The Commonwealth of Massachusetts
Executive Office of Health and Human Services
Department of Public Health
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June 26, 2009

Sandy Collins, R.N.
Director of Health Care Services
23 Depot Street
Westford, Massachusetts 01886

Dear Ms. Collins:

We have reviewed the letter from the Town of Westford Planning Department regarding the scope of air quality and emissions services for reviewing a MA DEP air permitting application for a proposed Asphalt Manufacturing Plant in Westford. The town asked the consultant to offer recommendations on the Air Permit Application (Task 1) and on the generation of truck emissions and potential emission from hot asphalt in trucks leaving the facility (Task 2).

The primary concern regarding the proposed facility is emissions from plant operations that may adversely impact residents in the vicinity of the site. In addition, an elementary school located within a mile of the site has a statistically significantly elevated rate of pediatric asthma compared to the statewide rate.

For these reasons we believe the Scope of Services for the town's consultant should include:

1. Comprehensive emissions estimates including air dispersion modeling

Further analyses of criteria and hazardous air pollutant emissions from the facility operations and air dispersion modeling should be conducted. The emissions inventory should include consideration of all potential emissions associated with the HMA plant operations and rock crushing operations. This should include on-site emissions from truck traffic and off-site emissions associated with transportation of asphalt by diesel trucks from the facility.

The emissions associated with HMA facilities are: criteria pollutants (PM10, PM2.5, volatile organic compounds, carbon monoxide, sulfur dioxide, and nitrogen oxides) and hazardous air pollutants (HAPs) including polycyclic organic hydrocarbons (PAHs), phenols, volatile HAPs, and metals. The process and fugitive sources of emissions on-site associated with HMA plant operations that should be characterized include: mobile sources (e.g., diesel trucks) to transport aggregate and final mix, material handling and road dust, fuel oil-fired or natural gas-fired dryer drum, hot screens and mixer, loading of HMA into haul trucks,

asphalt storage, and emissions from loaded trucks prior to departure from the site. Further, off-site emissions from trucks traveling to and from the site with hot asphalt as well as trucks delivering products related to the manufacture of asphalt such as oil, fuel, etc should be characterized. For example, emissions are associated with the proposed use of recycled asphalt product (RAP) that would be delivered and stored in recycle bins before it is crushed and added to the sand and stone at the rock crushing plant. Other sources of emissions are associated with the operation of rock crushing plant, which is expected to produce 300,000 tons of crushed materials per year.

In order to determine the potential impacts associated with these emissions in the vicinity of the site all sources of emissions (i.e., stationary, mobile, fugitive sources) need to be considered. For example, Table 1 lists all known sources of emissions associated with the proposed facility and whether they were considered in the air quality modeling analysis provided in the MA DEP permit application.

Table 1: Sources of emissions proposed asphalt and rock crusher facilities

Sources of emissions at proposed asphalt and rock crusher facilities	**Estimated and modeled for MA DEP Permit**
No. 2 fuel/natural gas drum mix plant	**Yes**
Hot oil heater	**Yes**
Loading trucks with asphalt	**No**
Asphalt storage	**No**
Materials handling	**No**
Fugitive emissions from plant operations (e.g., loading trucks)	**No**
Mobile sources - Diesel Trucks on-site - Diesel Trucks from facility with asphalt off-site	**No**
Rock-crushing plant operations	**No**

2. Identify sensitive populations and potential impacts

As previously mentioned, the impact at the Rita E. Miller Elementary School needs to be assessed. This assessment should include cumulative exposure to respiratory irritants (e.g., fine particulate matter, diesel exhaust, aldehydes) and higher exposure potential of children outdoors during recess. In addition, the distribution of exposure to air pollutants including the upper-bound exposure levels are necessary for evaluating the impacts of hazardous air pollutants whose effects may be associated with upper-bound and/or peak concentrations.

3. Further refinement of emission estimates

The proponent should provide justification for use of the formaldehyde emission factors based on 3 tests at 2 plants in Connecticut. More recent emissions factors should also be

considered if available. For example, the proponent should evaluate the findings of a study by Lee et al.[1] in which the characteristics of polycyclic aromatic hydrocarbon (PAH) emissions from batch hot mix asphalt (HMA) plants and PAH removal efficiencies associated with their installed air pollution control devices was assessed. The study found that the mean total PAH emission factor for all selected batch mix plants was much higher than that reported by U.S. EPA for the drum mix asphalt plant. With respect to mobile source emissions, it is also important to consider the in-use emissions from older heavy-duty diesel engines that have relatively higher emissions of diesel exhaust compared to newer diesel engines.

4. Further analysis of noise impacts

The noise levels reported in the MA DEP Air Permit should be evaluated and monitored in terms of specific relevance and applicability to actual operations. For example, uncertainties in noise modeling that may underestimate peak noise levels and noise impacts on children need to be considered.

5. Mitigation of emissions

A comprehensive analysis of mitigating emissions should to be conducted particularly since the air quality modeling analysis did not consider all sources of emissions associated with plant operations. Mitigation of diesel emissions (e.g., diesel retrofit control technology) should also be evaluated both on- and off-site as older diesel trucks used for transporting asphalt are likely to be high emitters of diesel exhaust.

We hope you find these comments helpful. Please feel free to contact us if you have any questions or if we can be of further assistance to you.

Sincerely,

Suzanne K. Condon, Associate Commissioner
Director, Bureau of Environmental Health

cc: Martha Steele, Deputy Director, Bureau of Environmental Health
Margaret M. Round, Bureau of Environmental Health, Environmental Toxicology Program

[1] Lee WJ, Chao WH, Shih M, Tsai CH, Chen TJ, Tsai PJ. Emissions of polycyclic aromatic hydrocarbons from batch hot mix asphalt plants. Environ Sci Technol. 2004 Oct 15;38(20):5274-80.