Dane G.

NORTH AMERICA
STEVEDORING COMPANY, LLC

June 11, 2014 Via Courier

Bechara Choucair, M.D., Commissioner
Department of Health, City of Chicago
333 S. State Street, Room 200
Chicago, IL 60604

Re: **Variance Application**
Fugitive Dust Plan
Bulk Material Storage Rules and Regulations
North American Stevedoring Company, LLC (NASCO)
9301 South Kreiter Avenue, Chicago, IL 60617

Dear Commissioner Choucair,

Enclosed is the Fugitive Dust Plan for North American Stevedoring Company, LLC's (NASCO) Iroquois Landing Marine Terminal located at 9301 South Kreiter Avenue in Chicago, Illinois. The Fugitive Dust plan was prepared in accordance with the City of Chicago Department of Public Health (CDPH) Article II – Air Pollution Control Rules and Regulations For Control of Emissions from the Handling and Storage of Bulk Material Piles dated March 13, 2014 (CDPH Regulations). Also included is a request for a variance from certain CDPH Regulations in accordance with the provisions set forth in Part E(8.0)(2) of the CDPH Regulations.

The Facility no longer handles certain Bulk Solid Materials (BSM), including petroleum coke, metallurgical coke, synthetic gypsum, and coke breeze. Materials which will continue to be handled at the Facility include salt, steel products, lumber, fluorspar, zinc, aluminum, blast furnace iron, ferromanganese, ballast rock, and break wall stone. The aluminum, lumber, zinc,

steel products, ballast rock, and the break wall stone do not generate particulate dust matter and do not meet the definition of BSM in Part A(2.0)(3) of the CDPH Regulations. Salt is specifically excluded from the definition of a BSM. Blast furnace iron (pig iron) does not meet the definition of a BSM because residues are too dense to become airborne or be scattered by the wind. Additional information regarding pig iron is presented in Exhibit A.

Materials handled at the Facility which meet the BSM definition are ferromanganese and fluorspar. These are managed within enclosures, as described in Exhibit B and the Fugitive Dust Plan. The Fugitive Dust Plan describes the location and area potentially affected by the BSM facility.

NASCO is requesting variances be permanently granted for the CDPH Regulations set forth in Parts B, D, and E of the CDPH Regulations in accordance with the provisions set forth in Part E(8.0)(2) of the CDPH Regulations. The regulations from which NASCO requests variances are discussed below. Descriptions are provided of the activities for which variances are requested.

(1) Part B (3.0)(4)-Fugitive Dust Monitoring

The applicant requests a variance from the requirement for installation and maintenance of permanent fugitive dust monitors. Facility operations do not result in off-site fugitive dust emissions. There have never been any complaints regarding visible emissions from facility operations. Based on historic quantities handled and published emission factors, PM_{10} emissions from BSM handling operations are negligible and insufficient to generate opacity greater than ten percent or fugitive dust visible beyond the property line of the facility [3.0(2)].

Materials handled at the Facility which meet the BSM definition include ferromanganese and fluorspar. These materials are dense with particles that settle quickly, within the vicinity of a transfer operation, and do not become windborne. The facility is within an industrial region,

located on property leased to NASCO by the Illinois Port District. No residential properties are located within a half mile of the Facility.

Fugitive dust monitoring is intended to detect pollutant concentrations elevated over background levels that can be credited to source emissions. At this location, establishing a reliable background level will be impractical because of a neighboring major source of fugitive dust. Immediately to the east of the facility is an active United States Army Corps of Engineers Confined Disposal Facility (CDF) – a disposal operation for dredged spoils - that operates without controls on particulate emissions. While dredged material may be expected to contain hazardous constituents, it qualifies for an exclusion from regulation as a hazardous waste under 40 CFR 261.4(g). Hazardous constituents in area sediments have included metals, oils, polynuclear aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), and ammonia. At least some of these constituents may migrate with fugitive dust.

Applying the published particulate matter (PM_{10}) emission factor for non-residential construction of 0.19 tons/acre-month [MRI, 1996], 40 acres of this uncontrolled operation can generate 100 tons per year of particulate emissions, making it a major air pollution source. Actual emissions from this CDF amount to several hundred times actual emissions from the BSM facility. Area background levels will be elevated by this neighboring source to levels well above normal background. It will be impossible for fugitive dust monitors to detect incremental fugitive dust emissions with such a large background source of fugitive dust immediately next door.

As described in the Fugitive Dust Plan, facility operations will achieve ordinance goals by implementing best management practices to ensure that under no condition does opacity exceed ten percent, nor will fugitive dust be visible beyond the property line of the facility [3.0(2)].

The regulation requiring monitoring imposes an unreasonable hardship, including excessive cost and resource commitment. At this location, the presence of a large neighboring source of fugitive dust makes a requirement for monitoring impractical. Application of best management practices is a more reasonable approach where bulk solid materials are not stored outside, and there are no receptors. Implementation of the Fugitive Dust Plan will assure the goals of the BSM regulations are met.

(2) Part B (3.0)(5)-Wind Monitoring

The applicant requests a variance from the requirement for the facility to operate a permanent device to monitor wind speed and direction. Information from such a device is useful in event the facility maintained large piles of BSM and installed PM_{10} monitors. The facility unloads BSM at the dock and temporarily stages them (for less than 24 hours) in piles along the dock before transferring them to enclosures. The facility has on-line access to wind speed and direction information from Midway Airport and the Chicago Water Intake Crib.

(3) Part B (3.0)(7) - Transfer Points

The applicant requests a variance from the Transport Point requirement [3.0(7)(d)] to transfer only Moist Material [2.0(15)] with moisture content of at least three percent by weight. At least one customer requests fluorspar be shipped with a moisture content of 2.5percent by weight. Fluorspar may be dried to 2.5percent moisture prior to loading into railcars. The drying operation includes a dust collection system designed and operated to contain fines and combine them with the shipped aggregate.

The Fugitive Dust Plan describes best management practices to maintain compliance with the opacity limit of ten percent and no fugitive dust visible beyond the property line of the facility [3.0(2)]. Loading is conducted using closed conveyors and in a manner that minimizes the exposed drop and that minimizes drop distances. Particulate emissions (PM_{10}) from transfer of fluorspar have been estimated using quantities and emission factors calculated using AP-42 (Exhibit B). Calculated emissions are negligible and insufficient to generate opacity greater than ten percent or fugitive dust visible beyond the property line of the facility [3.0(2)].

(4) Part B (3.0(8)(d) - Transport

The applicant requests a variance from Transport requirement [3.0(8)(d)] for wheel wash and rumble strips that will shake off loose material and dust. Under the Fugitive Dust Plan equivalent best management practices are documented including inspection at the scale house and security exit gate. BSM are valuable products owned by third parties and are not managed in a manner that allows loss or leakage. Dry materials do not have a propensity to agglomerate on vehicles or tires. The Plan describes procedures, and inspections are implemented to ensure trucks will not cause track out of bulk solid materials to public streets.

(5) Part B (8.0)(2) Additional Requirements of the Variance Application

This section addresses additional requirements of the variance application under Paragraph B, Item 2, c) through i).

c) The quantity and types of materials subject to variance are described in the Fugitive Dust Plan and in Exhibits A and B.

d) This variance request demonstrates that source BSM activities create negligible emissions that are insufficient to generate opacity greater than 10% or fugitive dust visible beyond the property line of the facility. [3.0(2)]. The facility is also remote from receptors in residential areas. On this basis, issuing the variances cannot create a public nuisance or adversely impact the surrounding area, environment or property uses.

e)(i) The regulation requiring monitoring imposes an unreasonable hardship in excessive cost and resource commitment. Monitoring is inappropriate where BSM is not maintained outdoors and cannot generate emissions visible at the property line or fugitive dust above background levels. Application of best management practices is a prudent approach where bulk solid materials are not stored outside, and there are no receptors. At this location, the presence of a neighboring large source of fugitive dust also makes a requirement for particulate monitoring unreasonable.

e)(ii) This variance application does not claim timeframe constraints such as permitting delays or force majeure.

e)(iii) Proposed alternative measures are preferable because they accomplish the objectives of the ordinance, including assurance that there are no impacts to human health or the environment. They eliminate unreasonable measures that could create a competitive disadvantage to a vital contributor of jobs and investment to the South side of Chicago, an area targeted by the City for economic renewal and reinvestment.

f) The Fugitive Dust Plan describes compliance and best management practices. The facility is conforming to this plan and is in compliance with the Ordinance, with the exception of those variances requested.

g) Alternate methods of compliance and factors influencing the choice of applying for a variance are described in herein, and in Exhibits A and B and the Fugitive Dust Plan.

h) The applicant is North American Stevedoring Company, LLC (NASCO) and their authorized representative since 4/1/2007 had been Mr. Stephen H. Mosher, Vice President.

i) Not applicable

Compliance Program

The Fugitive Dust Plan sets forth the compliance program, best management practices and demonstration that facility management of bulk storage materials will not adversely impact the surrounding area, environment or property uses. NASCO's variance application is limited to regulations under Parts B, D, or E. The facility no longer manages materials regulated under Part C. NASCO proposes reasonable conditions as set forth in the Fugitive Dust Plan. NASCO understands a variance issued by the Commissioner may be revoked if

> *"operation of the Facility is creating a public nuisance or otherwise adversely impacting the surrounding area, surrounding environment, or surrounding property uses."*

Change in Operations

NASCO commits to providing 30-day advance notification for any expansion or change in operations subject to a variance issued by the Commissioner.

We are now operating under the procedures described in the Fugitive Dust Plan. We removed the bulk solid materials gypsum and coke breeze, and now manage only two bulk solid materials

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at the Facility, fluorspar and ferromanganese. Materials are managed within enclosures or under procedures to minimize Fugitive Dust as set forth in the Plan.

Thank you for your attention to this matter. Please contact me if you have any questions or wish to have a Health Department representative visit the Facility.

Sincerely,

Steven H. Mosher, Vice President
NASCO

Enclosures: Exhibit A – Blast Furnace Iron
Exhibit B – Fugitive Dust Emissions
Fugitive Dust Plan

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Exhibit A - Blast Furnace Iron (BFI) – (Also Pig Iron, Cast Iron)

Handling of BFI or pig iron at the North American Stevedoring Company, LLC (NASCO) facility should not be regulated as a Bulk Solid Material (BSM) because it:

1) Is not susceptible to becoming windborne
2) Does not conform to the definition of Bulk Solid Material, and
3) Amounts managed are below de minimis amounts.
4) A variance will not create a public nuisance or adverse impacts

> *"Iron blast furnaces produce molten iron (pig iron) that can be cast (molded) into products; however, the majority of pig iron is used as the mineral feedstock for steel production. The modern blast furnace consists of a refractory-lined steel shaft in which a charge is continuously added to the top through a gas seal. The charge consists primarily of iron ore, sinter, or pellets; coke; and limestone or dolomite. Iron and steel scrap may be added in small amounts. Near the bottom of the furnace, preheated air is blown in. Coke is combusted in the furnace to produce carbon monoxide which reduces the iron ore to iron. Silica and alumina in the ore and coke ash are fluxed with limestone to form a slag that ab sorbs much of the sulfur from the charge. Molten iron and slag are intermittently tapped from the hearth at the bottom. The slag is drawn off and processed. The product, pig iron, is removed and typically cooled, then transported to a steel mill operation for further processing in either an electric arc furnace or a basic oxygen furnace."* (Reference 1)

BFI is comprised of iron (94percent) and carbon (five percent) with minor amounts of manganese, phosphorous, silicon, sulfur, and traces of other metals. In its molten state it can produce fumes and particulates; but at ambient conditions it is stable and does not generate significant dusts or particulate matter. Its specific gravity is 7.0. During storage and shipping,

oxides of iron (rust) form at its surface and these materials may slough or scale off the BFI during handling. Up to 0.5percent weight percent of iron oxide scale may form and separate from the BFI. Particle size of BFI iron oxide scale is above 30 micrometers, dense, and not mobilized by wind as particulate matter (PM_{10}). This material does not conform to the definition of fugitive dust: *"any solid particulate matter that becomes airborne"*. Trace particles which may become airborne, are too heavy to remain in suspension and cannot travel to the property line. United States Environmental Protection Agency (USEPA) (Reference 2) defines total suspended particulate (TSP) and suspended particulate (SP) as particulate matter with an aerodynamic diameter of 100 micrometers or less and no greater than 30 micrometers, respectively. For high volume PM samplers, a cut point of >30 micrometers is applied; larger particles are not monitored. USEPA reports that for a wind speed of ten miles per hour (mph), particles of 100 micrometers settle within 20-30 feet; and those of 30-100 micrometers will settle within a few hundred feet. This means the subject material cannot leave the property or cause adverse impacts.

1) Because of its physical properties, pig iron, and iron oxide scale from pig iron do not constitute "substances susceptible to being windborne" (Section 11-4-770).

2) Neither substance conforms to the definition of Bulk Solid Material (Reference 3). Neither substance is an ore, coke or coal. While each is a material that is "used as an ingredient in a manufacturing process"; neither "may become air borne or scattered by the wind". This is primarily due to its high specific gravity (7.0) and large particle size (>100 micron).

3) The iron oxide scale is incidental to handling but it is not a waste. The iron oxide scale is shipped separately to the customer and never accumulated at this facility in amounts approaching the de minimis volume of 25 cubic yards. For iron oxide scales this would

be about 150 tons; the maximum amount of iron oxide scale is expected to always remain under 100 tons.

Handling BFI will not create a public nuisance or adverse impacts. BFI is one of several metals handled at the facility with no history of complaints or visible emissions. No residential receptor is within a half mile of the unloading/loading areas. All adjacent property use is industrial and access to this facility is restricted under Homeland Security regulations.

References

(1) http://www.epa.gov/osw/nonhaz/industrial/special/mining/minedock/id/id4-iro.pdf
(2) AP-42 Chapter 13-2 Fugitive Dust Sources (1/95)
(3) http://www.cityofchicago.org/content/dam/city/depts/cdph/environmental_health_and_food/CoCRegulationsforBulkMaterialsSigned.pdf

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Exhibit B Particulate Emission Calculations for Fugitive Dust

Activity Description - Bulk solid materials (BSM) managed are the mineral aggregates fluorspar and ferromanganese. These materials arrive in bulk in ships and barges and are unloaded at the marine terminal. They are temporarily staged in piles along the dock and then transferred by front loader to areas within a building. Within the building, ferromanganese may be loaded into large shipping bags and fluorspar may be dried to 2.5percent moisture prior to bulk loading to railcars. Both bagging and drying operations have dust collectors designed and operated to contain fines within the units for transfer to packaging or for disposal. The only emission point is for the natural gas dryer exhaust. Specific gravity of fluorspar is 3.2 and of ferromanganese, 4.5. Bulk densities vary based on aggregate size and void spaces; for fluorspar, 2.5 tons per cubic yard; for ferromanganese, 3.5 tons per cubic yard.

Tons handled in the last two years were:

Bulk Material	2012	2013
Ferromanganese	34,027	44,051
Fluorspar	3,294	3,128

Ferromanganese normally arrives in 3000-ton deliveries by ship. Ninety-five percent of the ferromanganese ships out in bulk in dump trucks. Five percent ships out on flatbed trucks in super-sacks.

Fluorspar arrives in 1600-ton deliveries by barge. Seventy-five percent of the fluorspar ships out in bulk in enclosed railcars, 100 tons at a time. The remainder ships out in bulk in dump trucks.

Emission Factors - Fugitive dusts from material handling of bulk solid materials can be represented by applying published emission factors (AP-42) for particulate matter (PM). Aggregate Handling and Storage Pile emission factors appear in AP-42, Chapter 13.2.4. They are intended to estimate emissions for material handling, wind exposure and traffic. Emissions can vary based on wind speed, type of aggregate, silt percentage, and moisture content. A formula is provided to calculate emission factors in pounds per ton managed using these variables. An emissions factor can account for emissions from bagging because these relate to traffic and dropping into a hopper.

Particulate emissions from aggregate handling (drop operations) can be estimated using an emission factor calculated based on particle size, wind speed and moisture content (AP-42 13.2.4.3, Equation 1). A maximum-case emission factor can be based on lower moisture content and maximum 24-hour wind speeds. The emission factor can be applied to each drop in the material handling cycle. In this case, separate calculations for PM emissions from traffic on paved roads are not needed because on-site travel distances are short and speeds are low. The silt content of the bulk material is typically less than five percent and within the range of sources on which the emission factor equation was derived (0.44 to 19 percent).

For equation (1) the emission factor in pounds per ton is calculated as

$$E = k(0.0032)(U/5)^{1.3} / (M/2)^{1.4}$$

$$E = (0.35)(0.0032)(4.17)/(1) = 0.00467 \text{ pounds } PM_{10} \text{ per ton of bulk material}$$

Where:

Particle size multiplier, k = 0.35 for PM_{10}

Mean wind speed, U = 15 mile per hour

Moisture content, M = 2%

Emission Calculations – Rounding up the calculated emission factor to 0.005 pound per ton, PM_{10} emissions in pounds per year (lb/yr) from each drop operation can be calculated as:

Bulk Material	**2013 (tons per year)**	**PM_{10} (lb/yr)**
Ferromanganese	44,051	220
Fluorspar	3,128	16

Including two to three drops or transfers for all material handled would amount to 500 to 750 pounds of PM_{10} per year. This is a negligible amount; as Illinois Environmental Protection Agency (IEPA) does not require an air permit for a facility with total PM emissions below 10,000 pounds per year. Decreasing moisture content or increasing average wind speed would not materially affect the calculated emissions. As most operations occur indoors; these calculated emissions are overstated.

Particulate emissions can be calculated for transfers. A typical loading event for fluorspar involves moving it by front end loader from where it is stored within the building to a rail siding, dropping into a lift conveyor feed hopper, conveying a single stage to the drop point, and dropping into an open rail car. A typical loading event is one rail car receiving 100 tons of fluorspar loaded at a rate of 50 tons/hour. Assuming two drop events and an emission rate of 0.005 pounds per ton, PM_{10} emissions from this loading event amounts to 0.5 pounds per hour. This is a negligible amount. The density of the material (specific gravity = 3.2) means that fines do not easily mobilize and dusts settle quickly in the vicinity of the drop area. Such activities cannot under any conditions generate opacity greater than ten percent or fugitive dust visible beyond the property line of the facility. [3.0(2)].

Within an enclosure, ferromanganese is moved by front loader with three or four bucket loads dropped into a single truck. A full load is typically 22 tons. Several trucks may be loaded during the day shift. Average number of trucks loaded in 2013 was about 40 per week. Truck beds are covered with a tarp. Loading one truck takes about ten minutes, resulting in a drop rate of 132 tons per hour and emissions per single loading event of 0.11 pounds, a negligible amount. Total particulate emissions for loading 2000 trucks in 2013 amounted to about 200 pounds, also a negligible amount.

Unloading events have low emissions because there is only one drop occurring outside of enclosures. Likewise, bagging and drying events have negligible fugitive dust emission because they occur within enclosures. These events can under no conditions generate opacity greater than ten percent or fugitive dust visible beyond the property line of the facility [3.0(2)].

References

(1) http://www.epa.gov/osw/nonhaz/industrial/special/mining/minedock/id/id4-iro.pdf
(2) http://www.cityofchicago.org/content/dam/city/depts/cdph/environmental_health_and_food/CoCRegulationsforBulkMaterialsSigned.pdf
(3) AP-42 Chapter 13-2 Fugitive Dust Sources (1/95)