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STATEN ISLAND LANDFILL: DEBRIS RECOVERY PROJECT

AIR QUALITY SAMPLING – MATERIALS AND METHODS
05 January, 2001 **Control # 1-53**
Evans Environmental & Geosciences

Introduction

The following describes the materials and methods used by Evans Environmental & Geosciences (EE&G) for air quality sampling on the Staten Island Landfill Debris Recovery Project. These methods have been employed since the onset of sampling in October of 2001 and will continue to be employed until further notice. Future reports will incorporate this Materials and Methods section by reference only in an effort to prevent repetitive and unnecessary paperwork.

Asbestos

Air samples were collected by drawing a known volume of air across 25 mm mixed cellulose ester filters using battery powered pumps at approximate flow rates of 2.0 liters per minute (lpm). The pumps were calibrated before and after use with a rotometer that was in turn, calibrated against a primary standard. Sample pumps were secured to the worker's waist, and the sample media was placed approximately 10 inches from the mouth of the worker. Samples were sent to EMSL Laboratory, Inc., (EMSL) in Piscataway, New Jersey for analysis by Phase Contrast Microscopy (PCM) following method 7400 established by the National Institute of Occupational Safety and Health (NIOSH). Results were reported as fibers per cubic centimeter of air (f/cc).

Personal exposure monitoring was conducted by collection of whole-shift samples combined with 30 minute (approximate) excursion samples. The excursion samples were taken during periods of time when the worker was involved in activities that would have a high potential for exposure to airborne contaminants. The whole-shift and excursion samples were used to calculate time weighted averages which were then adjusted to compare against the OSHA Permissible Exposure Limit (PEL) of 0.1 f/cc. In some situations, NYPD personnel worked for less than 480 minutes. In those situations, the assumption was made that the workers had no exposure to asbestos for the period of time between the actual work shift and the 8-hour shift (480 minutes) used in calculating the time weighted average.

A total of 109 whole-shift samples were collected during the period of time covered by this report. In the event that the whole shift sample was overloaded, and could not be analyzed, the excursion samples were used to calculate the 8 hour time weighted average. In these situations, the data was presented indicating that the exposure was based on an assumption. Likewise, in situations where it was not feasible to collect an excursion sample, the calculated time weighted average was based only on the whole-shift sample.

Metals

Air samples were collected by drawing a known volume of air across a 37 millimeter mixed cellulose ester filter, using battery powered pumps. The pumps were calibrated

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and secured to workers as described previously. Samples were sent to EMSL for analysis by inductively coupled plasma (ICP) following NIOSH method 7300. The laboratory analyzed for six metals including; arsenic, beryllium, cadmium, total chromium, lead, and selenium. Results were reported as micrograms of each metal per cubic meter of air (ug/m^3).

Silica and Total Particles

Samples were collected by drawing a known volume of air across a 37 millimeter poly-vinyl chloride pre-weighted filter, using battery powered pumps. The pumps were calibrated and secured to the workers as previously described. Samples were sent to EMSL. 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 Personnel Exposure Limit (PEL) for silica, as defined by the Occupational Safety and Health Administration (OSHA), is not a set value. The PEL is based on the per cent (%) silica (SIO2) present in the sample. The formula, as presented in the OSHA "Z-3 Table," is as follows:

$$PEL = \frac{30mg/m3}{\%SiO2 + 2}$$

This formula is used to calculate the PEL for each individual sample for DOS reports. For NYPD and Contractor reports, a PEL based on the assumption that the sample is 100% silica is utilized. This results in the comparison of the data to the lowest possible PEL and a very conservative approach to the interpretation of the data. It also prevents confusion in the interpretation of the results by the large number of individuals viewing the results.

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