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Deputy Secretary

January 7, 2010

Mr. Shawn M. Garvin
Regional Administrator
U.S. Environmental Protection Agency
Region 3
1650 Arch Street (3RA00)
Philadelphia, PA 19103-2029

Re: Sparrows Point Particulate Sampling Proposal

Dear Administrator Garvin:

I am writing to request that Region 3 of the U.S. Environmental Protection Agency (EPA) undertake particulate sampling at a limited number of sites surrounding the Sparrows Point steelmaking facility. The following describes the background for this request.

Kish is a dust-like material that is generated during the steelmaking process. Kish can become airborne and has periodically settled in communities surrounding the Sparrows Point steelmaking facility. As you know, kish has been of longstanding concern to citizens and has more recently attracted the attention of the Chesapeake Bay Foundation. In 1997, Bethlehem Steel entered into a Consent Decree with EPA and the Maryland Department of the Environment (MDE). Concerns about kish were raised by citizens during a public meeting to announce the Consent Decree. This prompted EPA to perform a study to address the potential risks of kish exposure.

A November 1997 EPA document states that EPA "committed to assess the health and environmental impacts of the broadly defined "kish" material."[1] EPA planned to determine potential health risks by measuring the amounts of various elements in samples from the community.[2] In 1997-1998, air filters (collecting air samples) and dustfall buckets (collecting material that settled from the air) were placed in two communities surrounding the steelmaking facility. These samples were compared to kish collected at the steelmaking facility.

[1] EPA: Sparrows Point Air Monitoring Plan, Summer 1998. "Draft 7/98" is handwritten in upper right corner.
[2] EPA: Air Monitoring Work Plan: Particulate Screening Study – Sparrows Point, Baltimore County, Maryland, November 10, 1997.

Study results were presented in a March 2000 EPA report. Particles found in the communities were similar to kish particles from the steelmaking facility. Furthermore, some of these particles were small enough to enter the lungs (respirable particles). This suggested that particles associated with kish emissions may have reached the communities and that some of these particles could be breathed into the lungs. These particles contained various elements, some of which could cause adverse health effects at high enough levels. EPA thus concluded that kish exposure could carry potential health risks, but an assessment of these risks was not performed. The measurement of specific elements in community samples had been planned and was necessary to evaluate potential health risks, but no such measurements were included in the report. Overall, the study prompted questions that need to be addressed through further investigation.

The 1997 Consent Decree required the steelmaking facility to take measures to reduce kish releases. All requirements were fulfilled by 2004. Since then, the number of kish complaints received by MDE has decreased significantly. However, kish complaints are not reliable because they are influenced by a variety of factors and kish releases could occur without visible evidence because small, respirable kish particles would tend to be more mobile than larger kish particles. In addition, potentially toxic elements (such as manganese and lead) could be released separately from kish. While the kish reduction measures and subsequent decrease in kish complaints are encouraging, the questions raised by the March 2000 report remain unanswered.

It is not possible to measure respirable kish particles nor their concentration in the air because kish is composed of varying combinations of elements. However, air filters can be used to measure the ambient concentration of specific elements in respirable particulate matter. Such measurements are valuable because they could be used to assess potential health risks. We have developed a proposal (attached) to collect particulate samples at a limited number of sites in communities surrounding the Sparrows Point steelmaking facility. Measurement of elements contained in these particulate samples would allow an assessment of potential health risks. The measurements would not be kish-specific but could reflect any airborne releases from the facility, which would broaden evaluation of health risks in a favorable way. Noting the difficulty of attributing findings to a potential source, the proposed sampling could serve as a screening assessment. If concerning results are found, a further sampling strategy could be developed to determine if the steelmaking facility is responsible for the results.

Unfortunately MDE does not have the resources necessary to conduct the proposed particulate sampling. We do not have sufficient funding and, even if adequate funding was available, we do not have the technical and personnel resources to undertake sampling and analysis. In addition, EPA initiated the original study but did not complete a health risk evaluation, which was a stated objective of the study. For these reasons, I request that EPA perform the particulate sampling.

An itemized cost estimate is included as an appendix to the sampling proposal. The total estimated base cost is $70,400 (equipment and analytical costs only). If adequate funding is not available, we request that your Agency works to identify additional funding to perform the study.

We appreciate your efforts and look forward to seeing the proposed sampling in progress.

Sincerely,

Shari T. Wilson
Secretary

cc: Russell Becker, Severstal Sparrows Point

Enclosures

Proposal for Sparrows Point Particulate Sampling

A March 2000 U.S. Environmental Protection Agency (EPA) report described respirable particles that may be associated with kish emissions in two communities surrounding the Sparrows Point steelmaking facility. To address this finding, we propose particulate sampling in which the ambient concentrations of specific elements (notably manganese, lead and silica) associated with kish are quantified in PM-2.5 and PM-10 samples in order to estimate the magnitude of community inhalation exposure. Results from the proposed sampling could be used to screen for potential health risks of community exposure to particulate emissions from the steelmaking facility. Because the proposed sampling is intended for screening purposes, the results could suggest that further sampling is indicated but could not be used to determine the origin of the particulate matter.

Background

An EPA analysis of samples collected in 1997-1998 determined that respirable particles, which may be associated with kish emissions, were present at community sites 2 - 2.5km from the Sparrows Point steelmaking facility. Samples included actively-collected air filter material and passively-collected atmospheric fallout material from the nearby communities of Edgemere and Dundalk. Results for 2 community air filters and 11 fallout samples were reported. Respirable particles were identified as possibly being associated with kish material based upon similarities to samples taken from the facility. These respirable particles were composed of iron oxide spheres associated with lesser amounts of various elements. No quantitative data on elemental composition or ambient concentration were reported for community samples. For this reason, it was not possible to estimate the magnitude of community inhalation exposure to particulate emissions from the steelmaking facility. Several efforts to minimize kish emissions have been undertaken at the facility since these samples were collected. Additionally, improvements have been made in recent years to reduce emissions using maximum achievable control technology.

Sampling Objective and Design

We propose sampling to determine inhalation exposure at two sites in communities surrounding the Sparrows Point steelmaking facility. Samples will be obtained at sites with relative proximity to the steelmaking facility, though it is not possible to determine causality between community observations and presumptive origins in the steelmaking facility. Data from any source is vulnerable to a number of influences that could confound interpretation. The proposed sampling thus functions to screen for findings that might be attributable to the steelmaking facility. If significant results are found by the proposed sampling, expanded sampling to address source attribution would be indicated.

Collection filters from air monitors will be weighed to determine concentrations of PM-2.5 and PM-10 and further analyzed to determine elemental composition using x-ray fluorescence. Ambient concentrations of individual elements will then be calculated from data on elemental composition and air monitor settings. These concentrations

(notably manganese, lead, and silica) can be compared to established reference concentrations or exposure limits to evaluate potential risks to human health.

The following is a summary of the proposed study design:

Sample Collection Sites

Collection sites must be secure and free of any nearby influences that might affect sampling results (e.g., heavily-travelled or major roadways, industrial or waste facilities).

Site locations in surrounding communities: Edgemere (1 site); Dundalk (1 site)

Materials

- Each site will include an air monitor
- Air monitors will have collection filters allowing analysis for:
  - PM-2.5 concentration
  - PM-10 concentration
  - Elemental composition of collected material (using x-ray fluorescence)

Sampling Parameters

- Sampling period
  - Samples will be collected over 8 consecutive weeks
  - The sampling period will occur during the summer months and will be guided by consideration of expected wind patterns

- Air monitors
  - An every-6-day sampling frequency will be determined by the EPA Sampling Schedule Calendar (available at http://www.epa.gov/ttn/amtic/calendar.html), yielding approximately 10 samples per site
  - Each sample will be collected over 24 continuous hours
  - Collection filters for analysis of elemental composition will be included in every sample

Sample Analysis

- Collection filters will be analyzed to determine:
  - PM-10 concentration
  - PM-2.5 concentration
  - Elemental composition by x-ray fluorescence

Sparrows Point Particulate Sampling
Cost Estimate: equipment and analytical costs only

2 sites total: Edgemere (1) and Dundalk (1)

Each site: 1 PM-2.5 (Federal Reference Method), 1 PM-10 (Federal Reference Method)

Number of elemental analysis samples: 60 day study duration x 1-in-6 day sampling = 10 samples per site
PM-2.5 samples: 2 sites x 10 samples site = 20 total samples
PM-10 samples: 2 sites x 10 samples site = 20 total samples

Equipment Costs	
Item (quantity)	**Cost ($)**
FRM samplers (2)	32,000
PM-10 FRM samplers (2)	32,000
subtotal	64,000

Analytical Costs	
Item (quantity)	**Cost ($)**
PM-2.5 gravimetric analysis (20)	200
PM-10 gravimetric analysis (20)	200
PM-2.5 X-ray fluorescence analysis (20)	3,000
PM-10 X-ray fluorescence analysis (20)	3,000
subtotal	6,400

Total base cost = $70,400