services - Chicago/Lansing Municipal Airport Weather Observation

Date	Time	Wind			Visibility (miles)	Weather	Sky Cond.	Temperature (°F)				Relative Humidity	Wind Chill	Heat Index	Pressure		Precipitation (in.)		
		Direction	Speed (mph)	Gust (mph)				Air	Dwpt	6 hour Max.	6 hour Min.				altimeter (in.)	sea level (mb)	1 hr	3 hr	6 hr
5/19/2014	23:55	S	14	17	10	Overcast	BKN048 BKN055 OVC090	64	43			47%	NA	NA	30.01	NA			
5/19/2014	23:35	SE	12		10	Overcast	BKN048 OVC055	64	43			47%	NA	NA	30.02	NA			
5/19/2014	23:15	SE	10		10	Overcast	OVC048	64	43			46%	NA	NA	30.04	NA			
5/19/2014	22:55	SE	9		10	Overcast	OVC050	64	42			45%	NA	NA	30.04	NA			
5/19/2014	22:35	S	7		10	Overcast	SCT048 OVC055	64	42			45%	NA	NA	30.04	NA			
5/19/2014	22:15	SE	8		10	Mostly Cloudy	BKN055 BKN075	65	42			43%	NA	NA	30.03	NA			
5/19/2014	21:55	SE	10	17	10	Fair	CLR	64	41			43%	NA	NA	30.01	NA			
5/19/2014	21:35	SE	13	21	10	Fair	CLR	65	41			42%	NA	NA	30	NA			
5/19/2014	21:15	SE	15	24	10	Partly Cloudy	SCT120	65	41			42%	NA	NA	29.98	NA			
5/19/2014	20:55	SE	14		10	Partly Cloudy	SCT065 SCT075	64	41			44%	NA	NA	30.01	NA			
5/19/2014	20:35	SE	3		10	Partly Cloudy	SCT065	64	41			43%	NA	NA	30.04	NA			
5/19/2014	20:15	SE	8		10	Fair	CLR	65	41			41%	NA	NA	30.02	NA			
5/19/2014	19:55	SE	8		10	Partly Cloudy	SCT120	65	40			39%	NA	NA	30	NA			
5/19/2014	19:35	SE	13	18	10	Partly Cloudy	SCT110	66	40			39%	NA	NA	29.98	NA			
5/19/2014	19:15	S	13	16	10	Fair	CLR	66	40			38%	NA	NA	30.01	NA			
5/19/2014	18:55	S	15	18	10	Fair	CLR	66	40	69	66	38%	NA	NA	29.99	NA			
5/19/2014	18:35	S	13	21	10	Fair	CLR	67	40			37%	NA	NA	30	NA			
5/19/2014	18:15	S	15	28	10	Fair	CLR	67	40			37%	NA	NA	30	NA			
5/19/2014	17:55	SE	15	25	10	Fair	CLR	67	39			36%	NA	NA	30	NA			
5/19/2014	17:35	S	20	26	10	Fair	CLR	67	37			33%	NA	NA	30.02	NA			
5/19/2014	17:15	S	23	28	10	Fair and Breezy	CLR	67	37			33%	NA	NA	30.04	NA			
5/19/2014	16:55	S	12	18	10	Fair	CLR	67	39			36%	NA	NA	30.04	NA			
5/19/2014	16:35	SE	14	26	10	Fair	CLR	67	37			33%	NA	NA	30.05	NA			
5/19/2014	16:15	S	17	21	10	Fair	CLR	67	40			36%	NA	NA	30.07	NA			
5/19/2014	15:55	S	15	18	10	Fair	CLR	67	40			37%	NA	NA	30.09	NA			
5/19/2014	15:35	S	13		10	Fair	CLR	68	40			37%	NA	NA	30.1	NA			
5/19/2014	15:15	S	13	23	10	Fair	CLR	68	41			37%	NA	NA	30.11	NA			
5/19/2014	14:55	S	18	23	10	Fair	CLR	68	40			36%	NA	NA	30.12	NA			
5/19/2014	14:35	SE	14	23	10	Fair	CLR	67	41			38%	NA	NA	30.13	NA			
5/19/2014	14:15	S	17	25	10	Fair	CLR	68	40			36%	NA	NA	30.14	NA			
5/19/2014	13:55	S	16	23	10	Fair	CLR	68	40			37%	NA	NA	30.14	NA			
5/19/2014	13:35	S	14	20	10	Partly Cloudy	SCT110	67	40			37%	NA	NA	30.16	NA			
5/19/2014	13:15	S	17		10	Mostly Cloudy	BKN110	67	40			37%	NA	NA	30.16	NA			
5/19/2014	12:55	S	15	20	10	Partly Cloudy	SCT065 SCT090 SCT120	69	42	69	50	38%	NA	NA	30.17	NA			
5/19/2014	12:35	S	16	22	10	Partly Cloudy	SCT110	65	38			38%	NA	NA	30.17	NA			
5/19/2014	12:15	S	14	25	10	Fair	CLR	67	40			38%	NA	NA	30.19	NA			
5/19/2014	11:55	S	17	22	10	Fair	CLR	67	42			39%	NA	NA	30.19	NA			
5/19/2014	11:35	S	15		10	Fair	CLR	66	39			38%	NA	NA	30.21	NA			
5/19/2014	11:15	S	18	23	10	Fair	CLR	66	38			37%	NA	NA	30.21	NA			
5/19/2014	10:55	S	14	21	10	Fair	CLR	65	40			39%	NA	NA	30.21	NA			
5/19/2014	10:35	S	16	21	10	Fair	CLR	64	39			40%	NA	NA	30.21	NA			
5/19/2014	10:15	S	15		10	Fair	CLR	64	41			42%	NA	NA	30.22	NA			

Horsehead Corporation

Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials

EXHIBIT O

MAY 23, 2014
OPACITY TEST REPORT
HORSEHEAD CHICAGO PLANT

Visible Emissions and Opacity Observations Report

Prepared For
Horsehead Corporation (Chicago Plant)
2701 E. 114th St
Chicago, IL 60617
IEPA ID No. 031600AFV

Project No. M141714

May 23, 2014

mostardi platt

mostardi platt

EXECUTIVE SUMMARY

Subject: Opacity Observations at Horsehead Corporation (Chicago Plant)

Observation Date: May 23, 2014

Personnel:

Christopher Trezak	Certified Visible Emission Reader, Mostardi Platt
Nicholas Silvestri	Certified Visible Emission Reader, Mostardi Platt
Joseph Macak	Principal Consultant, Mostardi Platt
Nate Dine	EHS Specialist, Horsehead
John Marta	Plant Manager, Horsehead

V.E. Certificates for Messrs. Trezak and Silvestri can be found in Appendix A.

Test Program:

Visible emissions (V.E.) observations were conducted for the test locations itemized in Table 1. The location of the V.E. reader for each test is shown in the site drawing in Figure 1. The raw data sheets from the V.E. readings can be found in Appendix B. All opacity tests were conducted in accordance with USEPA Reference Method 9. All property line visible emissions tests were conducted in accordance with USEPA Reference Method 22.

Table 1. Horsehead Corporation (Chicago Plant) Test Locations for May 23, 2014.

Test #	Description	Test #	Description
1A	Barge Loading Front End Loader Loc 15	7	Off Spec Coke Pile Loc 21
1B	Barge Loading Covered Conveyor System Loc 15	8	Unpaved Roadway
2	IRM Storage Pile Loc 16(main pile)	9	Paved Roadway
3	IRM Storage Pile Loc 17 (main pile)	10	Paved Roadway
4	IRM Storage Pile Loc 18 (main pile)	11	Unpaved Roadway
5	Coke Pile West Loc 19	12	114th Street Unpaved City`
6	Coke Reclaim Pile Loc 20	13 A-H	Property Line Locations Method 22

Table 2 is a summary of the results from the test program. For informational purposes, photographs from each test location have been included in Appendix C.

Meteorology:
Meteorological data summaries from Midway and Lansing, Illinois are included in Appendix D. There was no precipitation on the day of testing.

888 Industrial Drive
Elmhurst, Illinois 60126
630-993-2100

Table 2. Horsehead Visible Emissions and Opacity Summary for May 23, 2014.

Run #	Location	Number of Minutes	Average Opacity (%)
1A	Barge Loading Front End Loader Loc 15	60	0
1B	Barge Loading Covered Conveyor System Loc 15	60	0
2	IRM Storage Pile Loc 16 (main pile)	15	0
3	IRM Storage Pile Loc 17 (main pile)	15	0
4	IRM Storage Pile Loc 18 (main pile)	15	0
5	Coke Pile West Loc 19	15	0
6	Coke Reclaim Pile Loc 20	15	0
7	Off Spec Coke Pile Loc 21	15	0
8	Unpaved Roadway	4 Vehicles	0
9	Paved Roadway	4 Vehicles	0
10	Paved Roadway	4 Vehicles	0
11	Unpaved Roadway	4 Vehicles	1.25
12	114th Street Unpaved City	4 Vehicles	1.25
13 A-H	Property Line Locations Method 22	8 x 10 min	No visible emissions

Conclusion:
The Method 9 test results demonstrated that Horsehead Corporation (Chicago Plant) were well below the most stringent 10% opacity standard stated in the City of Chicago's Bulk Solid Materials rules and regulations for transfer operations, material handling, storage areas, and roadways. Further, the Method 22 visible emissions results for the property line demonstrated that no visible emissions crossed the property lines.

Should you have any questions or require additional information, please contact me at jmacak@mp-mail.com or 630-993-2127.

Respectfully submitted:

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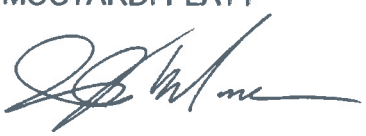


Joseph J. Macak III
Principal Consultant

JJM:pfl

APPENDIX A

Visible Emissions Observer Certifications

VE Certificates

CARL KOONTZ ASSOCIATES
of Nashville, Tennessee

This is to acknowledge that
NICKY SILVESTRI
successfully participated in Visible Emissions training on MAR 26 2014
and is qualified to evaluate Visible Emissions for a period of six (6) months from the date of certification.

Carl Koontz
Instructor

VISIBLE EMISSIONS EVALUATOR

Christopher Trezak

This is to certify that the above named observer has met the specifications of Federal Reference Method 9 and is qualified as a visible emissions evaluator. Maximum deviation on white and black smoke did not exceed 7.5% opacity and no single error exceeding 15% opacity was incurred during the certification test conducted by Eastern Technical Associates, Inc. of Raleigh, N.C. This certificate is valid for six months from date of issue.

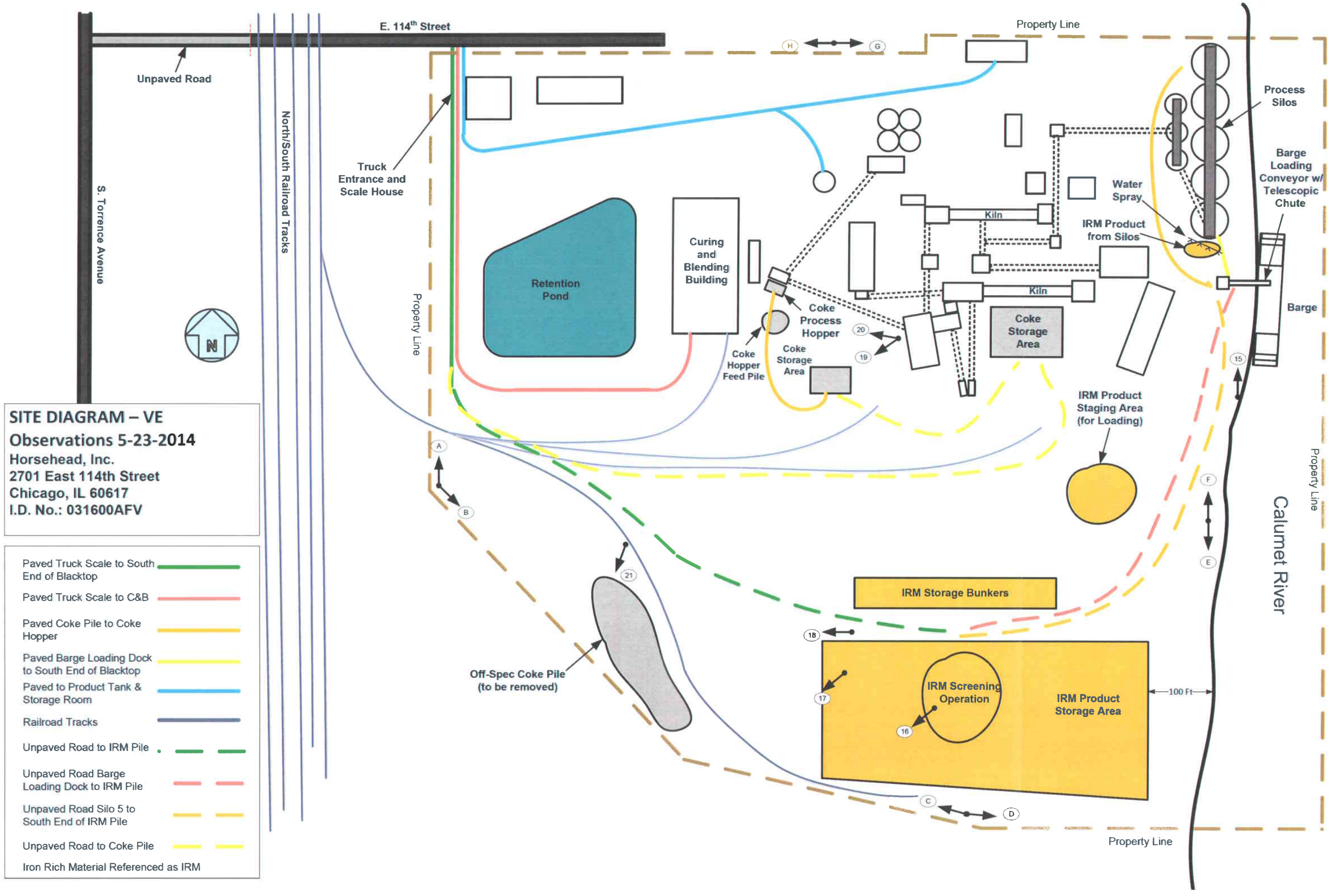
420007 Certificate #	**TRE905125** Student ID Number
3/5/2014 Date of Certification	**Valparaiso, IN** Location
9/4/2014 Certification Expiration Date	**NonETA** Last Lecture

Marty Hughes
Director of Training

APPENDIX B

HORSEHEAD DATA SHEETS – May 23, 2014

Official Signed Forms



SITE DIAGRAM – VE
Observations 5-23-2014
Horsehead, Inc.
2701 East 114th Street
Chicago, IL 60617
I.D. No.: 031600AFV

- Paved Truck Scale to South End of Blacktop
- Paved Truck Scale to C&B
- Paved Coke Pile to Coke Hopper
- Paved Barge Loading Dock to South End of Blacktop
- Paved to Product Tank & Storage Room
- Railroad Tracks
- Unpaved Road to IRM Pile
- Unpaved Road Barge Loading Dock to IRM Pile
- Unpaved Road Silo 5 to South End of IRM Pile
- Unpaved Road to Coke Pile
- Iron Rich Material Referenced as IRM

MOSTARDI PLATT

Visible Emissions Observation Record Form
Method 9

Sheet: 1A of _____
Date: 5-23-14
Observer: Nicky Silvestri
Observation Start: 8:10
Observation End: 9:10

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)	X	m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations	X	o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)		t.	Other	

Observation Point Comments: Map location 15

Distance from Source: 150 ft.
Source Height: 15 ft.
Emission Color:
Background:
Sky Condition: Clear Sky
Sun Position: 80° see chart
Temperature: 60° °F
Wind Direction: NE at 10 mph
Reading Conditions: Good

Operating Conditions: Normal

Plume Description: fugitive

Attached or Detached

Signature:

Certification Date: 3-26-14

Seconds	0	15	30	45	Notes	Seconds	0	15	30	45	Notes
0	0	0	0	0	8:10	30	0	0	0	0	8:40
1	0	0	0	0		31	0	0	0	0	
2	0	0	0	0		32	0	0	0	0	
3	0	0	0	0		33	0	0	0	0	
4	0	0	0	0		34	0	0	0	0	
5	0	0	0	0		35	0	0	0	0	
6	0	0	0	0		36	0	0	0	0	
7	0	0	0	0		37	0	0	0	0	
8	0	0	0	0		38	0	0	0	0	
9	0	0	0	0		39	0	0	0	0	
10	0	0	0	0	8:20	40	0	0	0	0	8:50
11	0	0	0	0		41	0	0	0	0	
12	0	0	0	0		42	0	0	0	0	
13	0	0	0	0		43	0	0	0	0	
14	0	0	0	0		44	0	0	0	0	
15	0	0	0	0		45	0	0	0	0	
16	0	0	0	0		46	0	0	0	0	
17	0	0	0	0		47	0	0	0	0	
18	0	0	0	0		48	0	0	0	0	9:00
19	0	0	0	0		49	0	0	0	0	
20	0	0	0	0	8:30	50	0	0	0	0	
21	0	0	0	0		51	0	0	0	0	
22	0	0	0	0		52	0	0	0	0	
23	0	0	0	0		53	0	0	0	0	
24	0	0	0	0		54	0	0	0	0	
25	0	0	0	0		55	0	0	0	0	
26	0	0	0	0		56	0	0	0	0	
27	0	0	0	0		57	0	0	0	0	
28	0	0	0	0		58	0	0	0	0	
29	0	0	0	0		59	0	0	0	0	

Comments / Notes: front end loader moving IRM from silo pile to hopper.

MOSTARDI PLATT

Visible Emissions Record Form

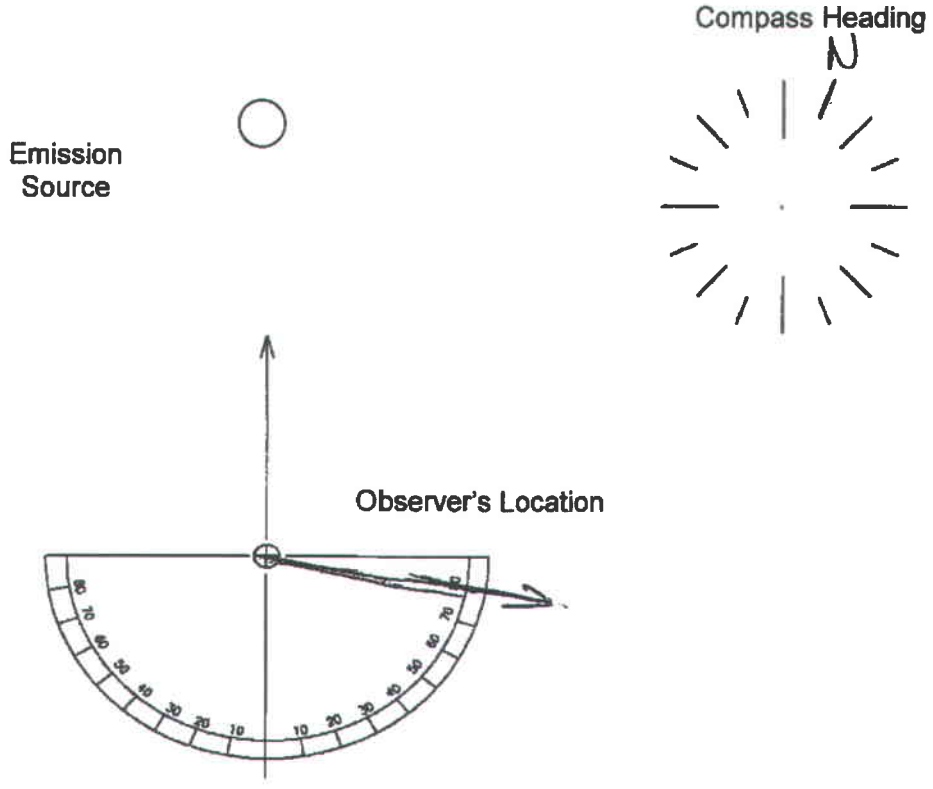
Date 5/23/14

Site Horsehead (Chicago Plant)

2701 East 114th Street

Chicago, IL 60617

USEPA Method 9



Observer: Nicky Silvestri

Comments:

Note:

1. Sun Position 80°
2. Wind Direction NE
3. Wind Speed 10 mph
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form
Method 9

Sheet: 1 B of _____
Date: 5-23-14
Observer: CHRIS TRUZAN
Observation Start : 0810
Observation End : _____

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)	✓	m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)		t.	Other	

Observation Point Comments:
SOUTHEAST OF SOURCE
LOCATION 15

Distance from Source: 150 ft.
Source Height: 15' ft.
Emission Color: AS NOTED
Background: SKY
Sky Condition: CLEAR/SUNNY
Sun Position: SEE CHART
Temperature: 60 °F
Wind Direction: NE at 0-10 mph
Reading Conditions: GOOD

Operating Conditions: _____

Plume Description: N/A
Attached or Detached

Signature: [signature]

Certification Date: 5-2014

	0	15	30	45	Notes		0	15	30	45	Notes
0	0	0	0	0	0810	30	0	0	0	0	0840
1	0	0	0	0		31	0	0	0	0	
2	0	0	0	0		32	0	0	0	0	
3	0	0	0	0		33	0	0	0	0	
4	0	0	0	0		34	0	0	0	0	
5	0	0	0	0		35	0	0	0	0	
6	0	0	0	0		36	0	0	0	0	
7	0	0	0	0		37	0	0	0	0	
8	0	0	0	0		38	0	0	0	0	
9	0	0	0	0		39	0	0	0	0	
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11	0	0	0	0		41	0	0	0	0	
12	0	0	0	0		42	0	0	0	0	
13	0	0	0	0		43	0	0	0	0	
14	0	0	0	0		44	0	0	0	0	
15	0	0	0	0		45	0	0	0	0	
16	0	0	0	0		46	0	0	0	0	
17	0	0	0	0		47	0	0	0	0	
18	0	0	0	0		48	0	0	0	0	
19	0	0	0	0		49	0	0	0	0	
20	0	0	0	0	0830	50	0	0	0	0	0900
21	0	0	0	0		51	0	0	0	0	
22	0	0	0	0		52	0	0	0	0	
23	0	0	0	0		53	0	0	0	0	
24	0	0	0	0		54	0	0	0	0	
25	0	0	0	0		55	0	0	0	0	
26	0	0	0	0		56	0	0	0	0	
27	0	0	0	0		57	0	0	0	0	
28	0	0	0	0		58	0	0	0	0	
29	0	0	0	0		59	0	0	0	0	0910

Comments / Notes:

MOSTARDI PLATT

Visible Emissions Record Form

Date 5/23/14

Site Horsehead (Chicago Plant)

2701 East 114th Street

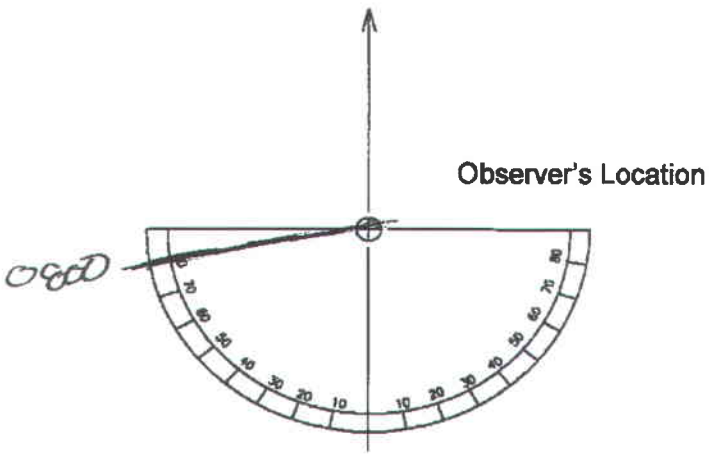
Chicago, IL 60617

USEPA Method 9

Compass Heading

NW

Emission Source



Observer: CHRIS TREZAK

Comments: _____

Note:

1. Sun Position 80°
2. Wind Direction NE
3. Wind Speed 0-10 mph
4. Plume Type FUGITIVE
5. Operating Level NORMAL

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form
Method 9

Sheet: 2 of _____
Date: 5-23-14
Observer: Nikky Silvestri
Observation Start: 10:10
Observation End: 10:25

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	X
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)		t.	Other	

Observation Point Comments:
Map location 16
East of Screening looking SW

Distance from Source: 100 ft.
Source Height: 30 ft.
Emission Color: NA
Background: Blue Sky
Sky Condition: Clear
Sun Position: 65° see chart
Temperature: 60° °F
Wind Direction: E at 10 mph
Reading Conditions: Good

Operating Conditions: Normal

Plume Description: fugitive

Attached or Detached

Signature: [signature]

Certification Date: 3-26-14

Sec	0	15	30	45	Notes	Sec	0	15	30	45	Notes
0	0	0	0	0	10:10	30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
4	0	0	0	0		34					
5	0	0	0	0		35					
6	0	0	0	0		36					
7	0	0	0	0		37					
8	0	0	0	0		38					
9	0	0	0	0		39					
10	0	0	0	0		40					
11	0	0	0	0		41					
12	0	0	0	0		42					
13	0	0	0	0		43					
14	0	0	0	0	10:	44					
15					10:15	45					
16						46					
17						47					
18						48					
19						49					
20						50					
21						51					
22						52					
23						53					
24						54					
25						55					
26						56					
27						57					
28						58					
29						59					

Comments / Notes:

MOSTARDI PLATT

Visible Emissions Record Form

Date 5/23/14

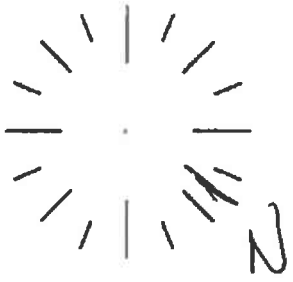
Site Horsehead (Chicago Plant)

2701 East 114th Street

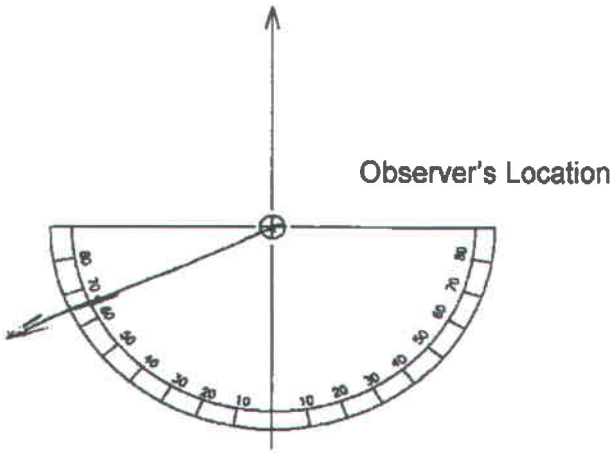
Chicago, IL 60617

USEPA Method 9

Compass Heading



Emission Source



Observer: Nicky Silvestri

Comments:

Note:

1. Sun Position 65°
2. Wind Direction E
3. Wind Speed 0-10 mph
4. Plume Type Figure
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form
Method 9

Sheet: 3 of _____
Date: 5-23-14
Observer: Nicky Silvera
Observation Start: 10:30
Observation End: 10:45

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	X
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)		t.	Other	

Observation Point Comments:
May location 17
West of screen looker SW

Distance from Source: 150 ft.
Source Height: 30 ft.
Emission Color: NA
Background: Sky + trees

Sky Condition: Clear

Sun Position: 40° see chart
Temperature: 60° °F
Wind Direction: E at 10 mph
Reading Conditions: Good

Operating Conditions: Normal

Plume Description: fugitive

Attached or Detached

Signature:

Certification Date: 3-26-14

><	0	15	30	45	Notes	><	0	15	30	45	Notes
0	0	0	0	0		30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
4	0	0	0	0		34					
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17						47					
18						48					
19						49					
20						50					
21						51					
22						52					
23						53					
24						54					
25						55					
26						56					
27						57					
28						58					
29						59					

Comments / Notes:

MOSTARDI PLATT

Visible Emissions Record Form

Date 5/23/14

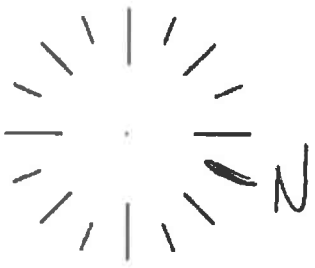
Site Horsehead (Chicago Plant)

2701 East 114th Street

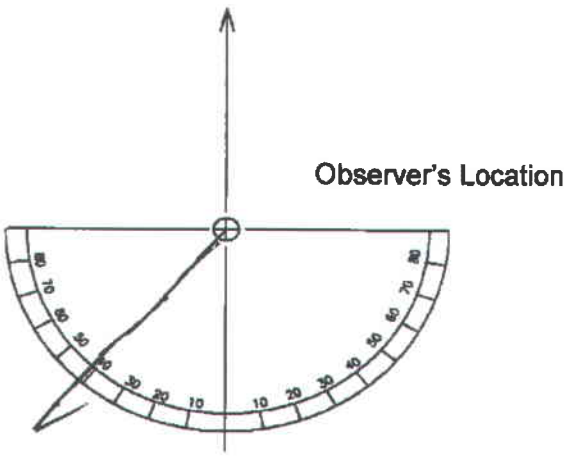
Chicago, IL 60617

USEPA Method 9

Compass Heading



Emission Source



Observer: Nicky Silvestri

Comments:

Note:

1. Sun Position 40°
2. Wind Direction E
3. Wind Speed 0-10 mph
4. Plume Type fugitive
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form
Method 9

Sheet: 4 of _____
Date: 5-23-14
Observer: Nicky Silvestri
Observation Start: 10:46
Observation End: 11:01

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	X
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)		t.	Other	

Observation Point Comments:
Map location 18
South of Bunkers looking West

Distance from Source: 100 ft.
Source Height: 15 ft.
Emission Color: NA
Background: Sky + trees

Sky Condition: clear sky

Sun Position: 30° see chart
Temperature: 60 °F
Wind Direction: E at 10 mph
Reading Conditions: Good

Operating Conditions: Normal

Plume Description: fugative

Attached or Detached

Signature:

Certification Date: 3-26-14

	0	15	30	45	Notes		0	15	30	45	Notes
0	0	0	0	0	10:46	30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
4	0	0	0	0		34					
5	0	0	0	0		35					
6	0	0	0	0		36					
7	0	0	0	0		37					
8	0	0	0	0		38					
9	0	0	0	0		39					
10	0	0	0	0		40					
11	0	0	0	0		41					
12	0	0	0	0		42					
13						43					
14						44					
15					11:01	45					
16						46					
17						47					
18						48					
19						49					
20						50					
21						51					
22						52					
23						53					
24						54					
25						55					
26						56					
27						57					
28						58					
29						59					

Comments / Notes:

MOSTARDI PLATT

Visible Emissions Record Form

Date 5/23/14

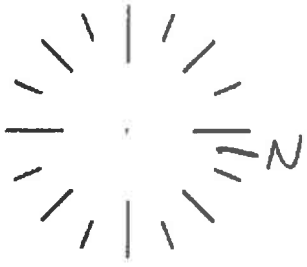
Site Horsehead (Chicago Plant)

2701 East 114th Street

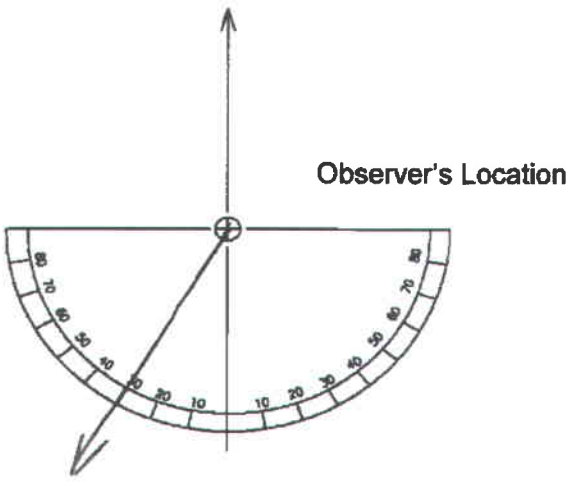
Chicago, IL 60617

USEPA Method 9

Compass Heading



Emission Source



Observer: Nicky Silvestri

Comments:

Note:

1. Sun Position 30°
2. Wind Direction E
3. Wind Speed 10 mph
4. Plume Type Figurine
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form
Method 9

"5"

Sheet: 1 of
Date: 5-23-14
Observer: CHRIS TRAINOR
Observation Start: 1037
Observation End: 1052

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
19 i.	Coke Pile (W)	✓	s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)		t.	Other	

Observation Point Comments:
NR OF SOURCES
Location 19

Distance from Source: 50 ft.
Source Height: 15 ft.
Emission Color: AS NOTED
Background: SKY
Sky Condition: CLEAR SUNNY
Sun Position: SEE CHART
Temperature: 60-65 °F
Wind Direction: NE at 010 mph
Reading Conditions: GOOD

Operating Conditions: N/A

Plume Description: N/A
Attached or Detached

Signature:

Certification Date: 3-14

Sec	0	15	30	45	Notes	Sec	0	15	30	45	Notes
0						30					
1						31					
2						32					
3						33					
4						34					
5						35					
6						36					
7						37	0	0	0	0	START
8						38	0	0	0	0	
9						39	0	0	0	0	
10						40	0	0	0	0	
11						41	0	0	0	0	
12						42	0	0	0	0	
13						43	0	0	0	0	
14						44	0	0	0	0	
15						45	0	0	0	0	
16						46	0	0	0	0	
17						47	0	0	0	0	
18						48	0	0	0	0	
19						49	0	0	0	0	
20						50	0	0	0	0	
21						51	0	0	0	0	
22						52					END
23						53					
24						54					
25						55					
26						56					
27						57					
28						58					
29						59					

Comments / Notes:

MOSTARDI PLATT

Visible Emissions Record Form

Date 5/23/-15

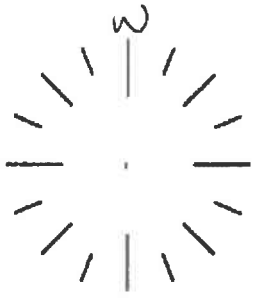
Site Horsehead (Chicago Plant)

2701 East 114th Street

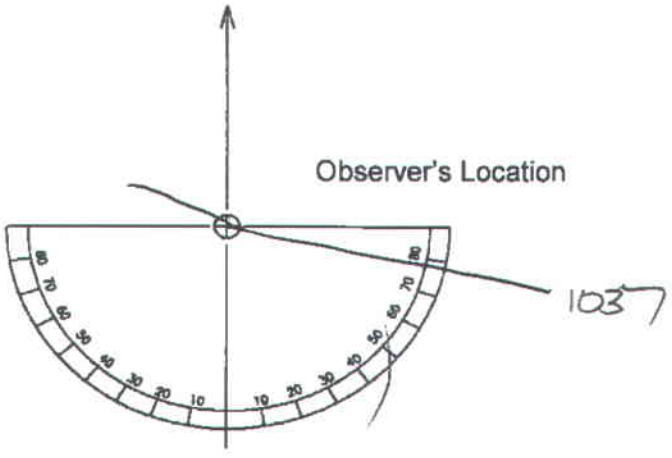
Chicago, IL 60617

USEPA Method 9

Compass Heading



Emission Source



Observer: Chris Trezak

Comments: _____

Note:

1. Sun Position 80°
2. Wind Direction NE
3. Wind Speed 0-10
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form
Method 9

1/6"

Sheet: 1 of _____
Date: 5-23-14
Observer: CHRIS TRITZAK
Observation Start: 1053
Observation End: 1108

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line #20	
j.	Coke Pile (1600 Ton Pile)		t.	Other COKE RECLAIM PILE	

Observation Point Comments:
EAST OF SOURCE
LOCATION 20

Distance from Source: 70 ft.
Source Height: 12' ft.
Emission Color: AS NOTED
Background: SKY

Sky Condition: CLEAR / SUNNY

Sun Position: SEE CHART
Temperature: 60-65 °F
Wind Direction: NE at 0-10 mph
Reading Conditions: GOOD

Operating Conditions: N/A

Plume Description: N/A

Attached or Detached

Signature:

Certification Date: 5-14

Sec	0	15	30	45	Notes	Sec	0	15	30	45	Notes
0	0	0	0	0	1053	30					
1	0	0	0	0		31					
2	0	0	0	0		32					
3	0	0	0	0		33					
4	0	0	0	0		34					
5	0	0	0	0		35					
6	0	0	0	0		36					
7	0	0	0	0	1100	37					
8	0	0	0	0		38					
9	0	0	0	0		39					
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14	0	0	0	0		44					
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16					END	46					
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18						48					
19						49					
20						50					
21						51					
22						52					
23						53					
24						54					
25						55					
26						56					
27						57					
28						58					
29						59					

Comments / Notes:

MOSTARDI PLATT

Visible Emissions Record Form

Date 5/23/14

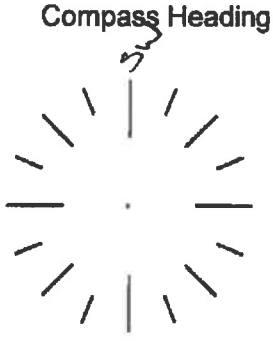
Site Horsehead (Chicago Plant)

2701 East 114th Street

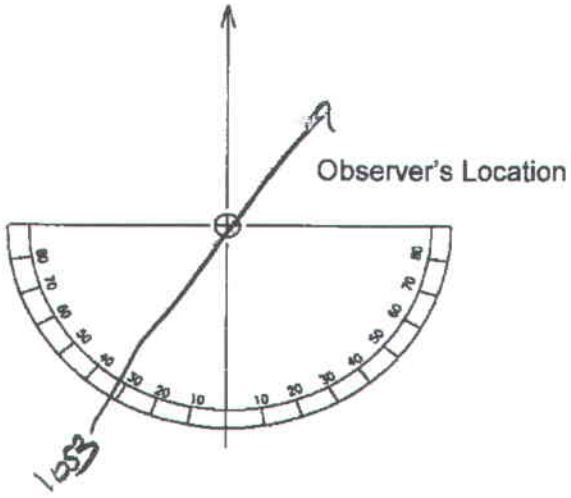
Chicago, IL 60617

USEPA Method 9

Compass Heading



Emission Source



Observer: Owens Testad

Comments: _____

Note:

1. Sun Position 35°
2. Wind Direction NE
3. Wind Speed 0-10
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form
Method 9

"7"

Sheet: 1 of _____
Date: 5-23-14
Observer: CHRIS TROZZOLO
Observation Start: 1020
Observation End: 1035

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Facility Location/Activity

a.	Truck Unloading (Coke)		k.	IRM Storage Pile Bunkers	
b.	Truck Loading		l.	High Iron IRM Pile	
c	Barge Loading (IRM)		m.	IRM Main Storage Piles	
d.	Train Loading (IRM)		n.	IRM Screening Operation	
e.	Front end loader operations		o.	IRM Truck Loading	
f.	Coke Reclaim Operations		p.	North Property Line	
g.	Unpaved Roadway(s)		q.	East Property Line	
h.	Coke Pile (E)		r.	South Property Line	
i.	Coke Pile (W)		s.	West Property Line	
j.	Coke Pile (1600 Ton Pile)	✓	t.	Other	

#21

Observation Point Comments:
EAST OF PILE
Location - 21

Distance from Source: 100 ft.
Source Height: 15 ft.
Emission Color: AS NOTED
Background: TREES/SKY
Sky Condition: CLEAR/SUNNY
Sun Position: SEE CHART
Temperature: 60's °F
Wind Direction: NE at 0-10 mph
Reading Conditions: Good

Operating Conditions: N/A

Plume Description: N/A
Attached or Detached

Signature: [signature]

Certification Date: 5-14

	0	15	30	45	Notes		0	15	30	45	Notes
0						30	0	0	0	0	
1						31	0	0	0	0	
2						32	0	0	0	0	
3						33	0	0	0	0	
4						34	0	0	0	0	
5						35					END
6						36					
7						37					
8						38					
9						39					
10						40					
11						41					
12						42					
13						43					
14						44					
15						45					
16						46					
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18						48					
19						49					
20	0	0	0	0	1020	50					
21	0	0	0	0		51					
22	0	0	0	0		52					
23	0	0	0	0		53					
24	0	0	0	0		54					
25	0	0	0	0		55					
26	0	0	0	0		56					
27	0	0	0	0		57					
28	0	0	0	0		58					
29	0	0	0	0		59					

Comments / Notes:

MOSTARDI PLATT

Visible Emissions Record Form

Date 5/23/14

Site Horsehead (Chicago Plant)

2701 East 114th Street

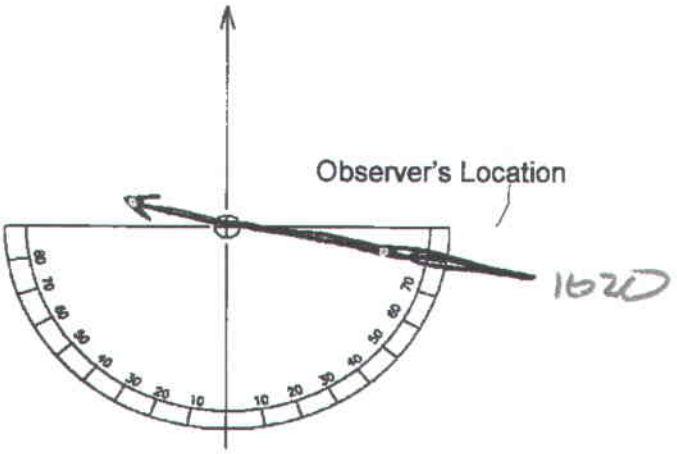
Chicago, IL 60617

USEPA Method 9

Compass Heading

SSW

Emission Source



Observer: Mitchell Sz

Comments:

Note:

1. Sun Position 60°
2. Wind Direction NE
3. Wind Speed 0-10
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form "9"
Paved and Unpaved Roadways

Sheet: 1 of ____
Date: 5-23-14
Observer: [illegible]

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Section 212.109 Measurement Methods for Opacity

Except as otherwise provided in this Part, and except for the methods of data reduction when applied to Sections 212.122 and 212.123 of this Part, measurements of opacity shall be conducted in accordance with Method 9, 40 CFR part 60, Appendix A, and the procedures in 40 CFR 60.675(c) and (d), if applicable, incorporated by reference in Section 212.113 of this Subpart, except that for roadways and parking areas the number of readings required for each vehicle pass will be three taken at 5-second intervals. The first reading shall be at the point of maximum opacity and second and third readings shall be made at the same point, the observer standing at right angles to the plume at least 15 feet away from the plume and observing 4 feet above the surface of the roadway or parking area. After four vehicles have passed, the 12 readings will be averaged.

Roadway Surface: Paved ☐ Unpaved ☑
Road Condition: Wet ☐ Dry ☑

Measurement Point Perpindicular to Road
Yes ☑
No ☐
If No Comment: 1

Distance From Roadway: 15'
Location Description: PERPENDICULAR TO ROADWAY

Emission Color: AS NOTED
Background: GRASS
Sky Condition: CLEAR/SUNNY
Sun Position: SOUTHEAST
Temperature: 60-65 °F
Wind Direction: NE at 0-10 mph
Reading Conditions: GOOD

Signature: [signature]

Certification Date: MARCH-2014

	Max Opacity	5 Seconds	10 seconds
Vehicle 1	0	0	0

Clock Time Max Opacity: 1255
Vehicle Description: TRACTOR TRAILER

	Max Opacity	5 Seconds	10 seconds
Vehicle 2	5	0	0

Clock Time Max Opacity: 12:55
Vehicle Description: VAN

	Max Opacity	5 Seconds	10 seconds
Vehicle 3	0	0	0

Clock Time Max Opacity: 1300
Vehicle Description: TRACTOR TRAILER

	Max Opacity	5 Seconds	10 seconds
Vehicle 4	0	0	0

Clock Time Max Opacity: 1301
Vehicle Description: PASSENGER CAR

Average of 12 Readings: ____

Comments / Notes:

MOSTARDI PLATT

Visible Emissions Record Form

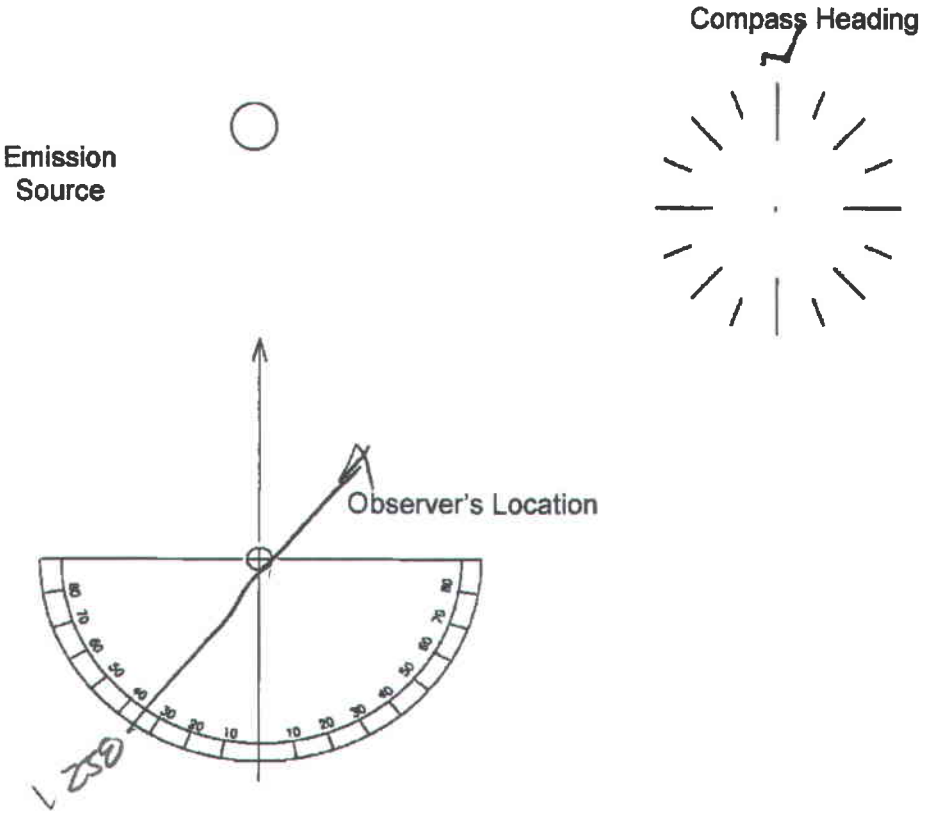
Date 5/23/14

Site Horsehead (Chicago Plant)

2701 East 114th Street

Chicago, IL 60617

USEPA Method 9



Observer: Chris Trezak

Comments:

Note:

1. Sun Position 35°
2. Wind Direction NE
3. Wind Speed 0-10
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form
Paved and Unpaved Roadways

"9"

Sheet: 1 of _____
Date: 5-23-14
Observer: Nicky Stevens

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Section 212.109 Measurement Methods for Opacity

Except as otherwise provided in this Part, and except for the methods of data reduction when applied to Sections 212.122 and 212.123 of this Part, measurements of opacity shall be conducted in accordance with Method 9, 40 CFR part 60, Appendix A, and the procedures in 40 CFR 60.675(c) and (d), if applicable, incorporated by reference in Section 212.113 of this Subpart, except that for roadways and parking areas the number of readings required for each vehicle pass will be three taken at 5-second intervals. The first reading shall be at the point of maximum opacity and second and third readings shall be made at the same point, the observer standing at right angles to the plume at least 15 feet away from the plume and observing 4 feet above the surface of the roadway or parking area. After four vehicles have passed, the 12 readings will be averaged.

Roadway Surface: Paved [X] Unpaved [ ]
Road Condition: Wet [ ] Dry [X] See Vehicle notes

Measurement Point Perpindicular to Road
Yes [X]
No [ ]
If No Comment: _____

Distance From Roadway: _____
Location Description: South of main Gate

Emission Color: _____
Background: Grass + trees

Sky Condition: Clear sky
Sun Position: 10° See notes
Temperature: 60-65 °F
Wind Direction: E at 0-10 mph
Reading Conditions: Good

Signature: MP

Certification Date: 3-26-14

	Max Opacity	5 Seconds	10 seconds
Vehicle 1	0	0	0

Clock Time Max Opacity: 9:33
Vehicle Description: Semi truck Dry

	Max Opacity	5 Seconds	10 seconds
Vehicle 2	0	0	0

Clock Time Max Opacity: 9:37
Vehicle Description: Vacuum truck Wet

	Max Opacity	5 Seconds	10 seconds
Vehicle 3	0	0	0

Clock Time Max Opacity: 9:43
Vehicle Description: Semi truck Dry

	Max Opacity	5 Seconds	10 seconds
Vehicle 4	0	0	0

Clock Time Max Opacity: 9:46
Vehicle Description: Semi truck Dry

Average of 12 Readings: 0.0

Comments / Notes:

MOSTARDI PLATT

Visible Emissions Record Form

Date 5/23/14

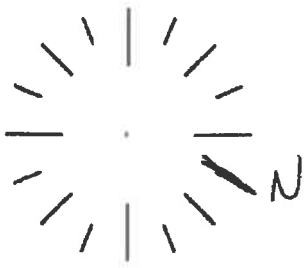
Site Horsehead (Chicago Plant)

2701 East 114th Street

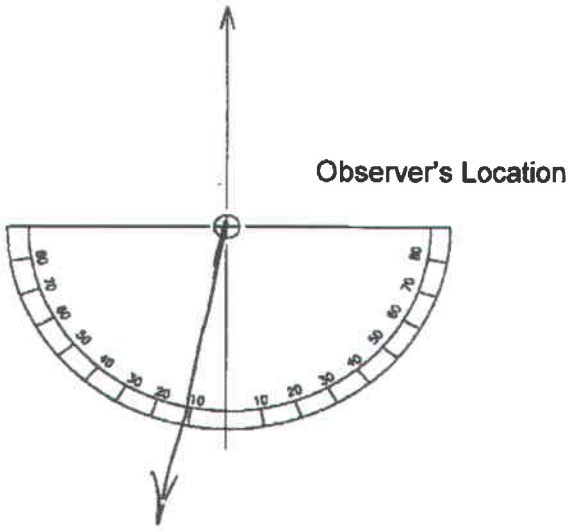
Chicago, IL 60617

USEPA Method 9

Compass Heading



Emission Source



Observer: Nicky S. Vesta

Comments:

Note:

1. Sun Position 10°
2. Wind Direction E
3. Wind Speed 10 mph
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form
Paved and Unpaved Roadways

11/0 11

Sheet: 1 of _____
Date: 5-23-14
Observer: CHRIS TRUSZAK

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Section 212.109 Measurement Methods for Opacity

Except as otherwise provided in this Part, and except for the methods of data reduction when applied to Sections 212.122 and 212.123 of this Part, measurements of opacity shall be conducted in accordance with Method 9, 40 CFR part 60, Appendix A, and the procedures in 40 CFR 60.675(c) and (d), if applicable, incorporated by reference in Section 212.113 of this Subpart, except that for roadways and parking areas the number of readings required for each vehicle pass will be three taken at 5-second intervals. The first reading shall be at the point of maximum opacity and second and third readings shall be made at the same point, the observer standing at right angles to the plume at least 15 feet away from the plume and observing 4 feet above the surface of the roadway or parking area. After four vehicles have passed, the 12 readings will be averaged.

Roadway Surface: Paved ☑ Unpaved ☐
Road Condition: Wet ☐ Dry ☑

Measurement Point Perpindicular to Road: Yes ☑ No ☐
If No Comment: _____

Distance From Roadway: 15
Location Description: _____

Emission Color: _____
Background: TALL GRASS / TREES
Sky Condition: CLEAR
Sun Position: SEE CHART
Temperature: 60-65 °F
Wind Direction: NE at 0-10 mph
Reading Conditions: GOOD

Signature: [signature]

Certification Date: 3-2014

	Max Opacity	5 Seconds	10 seconds
Vehicle 1	0	0	0

Clock Time Max Opacity: 0933
Vehicle Description: SEMI TRACTOR TRAILER ROAD DRY

	Max Opacity	5 Seconds	10 seconds
Vehicle 2	0	0	0

Clock Time Max Opacity: 0937
Vehicle Description: VACUUM TRUCK ROAD WET - ROAD SWEEPER PASSED.

	Max Opacity	5 Seconds	10 seconds
Vehicle 3	0	0	0

Clock Time Max Opacity: 0943
Vehicle Description: SEMI TRACTOR TRAILER ROAD DRY

	Max Opacity	5 Seconds	10 seconds
Vehicle 4	0	0	0

Clock Time Max Opacity: 0946
Vehicle Description: SEMI TRACTOR TRAILER ROAD DRY

Average of 12 Readings: 0.0

Comments / Notes:

MOSTARDI PLATT

Visible Emissions Record Form

Date 5/23/14

Site Horsehead (Chicago Plant)

2701 East 114th Street

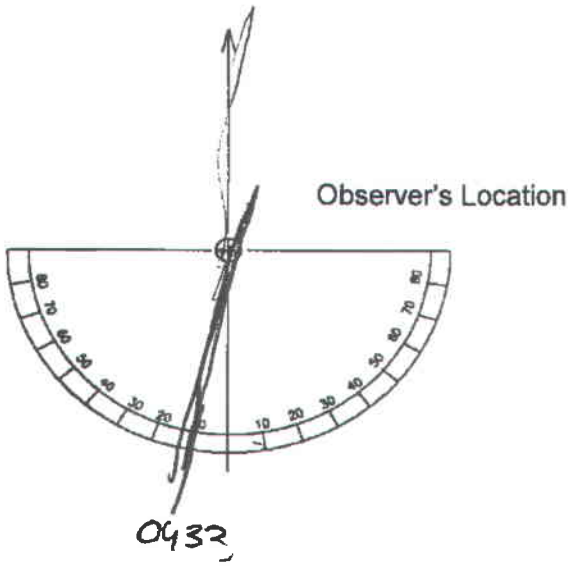
Chicago, IL 60617

USEPA Method 9

Compass Heading

W

Emission Source



Observer: CHRIS TRZNA

Comments:

Note:

1. Sun Position 10°
2. Wind Direction NE
3. Wind Speed 0-10 mph
4. Plume Type FUGITIVE
5. Operating Level NORMAL

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form
Paved and Unpaved Roadways

"//"

Sheet: 2 of _____
Date: 5-23-14
Observer: Nicky Silvestri

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Section 212.109 Measurement Methods for Opacity

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Roadway Surface: Paved ☐ Unpaved ☒
Road Condition: Wet ☐ Dry ☐

Measurement Point Perpindicular to Road
Yes ☐
No ☐
If No Comment: _____

Distance From Roadway: _____
Location Description: Truck road

Emission Color: Brown
Background: White truck cab

Sky Concition: Clear sky
Sun Position: 55° SE
Temperature: 60 °F
Wind Direction: E at 0-10 mph
Reading Conditions: Good

Signature: [signature]

Certification Date: 3-26-14

	Max Opacity	5 Seconds	10 seconds
Vehicle 1	5	0	0

Clock Time Max Opacity: 9:56
Vehicle Description: front end loader

	Max Opacity	5 Seconds	10 seconds
Vehicle 2	5	0	0

Clock Time Max Opacity: 9:57
Vehicle Description: front end loader

	Max Opacity	5 Seconds	10 seconds
Vehicle 3	0	0	0

Clock Time Max Opacity: 9:59
Vehicle Description: front end loader

	Max Opacity	5 Seconds	10 seconds
Vehicle 4	5	0	0

Clock Time Max Opacity: 10:00
Vehicle Description: front end loader

Average of 12 Readings: 1.25%

Comments / Notes:

MOSTARDI PLATT

Visible Emissions Record Form

Date 5/23/14

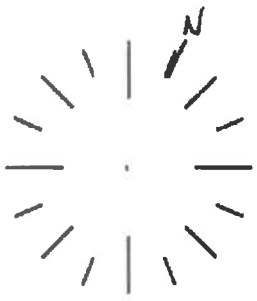
Site Horsehead (Chicago Plant)

2701 East 114th Street

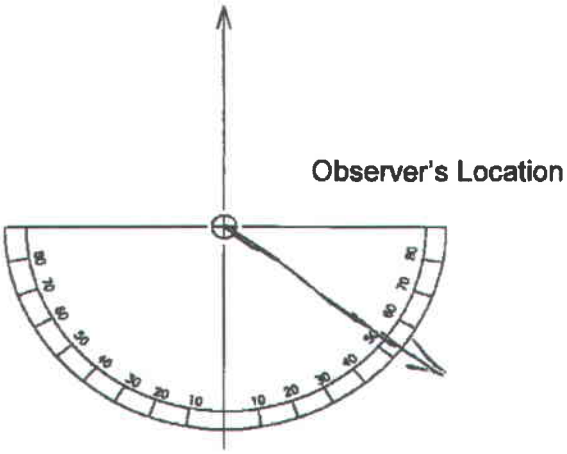
Chicago, IL 60617

USEPA Method 9

Compass Heading



Emission Source



Observer: Nicky Silvestri

Comments: _____

Note:

1. Sun Position SE
2. Wind Direction E
3. Wind Speed 0-10 mph
4. Plume Type Fugitive
5. Operating Level Normal

EPA Reference Method 9

MOSTARDI PLATT

Visible Emissions Observation Record Form
Paved and Unpaved Roadways

"12"

Sheet: 1 of _____
Date: 5-23-14
Observer: CHRIS TROZAK

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617

Section 212.109 Measurement Methods for Opacity

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Roadway Surface: Paved ☐ Unpaved ☐
Road Condition: Wet ☐ Dry ☑

Measurement Point Perpindicular to Road
Yes ☑
No ☐
If No Comment: _____

Distance From Roadway: 15'
Location Description: 8 TRACK ROAD

Emission Color: BROWN
Background: WHITE TRAIN CAR

Sky Condition: CLEAR / SUNNY
Sun Position: SEE CHART
Temperature: 60-65 °F
Wind Direction: NE at 0-10 mph
Reading Conditions: GOOD

Signature: [signature]

Certification Date: MARCH 2014

	Max Opacity	5 Seconds	10 seconds
Vehicle 1	5	0	0

Clock Time Max Opacity: 0956
Vehicle Description: FRONT END LOADER DEN ROAD

	Max Opacity	5 Seconds	10 seconds
Vehicle 2	5	0	0

Clock Time Max Opacity: 0957
Vehicle Description: FRONT END LOADER

	Max Opacity	5 Seconds	10 seconds
Vehicle 3	0	0	0

Clock Time Max Opacity: 0957
Vehicle Description: FRONT END LOADER

	Max Opacity	5 Seconds	10 seconds
Vehicle 4	5	0	6

Clock Time Max Opacity: 1000
Vehicle Description: FRONT END LOADER

Average of 12 Readings: 1.25%

Comments / Notes:

MOSTARDI PLATT

Visible Emissions Record Form

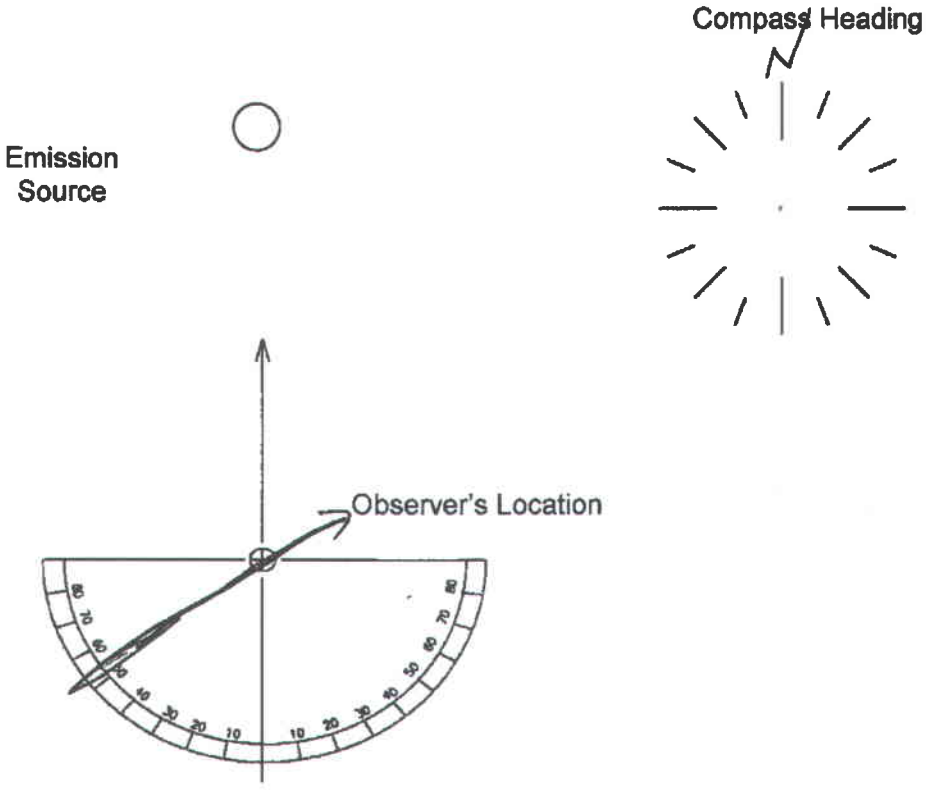
Date 5/23/15

Site Horsehead (Chicago Plant)

2701 East 114th Street

Chicago, IL 60617

USEPA Method 9



Observer: CHRIS TREZAK

Comments: _____

Note:
1. Sun Position 55°
2. Wind Direction NE
3. Wind Speed 0–10
4. Plume Type FUGITIVE
5. Operating Level NORMAL

EPA Reference Method 9

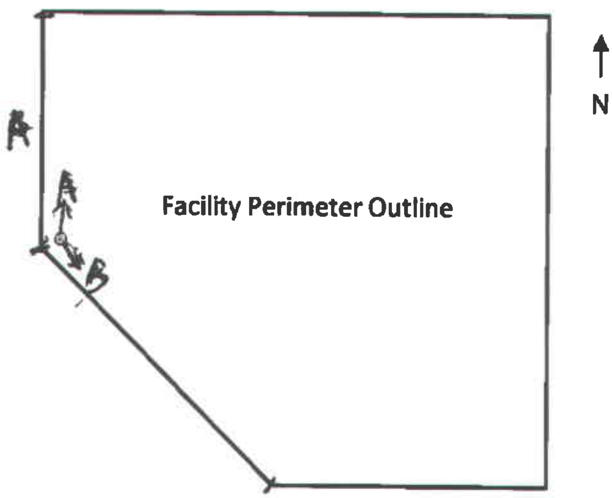
MOSTARDI PLATT

Visible Emissions Observation Record Form
Method 22 Property Lines

13A

Sheet: 1 of ____
Date: 5-23-14
Observer: Nicky Silvestri

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617



Observation Point Comments: West property line facing N
Map location A

Emission Color:
Background:
Sky Condition: Clear
Sun Position:
Temperature: 60 °F
Wind Direction: ____ at ____ mph
Reading Conditions: Good

Operating Conditions: Normal

Signature: [signature]

Certification Date: 3-26-14

Location Code	Clock Time	Observation Period Total Duration, Min:Sec	Accumulated Emission Time, Min:Sec
A	11:35	10:00	00:00

Comments / Notes:

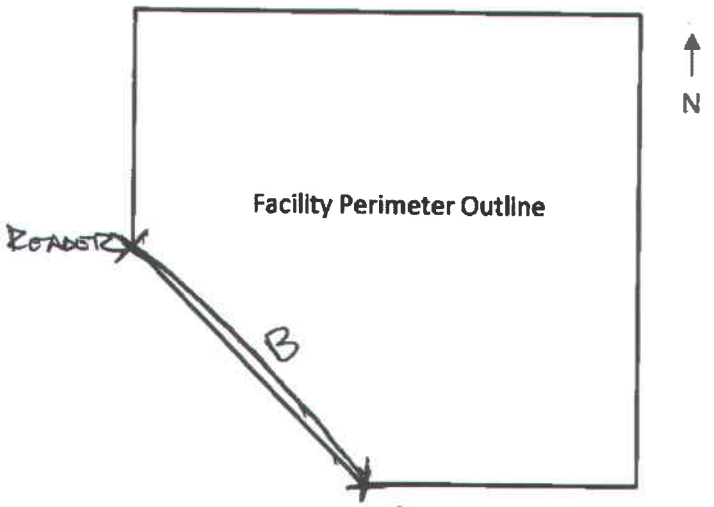
MOSTARDI PLATT

Visible Emissions Observation Record Form
Method 22 Property Lines

13B

Sheet: 1 of
Date: 5-23-14
Observer: CHRIS TRZAK

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617



Observation Point Comments: LOOKING SOUTHEAST

Emission Color: AS NOTED
Background: SKY
Sky Condition: CLEAR SUNNY
Sun Position: SEE CHART
Temperature: 60-65 °F
Wind Direction: NW at 5-10 mph
Reading Conditions: GOOD

Operating Conditions: N/A

Signature: [signature]
MQ
Certification Date: 03-2014

Location Code	Clock Time	Observation Period Total Duration, Min:Sec	Accumulated Emission Time, Min:Sec
B	1135-1145	10MIN 0SEC	0:00

Comments / Notes:

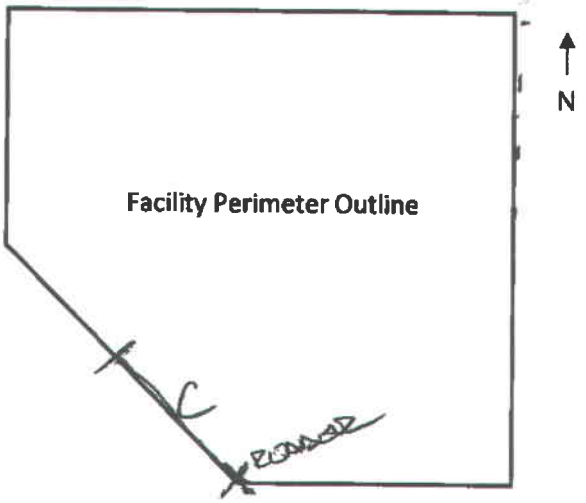
MOSTARDI PLATT

Visible Emissions Observation Record Form
Method 22 Property Lines

13C

Sheet: 1 of
Date: 5-23-13
Observer: CHRIS TROZAK

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617



Observation Point Comments: LOOKING NORTHWEST

Emission Color: AS NOTED
Background: SKY
Sky Condition: CLEAR/SUNNY
Sun Position: N/A
Temperature: 60-65 °F
Wind Direction: NE at 0-10 mph
Reading Conditions: GOOD

Operating Conditions: N/A

Signature:

Certification Date: 3-14

Location Code	Clock Time	Observation Period Total Duration, Min:Sec	Accumulated Emission Time, Min:Sec
C	1154-1204	10 MIN 0 SEC	0:00

Comments / Notes:

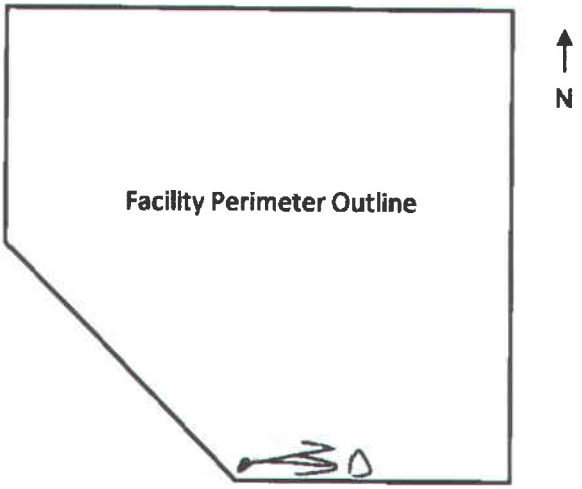
MOSTARDI PLATT

Visible Emissions Observation Record Form
Method 22 Property Lines

13D

Sheet: 2 of _____
Date: 5-23-14
Observer: Nick, Silvestri

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617



Observation Point Comments:	Location Code	Clock Time	Observation Period Total Duration, Min:Sec	Accumulated Emission Time, Min:Sec
5~~0~~ property line Facing East	D	11:54	10:00	00:00
Emission Color: NA				
Background: Cargill silos + Clear Sky				
Sky Condition: Clear				
Sun Position:				
Temperature: 60° °F				
Wind Direction: NE at ____ mph				
Reading Conditions: Good				
Operating Conditions: Normal				
Signature: NV				
Certification Date: 3-26-14				

Comments / Notes:

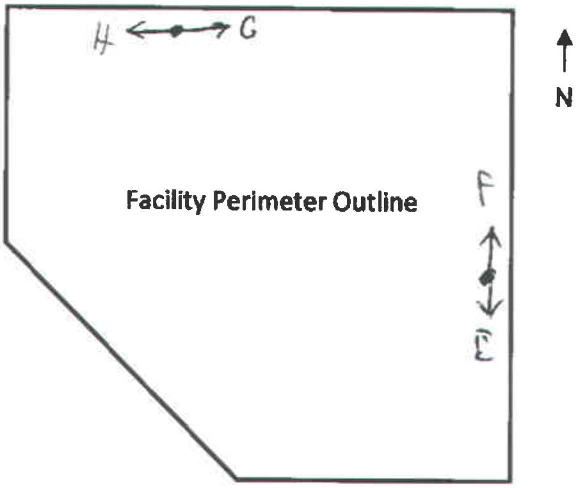
MOSTARDI PLATT

Visible Emissions Observation Record Form
Method 22 Property Lines

13E

Sheet: 3 of ____
Date: 5-23-14
Observer: Nicky Sjuegen

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617



Observation Point Comments: South half of East Property line Location E

Emission Color: NA
Background: Cargill silos, trees, sky
Sky Condition: Clear sky
Sun Position:
Temperature: 68 °F
Wind Direction: NE at 0-10 mph
Reading Conditions: Good

Operating Conditions: Normal

Signature: [signature]

Certification Date: 3-26-14

Location Code	Clock Time	Observation Period Total Duration, Min:Sec	Accumulated Emission Time, Min:Sec
E	12:08	10:00	00:00

Comments / Notes:

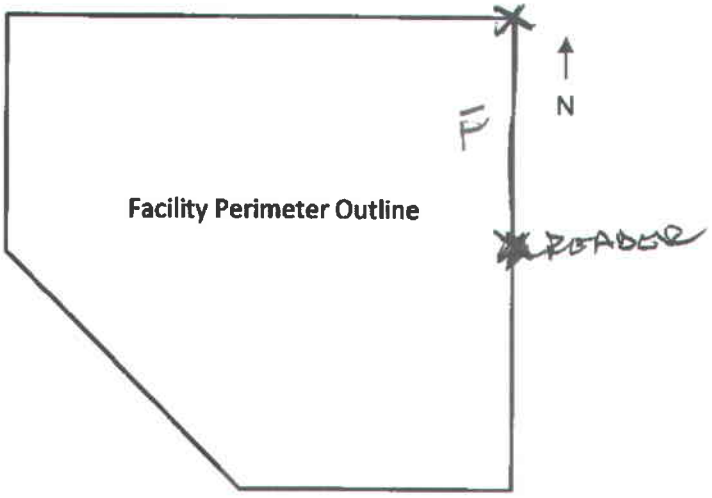
MOSTARDI PLATT

Visible Emissions Observation Record Form
Method 22 Property Lines

13F

Sheet: 1 of ____
Date: 5-22-14
Observer: CHRIS TROZAK

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617



Observation Point Comments:	Location Code	Clock Time	Observation Period Total Duration, Min:Sec	Accumulated Emission Time, Min:Sec
LOOKING NORTH	F	1205-1215	10 min 0 sec	0:00

Emission Color: AS NOTED
Background: SKY
Sky Condition: SUNNY/CLEAR
Sun Position: N/A
Temperature: 60-65 °F
Wind Direction: NE at 0-10 mph
Reading Conditions: GOOD

Operating Conditions: N/A

Signature: [signature]
Certification Date: 3-14

Comments / Notes:

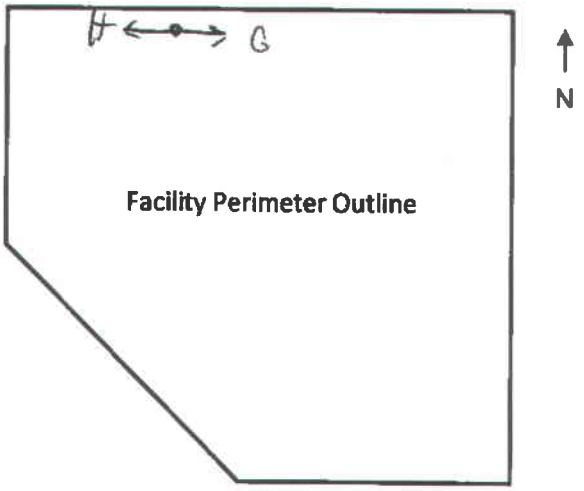
MOSTARDI PLATT

Visible Emissions Observation Record Form
Method 22 Property Lines

13 G

Sheet: 4 of _____
Date: 5-23-14
Observer: Nicky Silvestri

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617



Observation Point Comments: North property line looking East Location G

Emission Color: NA
Background: Sky + Silos
Sky Condition: Clear
Sun Position: _____
Temperature: 65 °F
Wind Direction: NE at 0-10 mph
Reading Conditions: Good

Operating Conditions: Normal

Signature: [signature]

Certification Date: 3-26-14

Location Code	Clock Time	Observation Period Total Duration, Min:Sec	Accumulated Emission Time, Min:Sec
G	12:26	15:00	00:00

Comments / Notes:

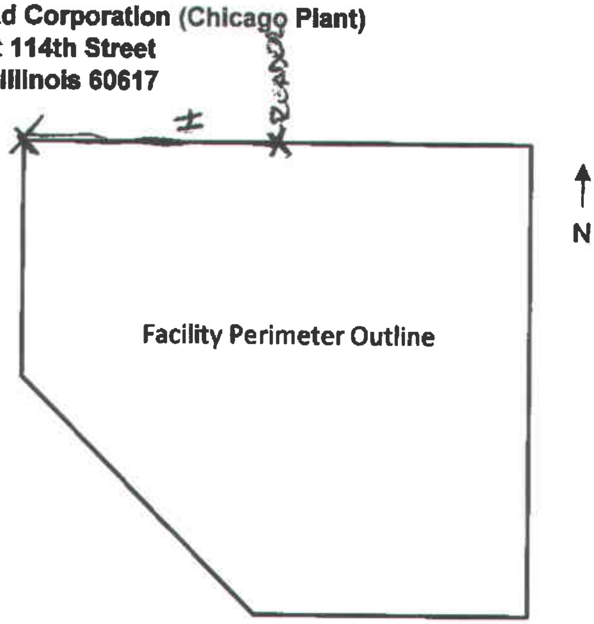
MOSTARDI PLATT

Visible Emissions Observation Record Form
Method 22 Property Lines

13H

Sheet: 1 of ____
Date: 5-23-14
Observer: CHRIS TROZAK

Facility Location:
Horsehead Corporation (Chicago Plant)
2701 East 114th Street
Chicago, Illinois 60617



Observation Point Comments:	Location Code	Clock Time	Observation Period Total Duration, Min:Sec	Accumulated Emission Time, Min:Sec
LOOKING WEST	A	1226-1236	10 MIN 0 SEC	0:00

Emission Color: AS NOTED
Background: SKY
Sky Condition: CLEAR / SUNNY
Sun Position: N/A
Temperature: 60-65 °F
Wind Direction: NE at 0-10 mph
Reading Conditions: GOOD

Operating Conditions: N/A

Signature: [signature]

Certification Date: 3-2014

Comments / Notes:

APPENDIX C

HORSEHEAD TEST PHOTOS – May 23, 2014

Informational Purposes Only

Test 1A – Barge Loading Front End Loader Operation

Test 1B – Barge Loading Covered Conveyor System

Test 2 – IRM Storage Pile (Loc 16)

Test 3 – IRM Pile Loc 17

Test 4 – IRM Pile Loc 18

Test 5 – West Coke Pile

Test 6 – Coke Reclaim Pile

Test 7 – Off Spec Coke Pile (to be removed)

Test 8 – Unpaved Roadway

Test 9 – Paved Roadway

Test 10 – Paved Roadway

Test 11 – Unpaved Roadway

Test 12 – 114th Street Unpaved Portion (Photo Not Available of Traffic)

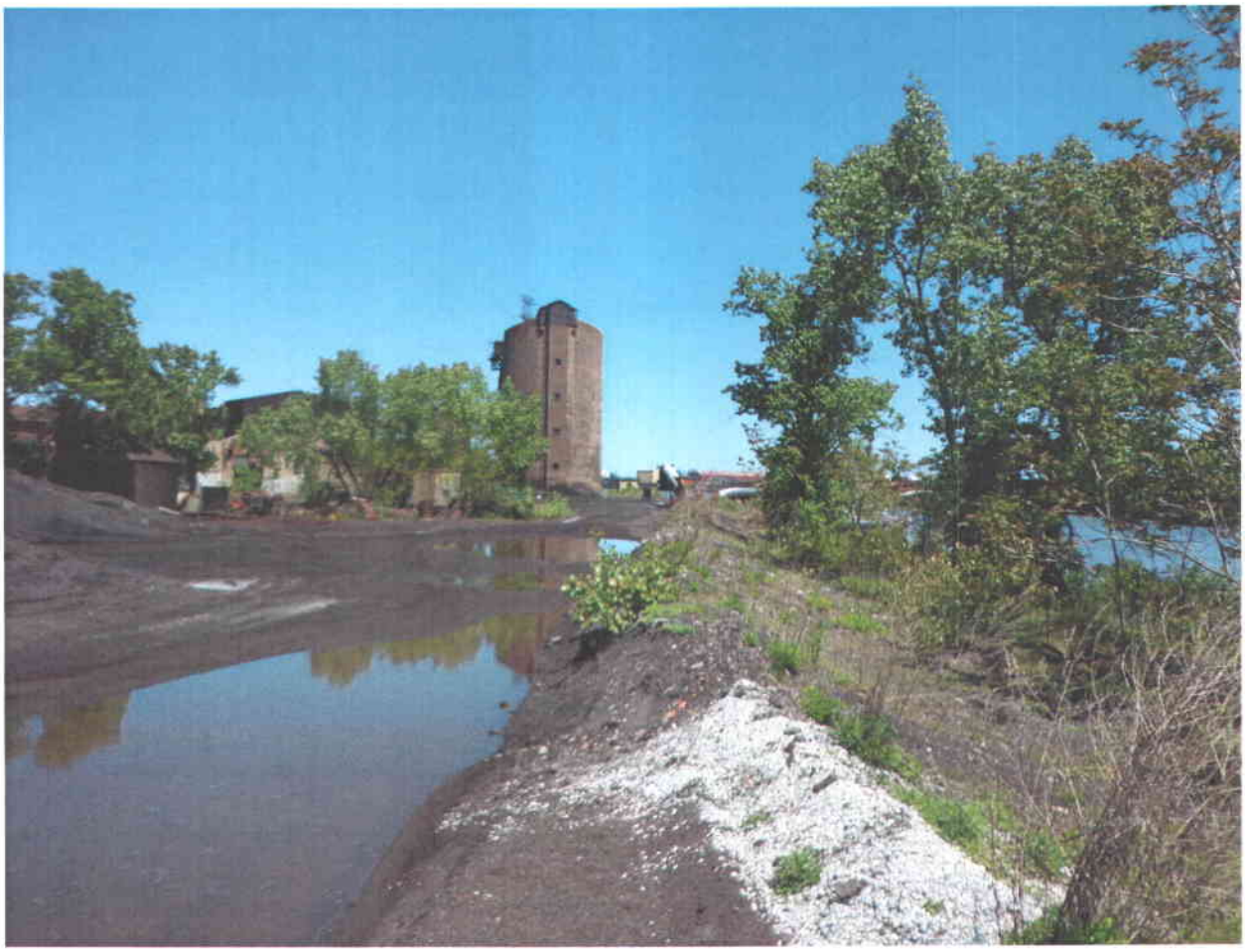
Test 13 – Property Line Segment A (Example Reading Location)

Test 13 – Property Line Segment B (Example Reading Location)

Test 13 – Property Line Segment C (Example Reading Location)

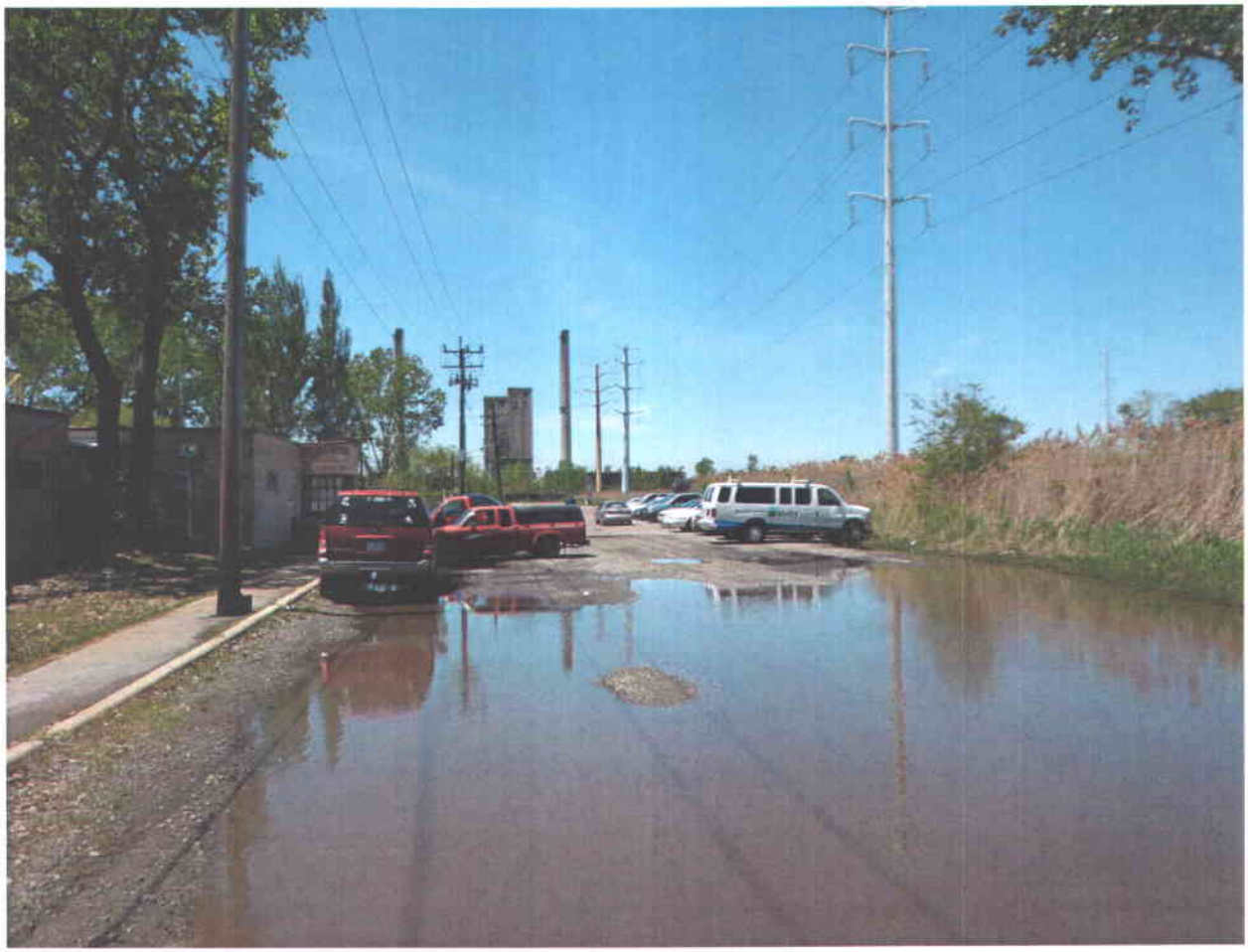
Test 13 – Property Line Segment D (Example Reading Location)

Test 13 – Property Line Segment E (Example Reading Location)



Test 13 – Property Line Segment F (Example Reading Location)

Test 13 – Property Line Segment G (Example Reading Location)



Test 13 – Property Line Segment H (Example Reading Location)
114th Street Far East Section – City Street

APPENDIX D

Meteorological Data

orsehead Chicago Site
P Project Number: M141714

National Weather Services - Chicago/Midway Hourly Weather Observation

Date	Time	Wind			Visibility (miles)	Weather	Sky Cond.	Temperature (°F)				Relative Humidity	Wind Chill	Heat Index	Pressure		Precipitation (in.)		
		Direction	Speed (mph)	Gust (mph)				Air	Dwpt	6 hour Max.	6 hour Min.				altimeter (in.)	sea level (mb)	1 hr	3 hr	6 hr
5/23/2014	13:51	NE	10	17	10	Partly Cloudy	FEW050 SCT300	66	46			49%	NA	NA	30.21	1022.9			
5/23/2014	12:51	NE	10		10	A Few Clouds	FEW048 FEW300	66	46	67	57	49%	NA	NA	30.22	1023.1			
5/23/2014	11:51	NE	13		10	Partly Cloudy	FEW043 SCT300	65	47			52%	NA	NA	30.22	1023			
5/23/2014	10:51	NE	10		10	A Few Clouds	FEW038 FEW300	64	47			54%	NA	NA	30.21	1022.9			
5/23/2014	9:51	Vrbl	7		10	Partly Cloudy	SCT300	64	47			54%	NA	NA	30.21	1022.8			
5/23/2014	8:51	E	6		10	Partly Cloudy	SCT300	62	48			60%	NA	NA	30.2	1022.4			
5/23/2014	7:51	Calm			10	Partly Cloudy	SCT300	60	48			65%	NA	NA	30.19	1021.9			
5/23/2014	6:51	Calm			10	Partly Cloudy	SCT300	57	47	57	53	69%	NA	NA	30.17	1021.4			
5/23/2014	5:51	Calm			10	Partly Cloudy	SCT300	54	48			80%	NA	NA	30.16	1021.3			
5/23/2014	4:51	NE			10	Partly Cloudy	SCT300	55	48			77%	NA	NA	30.14	1020.8			
5/23/2014	3:51	NE			10	Mostly Cloudy	BKN300	55	47			74%	NA	NA	30.14	1020.3			
5/23/2014	2:51	NW			10	Mostly Cloudy	BKN300	54	47			77%	NA	NA	30.13	1020			
5/23/2014	1:51	Calm			10	A Few Clouds	FEW065	54	47			77%	NA	NA	30.12	1019.7			
5/23/2014	0:51	Calm			10	A Few Clouds	FEW065	54	46	61	54	75%	NA	NA	30.12	1019.9			

SKY CONDITION: Cloud amount and height: CLR (no clouds detected below 12000 feet); FEW (few); SCT (scattered); BKN (broken); OVC (overcast); followed by 3-digit height in hundreds of feet; or vertical visibility (VV) followed by height for indefinite ceiling, e.g. BKN015 -(broken cloud coverage at 1500 feet).

BKN - Broken CLR - Clear FEW - Few OVC - Overcast SCT - Scatter

orsehead Chicago Site
P Project Number: M141714

National Weather Services - Chicago/Lansing Municipal Airport Weather Observation

Date	Time	Wind			Visibility (miles)	Weather	Sky Cond.	Temperature (°F)				Relative Humidity	Wind Chill	Heat Index	Pressure		Precipitation (in.)		
		Direction	Speed (mph)	Gust (mph)				Air	Dwpt	6 hour Max.	6 hour Min.				altimeter (in.)	sea level (mb)	1 hr	3 hr	6 hr
5/23/2014	14:35	NE	10	17	10	Fair	CLR	63	44			52%	NA	NA	30.21	NA			
5/23/2014	14:15	NE	12		10	Fair	CLR	63	45			51%	NA	NA	30.21	NA			
5/23/2014	13:55	NE	9		10	Fair	CLR	63	45			53%	NA	NA	30.22	NA			
5/23/2014	13:35	NE	13	16	10	Fair	CLR	63	46			54%	NA	NA	30.22	NA			
5/23/2014	13:15	NE	13		10	Fair	CLR	63	46			53%	NA	NA	30.22	NA			
5/23/2014	12:55	NE	12		10	Fair	CLR	64	47	64	53	55%	NA	NA	30.22	NA			
5/23/2014	12:35	NE	10		10	Fair	CLR	63	47			56%	NA	NA	30.22	NA			
5/23/2014	12:15	NE	7		10	Fair	CLR	63	48			59%	NA	NA	30.22	NA			
5/23/2014	11:55	N	5		10	Fair	CLR	62	46			56%	NA	NA	30.23	NA			
5/23/2014	11:35	N	9		10	Fair	CLR	62	47			57%	NA	NA	30.22	NA			
5/23/2014	11:15	N	9		10	Fair	CLR	62	46			57%	NA	NA	30.22	NA			
5/23/2014	10:55	NE	8		10	Fair	CLR	61	47			59%	NA	NA	30.22	NA			
5/23/2014	10:35	NE	10		10	Fair	CLR	62	48			59%	NA	NA	30.21	NA			
5/23/2014	10:15	NE	7		10	Fair	CLR	62	46			57%	NA	NA	30.21	NA			
5/23/2014	9:55	NE	6		10	Fair	CLR	62	48			60%	NA	NA	30.21	NA			
5/23/2014	9:35	N	6		10	Fair	CLR	61	48			62%	NA	NA	30.2	NA			
5/23/2014	9:15	NE	5		10	Fair	CLR	61	48			63%	NA	NA	30.2	NA			
5/23/2014	8:55	NE	6		10	Fair	CLR	61	48			64%	NA	NA	30.2	NA			
5/23/2014	8:35	N 7	7		10	Fair	CLR	59	46			63%	NA	NA	30.2	NA			
5/23/2014	8:15	Calm			10	Fair	CLR	58	46			64%	NA	NA	30.2	NA			
5/23/2014	7:55	NE	5		10	Fair	CLR	57	47			67%	NA	NA	30.19	NA			
5/23/2014	7:35	N 5	5		10	Fair	CLR	56	46			70%	NA	NA	30.19	NA			
5/23/2014	7:15	NE	5		10	Fair	CLR	55	46			73%	NA	NA	30.18	NA			
5/23/2014	6:55	Calm			10	Fair	CLR	53	46	53	48	78%	NA	NA	30.17	NA			
5/23/2014	6:35	Calm			10	Fair	CLR	52	46			79%	NA	NA	30.17	NA			
5/23/2014	6:15	Calm			10	Fair	CLR	51	46			82%	NA	NA	30.18	NA			
5/23/2014	5:55	NE	3		10	Fair	CLR	50	46			85%	NA	NA	30.16	NA			
5/23/2014	5:35	NE	5		10	Fair	CLR	49	46			86%	47	NA	30.15	NA			
5/23/2014	5:15	NE	5		10	Fair	CLR	50	46			87%	48	NA	30.16	NA			
5/23/2014	4:55	NE	3		10	Fair	CLR	49	47			90%	NA	NA	30.14	NA			
5/23/2014	4:35	Calm			10	Fair	CLR	49	46			92%	NA	NA	30.15	NA			
5/23/2014	4:15	Calm			10	Fair	CLR	48	45			90%	NA	NA	30.15	NA			
5/23/2014	3:55	Calm			10	Fair	CLR	49	46			89%	NA	NA	30.14	NA			
5/23/2014	3:35	Calm			10	Fair	CLR	49	46			90%	NA	NA	30.14	NA			
5/23/2014	3:15	Calm			10	Fair	CLR	49	46			90%	NA	NA	30.13	NA			
5/23/2014	2:55	Calm			10	Fair	CLR	49	46			89%	NA	NA	30.13	NA			
5/23/2014	2:35	Calm			10	Fair	CLR	49	46			89%	NA	NA	30.13	NA			
5/23/2014	2:15	Calm			10	Fair	CLR	49	46			90%	NA	NA	30.13	NA			
5/23/2014	1:55	Calm			10	Fair	CLR	50	47			89%	NA	NA	30.13	NA			

lorsehead Chicago Site
IP Project Number: M141714

National Weather Services - Chicago/Lansing Municipal Airport Weather Observation

Date	Time	Wind			Visibility (miles)	Weather	Sky Cond.	Temperature (°F)				Relative Humidity	Wind Chill	Heat Index	Pressure		Precipitation (in.)		
		Direction	Speed (mph)	Gust (mph)				Air	Dwpt	6 hour Max.	6 hour Min.				altimeter (in.)	sea level (mb)	1 hr	3 hr	6 hr
5/23/2014	1:35	Calm			10	Fair	CLR	50	47			90%	NA	NA	30.13	NA			
5/23/2014	1:15	Calm			10	Fair	CLR	50	47			89%	NA	NA	30.13	NA			
5/23/2014	0:55	Calm			10	Fair	CLR	51	47	59	49	89%	NA	NA	30.13	NA			
5/23/2014	0:35	Calm			10	Fair	CLR	51	47			88%	NA	NA	30.13	NA			
5/23/2014	0:15	Calm			10	Fair	CLR	49	46			90%	NA	NA	30.13	NA			

SKY CONDITION: Cloud amount and height: CLR (no clouds detected below 12000 feet); FEW (few); SCT (scattered); BKN (broken); OVC (overcast); followed by 3-digit height in hundreds of feet; or vertical visibility (VV) followed by height for indefinite ceiling, e.g. BKN015 -(broken cloud coverage at 1500 feet).

BKN - Broken CLR - Clear FEW - Few OVC - Overcast SCT - Scatter

Horsehead Corporation

Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials

EXHIBIT P

JULY 8, 1997 ILLINOIS EPA LETTER APPROVING THE TERMINATION OF AMBIENT AIR MONITORING HORSEHEAD CHICAGO PLANT

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

July 8, 1997

Mr. John Cigan
Director, Technical Services
Horsehead Resource Development
Company, Inc.
4th Street and Franklin Avenue
Palmerton, PA 18701

bc: J.M.Cigan-File(Permits)
R.Krablin
G.T.Mahler
J.A.Marta
W.A.Smelas

re: Horsehead Resource Recovery Company
Facility ID. No. 031651AFV
Permit Nos. 8512055 and 91020081
Ambient Air Monitoring Program

Dear Mr. Cigan:

The purpose of this letter is to provide the Illinois Environmental Protection Agency's formal approval for the termination of the requirement for ambient air monitoring as prescribed in the above referenced permits effective July 1, 1997.

The submittal of air monitoring results for the period of April 1- June 30, 1997, will serve as the final report for the monitoring program. If you have any questions or further requirements in this matter, please feel free to contact me directly at (217)782-7438.

Sincerely,

Terry A. Sweitzer, P.E.
Manager, Air Monitoring Section

cc: Donald Sutton
Air Permits Section