PROPOSED AMENDMENTS TO:

AIR MANAGEMENT REGULATION I: GENERAL PROVISIONS

SECTION I: DEFINITIONS

AND

AIR MANAGEMENT REGULATION II: AIR CONTAMINANT AND PARTICULATE MATTER EMISSIONS

SECTION IX. CONTROL OF DUST FROM CONSTRUCTION AND DEMOLITION ACTIVITIES

BACKGROUND DOCUMENT

City of Philadelphia
Department of Public Health
Air Management Services

I. Overview

The City of Philadelphia (City) Department of Public Health, Air Management Services (AMS) charged with enforcing local, state, and federal air pollution requirements within the city and county of Philadelphia is responsible for the prevention, abatement, and control of air pollution. Specifically, AMS enforces air pollution requirements laid out in Title 3 of the Philadelphia Code, also known as the Air Management Code, the Pennsylvania Air Pollution Control Act, the Federal Clean Air Act, and the respective regulations promulgated thereunder.

Exposure to airborne dust, generated from construction and demolition activities, has been linked to a number of negative health effects. AMS proposes that the APCB amend the definitions in AMR I and add additional work practice standards to Section IX. C. General Work Practice Standards in AMR II to protect the public health from fugitive dust generated during such construction and demolition activities.

II. Background

Dust is a form of particulate or Particulate Matter (PM) pollution composed of solid particles that are, or can otherwise easily be, suspended in the ambient air. See e.g. Phila. Code § 3-102(12). Inhalation of PM, in general, has been linked to a number of adverse health effects. See e.g. National Center for Environmental Assessment Office of Research and Development, U.S. Environmental Protection Agency (EPA), *Integrated Assessment of for Particulate Matter*, 6-1 – 8-17 (2009). Such short term health effects include increased hospitalizations for cardiovascular (e.g. relating to the heart and blood vessels) and respiratory (e.g. relating to the lungs) illness among certain sensitive populations such as young children and asthmatic adults. See Id. at 6-81- 6-83, 6-152 – 6-153, 6-210-212. Various scientific studies reviewed by EPA suggest that PM exposure has been linked to increased incidents of diseases like chronic obstructive pulmonary disease, asthma, upper respiratory infections, and heart attacks in humans. Id. at 2-8 – 2-33. See also Bonner JC. *Lung Fibrotic Responses to Particle Exposure*. Toxicol Pathol, Vol. 35, No. 1 (2007) pp. 148-153; Atikinson RW, Anderson HR, Sunyer J, et al. *Acute Effects of Particulate Air Pollution on Respiratory Admissions*. American Journal of Respiratory and Critical Care Medicine, Vol. 164, No. 10 (2001), pp. 1860-1866.

A. Health and Environmental Effects Attributed to Dust Generated from Construction and Demolition Activities

Common construction and demolition tasks like using masonry saws, grinders, drills, jackhammers and handheld powered chipping tools; operating vehicle-mounted drilling rigs; operating crushing machines; and using heavy equipment can generate large amounts of dust. The solid particles that make up dust from construction or demolition activities often contains high amounts of lead, asbestos, fiberglass and silica – materials that can otherwise be found in paint, insulation, masonry / concrete, and other building products. The general health effects of PM notwithstanding, the presence of such construction or demolition related contaminates pose

additional health risks to persons who otherwise reside or otherwise occupy property near such construction or demolition sites.

In particular, studies conducted in Baltimore and Chicago found that demolition of multifamily, and single family structures in densely packed urban neighborhoods, absent dust control measures, can spread lead contaminated dust to other nearby residential structures See Jacobs DE, Cali S, Welch A, et al. *Lead and Other Heavy Metals in Dust Fall from Single-Family Housing Demolition*. Public Health Reports, Vol. 128, No. 6 (2013) pp. 454-462. See also Jacobs DE, Catalin B, Welch A, et al. *Lead Particulate Deposition from Housing Demolition*. Proceedings of the 5th Warwick healthy housing conference. Coventry, UK: University of Warwick. Retrieved August 18, 2014, from http://www.nchh.org/Portals/0/Contents/Article0858.pdf. Children who resided in close proximity to such demolition sites were found to have elevated blood lead levels in children. Id. Similarly, inhaling elevated levels of silica and asbestos laden dust has been linked to respiratory illnesses like silicosis and asbestosis, as well as an increased mortality due to lung cancer, in construction workers. See Normohammadi M, et al., *Risk Assessment of Exposure to Silica Dust in Building Demolition Sites*, Safety and Health at Work (2016), http://dx.doi.org/10.1016/j.shaw.2015.12.006. Occupational exposures to respirable crystalline silica also may result in the development of kidney and autoimmune diseases and in death from other nonmalignant respiratory diseases, including chronic obstructive pulmonary disease. See Occupational Exposure to Respirable Crystalline Silica, 81 Fed. Reg. 16,285 (Mar 25, 2016).

B. Current Authority Governing Dust Emissions

Pennsylvania air pollution regulations prohibit the emission of visible dust from construction and demolition activities if such dust is visible and passes outside the property on which it is generated. See 25 Pa. Code §§ 123.1 123.2. The City's Air Management Code and attendant Air Management Regulations (AMRs) also require parties engaging in construction and demolition activity to take precautions to prevent air contamination from fugitive dust. See e.g. Phila. Code § 3-201(a)(1) – (3); AMR II. § VIII. However, these authorities do not mandate specific work practice requirements to minimize the production of dust during such activities within Philadelphia. Nor do these authorities require that the public be otherwise notified that such construction or demolition activity will occur and that they should take precautions to avoid exposure to such dust.

Other urban jurisdictions including New York City, Chicago, San Francisco, and The District Columbia, have promulgated requirements that address construction and demolition generated dust. See e.g. Rules of the City of New York §§ 13-01 – 13-10; Chicago Municipal Code §§ 11-4-2150 – 11-4-2190; San Francisco Health Code, Art. 22B §§ 1240-1249; D.C. Municipal Regulations § 20-605. These regulatory schemes mandate specific work practices, such as wetting during demolition, and the establishment of a permitting / notification process for certain dust generating demolition and construction activities. See e.g. Id.

C. Prior Amendments to AMR I and AMR II to Regulate Construction and Demolition Generated Dust

On August 11, 2016, the amended AMR I and AMR II with requirements for the control of dust during construction and demolition activities went into effect. The regulation had new notification, permit requirements, and work practice requirements for these activities. Below are several of the amendments that are now in effect:

1. New defined terms pertinent to demolition and construction activity.

2. Duty for owners / contractors engaging in demolition or construction activities that may lead to the release of dust into the outside air to notify occupants of nearby properties, in writing, ten (10) days before engaging in such activities (AMR II. § IX.A).

3. Dust control permitting requirement for complete demolitions of major buildings (e.g.Structure that is > 3 stories, > 40 feet tall, or 10,000 square feet), and all demolitions completed via implosions (AMR II. § IX.B).

4. Work practice requirements for construction / demolition activities to prevent dust generation (AMR II. § IX.C).

5. Implosion specific work practices (AMR II. § IX.D).

III. Proposed Amendments to Air Management Regulations (AMRs) I and II to include additional work practice standards including earthworks

AMS is proposing amendments to AMR I and AMR II that establish the following:

1. New definitions added (AMR I. § I.B).
    a. *Earthworks* – Clearing, grubbing, or earth disturbance of any land in excess of 5,000 square feet (AMR I. § I.B.12).
    b. *Owner or Operator of Earthworks, Construction, or Demolition Activity* – any person or entity who owns, leases, operates, controls, or supervises the property where earthworks, construction, and / or demolition occurs (AMR I. § I.B.14)

2. Public Notification of Construction and Demolition Activities to Occupants of Nearby Properties expanded and now includes earthworks (AMR II. § IX.A).

3. Added Permit requirement for activities engaging in earthworks as defined in AMR I. (AMR II. § IX.B).

4. Additional General Work Practice Standards (AMR II. § IX.C) to include:

    a. Added Emission of dust into outdoor atmosphere from construction, demolition and earthworks worksite, where such dust is visible at the point that it passes beyond the property line of said worksite is prohibited (AMR II. § IX.C.1).

    b. Work Practice Standards for Dust Chutes (AMR II. § IX.C.5) – No construction material or debris shall be dropped more than twenty (20) feet to any point lying outside of the exterior walls of a building or outside of a structure, except through the use of a materials chute. All materials chutes, or sections thereof, shall be entirely enclosed, except for openings equipped with closures at or about floor level for the insertion of materials. At all stories below the top floor, such openings shall be kept closed when not in use. Chutes shall be designed and constructed of such strength as to eliminate failure due to impact of materials or debris loaded therein. To prevent dust emissions at the exit of the materials chute, all construction material or debris dropped through a materials chute must be adequately wetted to prevent dust emissions. Alternatively, the material chute exit must be sealed against the top of an appropriate container to prevent dust emissions.

    c. Working Practice Standards for Earthworks and new construction engaging in such activities. (AMR II. § IX.C.6**)** – Water, or other dust suppressants approved by the Department, must be applied to all worksites with ongoing filling, grading, excavation, land clearing, grubbing, or earthworks activities open to the outdoor air to prevent dust emissions. Application of water as the sole dust suppression agent is prohibited when the temperature drops below thirty two (32) Degrees Fahrenheit at source of dust emission.

    d. Work Practice Standards for fences around the construction site (AMR II. § IX.C.7) – Dust control fabric must be securely attached to any temporary, worksite perimeter fencing. The dust control fabric material shall be a minimum of five feet in height as measured from the bottom of the perimeter fence, and have a minimum blockage of 50%.

    e. Work Practice Standards for speed limit of equipment and trucks (AMR II. § IX.C.11**) –** A 10-mph speed limit shall be observed by all equipment and trucks traveling within the work site.

    f. Work Practice Standards for adequate wetting (Proposed amendment AMR II. § IX.C.12**) –** All roadways on the worksite, and all vehicle access points to the site, must be adequately wetted and swept of materials that will give rise to dust emissions. Vehicle access points must be equipped with dust track out

prevention measures (e.g. wheel wash systems, rumble grates, and / or gravel pads).

5. Added Air Monitoring and Dust Sampling Requirement (AMR II. § IX.F) – The Department may require air monitoring and/or dust sampling during the performance of any filling, grading, excavation, land clearing, grubbing, earthworks, construction, or demolition activities at a worksite to verify that soil and other contaminates at the worksite will not have adverse impacts beyond the property line.

6. Corrected typos and punctuation errors in various sections throughout AMR I and AMR II.