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Mr. Steve Thompson
Phillips & Jordan, Inc.
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Subject: Supplement to EE&G's Correspondence Dated October 20, 2001 Regarding Air Sampling Data for Asbestos, Metals and Silica/Total Particulate for Department of Sanitation, New York (DSNY) Workers, Staten Island Landfill Debris Sorting Operations, Staten Island, New York.

Dear Mr. Thompson:

Pursuant to the request of the Department of Sanitation, New York City (DSNY) and the U.S. Army Corps of Engineers (USACE), Evans Environmental and Geosciences (EE&G) has prepared this supplement to our subject correspondence.

FINDINGS

Asbestos

Pursuant to our meeting with DSNY and U.S. Army Corps of Engineers representatives regarding the reporting of the DSNY sample data, EE&G offers the following findings:

- Fourteen sets of personnel samples were collected from DSNY employees on October 17, 2001. Samples were delivered to EMSL Analytical Laboratory (EMSL) in Piscataway, NJ for analysis. A set of samples consisted of two individual samples, which were used to calculate a single 8-hour Time Weighted Average (TWA). One of the two samples in each set was a short duration sample used to assess the Short Term Exposure (excursion) of the employee. In situations where an excursion could not be collected, the whole shift sample was used to calculate the 8-hour TWA.

- One of the sample sets was voided because it was overloaded and could not be analyzed, consequently there is data available from only thirteen sample sets.

- One air sample (# 101701JF11) out of the fourteen sample sets collected from DSNY employees exceeded the Permissible Exposure Limit (PEL). The sample, which exceeded the PEL, was collected from the worker group designated as "oiler". This worker worked an 8-hour shift. This sample, as all other personnel samples, was analyzed by Phase Contrast Microscopy (PCM) utilizing NIOSH Method 7400. The sample as reported by the laboratory indicates a concentration of 0.165 f/cc. This result, as well as the result from Sample #101701JF12 were used to calculate an 8-hour TWA for this sample set. This calculation is shown below:

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$$TWA = \frac{(T_1 \times C_1) + (T_2 \times C_2) + (T_3 \times C_3) + \ldots}{480 \text{ Minutes}}$$

Where:

T_1 = 367 minutes
C_1 = 0.165 f/cc
T_2 = 30 Minutes
C_2 = 0.047 f/cc
TWA = 0.129 f/cc

- The 8-hour Time Weighted Average for this sample set, calculated using both samples from this set, showed a value of 0.129f/cc.

- Sample # 101701JF11, which showed 0.165 f/cc when analyzed by PCM, yielded a concentration of less than 0.004 f/cc when analyzed by Transmission Electron Microscopy (TEM) utilizing NIOSH Method 7402. The laboratory analysis identified one asbestos fiber in this sample.

- One of the fourteen sample sets contained a short duration sample (# 101701PH02), which yielded a concentration of 0.123 f/cc when analyzed by PCM. Whole shift sampling could not be obtained (sample overloaded, as mentioned above).

- The Short-Term Exposure Limit (STEL) result of 0.123 f/cc is below the limit established by OSHA for the STEL and the other sample in the set that was representative of the remainder of the work shift was overloaded. The STEL was presumed to be representative of the whole shift exposure. Based on this presumption, the whole shift exposure would be presumed to be above the PEL. The calculation is done with the same formula for the TWA as presented above where C_1 = 0.123 f/cc and T_1 = is assumed to be 480 minutes.

- This same sample (#101701PH02), when analyzed by TEM using NIOSH Method 7402 identified no asbestos fibers.

- Pursuant to the request of DSNY, EE&G reviewed its notes regarding the DSNY "oiler" who wore the sample in which the asbestos PEL was exceeded. EE&G's field industrial hygiene technician reported that the "oiler" was not wearing a respirator, when observed.

- The 0.129 f/cc result that was collected from the worker group "oiler" exceeded the OSHA defined PEL.

Metals and Silica/Total Particulate

On October 17 and 19, EE&G collected air samples for metals and silica/total particulate from DSNY workers performing the following job functions:

- Dozer 003 operator, silica/total particulate.
- Truck counter, silica/total particulate.

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- Barge operation, metals.
- Pay Hauler, metals.

Samples were sent to EMSL for analysis by inductively coupled plasma (ICP) following NIOSH method 7300. The laboratory analyzed for 8 metals including; arsenic, barium, beryllium, cadmium, total chromium, lead, selenium, and silver. Results were reported as micrograms of each metal per cubic meter of air (ug/m^3). The method selected did not differentiate between soluble and insoluble forms of chromium. As such, the reported concentrations did not identify hexavalent chromium from other forms of the metal.

Silica/total particulate samples were collected by drawing a known volume of air across a 37 millimeter poly- vinyl chloride pre-weighted filter. These samples were also sent to EMSL for analysis. Samples were first weighed to determine total particles, and were then analyzed by X-ray diffraction microscopy following NIOSH method 7500. Results were reported as milligrams per cubic meter of air (mg/m^3) for both parameters.

The metal samples did not identify concentrations of metals at, or above the current OSHA PEL for the individual constituents. The current exposure limits for each of the metals is presented below:

- Arsenic 10 ug/m^3
- Barium 500 ug/m^3
- Beryllium 2 ug/m^3
- Cadmium 5 ug/m^3
- Chromium 50 ug/m^3
- Lead 50 ug/m^3
- Selenium 200 ug/m^3
- Silver 10 ug/m^3

The silica/total particulate samples did not show concentrations at or above the current OSHA PEL of 0.1 mg/m^3 for silica and 10 mg/m^3 for total particulate.

A copy of the laboratory results and chain of custody forms for metal and silica/total particulate analysis are attached to this letter.

RECOMMENDATIONS

- The PCM method was developed by NIOSH to provide a rapid and inexpensive method to evaluate exposure to airborne asbestos fibers. While the method is not specific to asbestos fibers, and will count any fiber that has a certain morphology, the method is approved by OSHA as the preferred method of analysis for worker exposure to airborne asbestos. EE&G recognizes the potential limitation of the PCM method as applied to the current project, and has implemented the analysis of samples found to exceed the PEL by TEM. The TEM method will verify the presence or confirm the absence of asbestos fibers within a defined size range through a method utilizing discriminatory analysis. This method is limited to counting only those fibers greater than 5 microns in length and 0.5 microns in diameter (the same rules governing size as the NIOSH Method 7400). One should not presume that

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a low asbestos structure count as a result of NIOSH Method 7402 analysis correlates to the absence of asbestos fibers. Asbestos structures smaller than the size counted in TEM Method 7402 could still present a health risk. There is no known safe level of exposure to airborne asbestos.

- Dust generation has been observed during off loading of debris, in particular when the debris is dry. This, combined with the air sampling results to date, lead EE&G to recommend that this area be designated an exclusion zone and included under the Health and Safety Plan. Various dust suppression alternatives are currently being examined for marine transfer operations. Until an effective dust suppression procedure can be put in place, personal protective equipment will be the primary method of worker protection. Consideration should be given to using a fine mist spray on loads that are dry, and/or in the unloading storage bunkers. All workers in the immediate vicinity of the loading operations should be wearing respiratory protection (OV/HEPA cartridge), Tyvek protective coveralls, hard hats, steel-toed boots, safety goggles, and gloves. These workers should be required to pass through a personal hygiene station (like at the top of the landfill) prior to taking lunch breaks or going home for the day. As an exclusion zone, further monitoring of the employees should be conducted.

- As per OSHA requirements, the results of the air sample data must be transmitted to the effected employees, including all employees in the same job function, within 15 days of receipt of the lab data. While the analysis of the samples (#'s 101701JF11 and 101701PH02) by TEM suggests that the fibers reported in the data from analysis by PCM are not asbestos (note size limitations of analysis, as discussed above), the exceedance of the OSHA PEL cannot be disregarded. EE&G recommends that both sets of data be presented and explained to the affected individual(s). If requested, EE&G representative will be available to assist the client in performing this task.

Please call us if you have any questions regarding this correspondence. As always, we are ready to assist Phillips & Jordan upon a moment's notice.

Sincerely,

Jay W. Sall, C.I.H.
Senior Industrial Hygienist
EE&G

Timothy R. Gipe
President
EE&G

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Attachments: EMSL Analytical Inc. laboratory results
EE&G Chain of Custody
Field notes from EE&G IH technician (October 17, 2001)
EMSL Analytical Inc. certifications