NYC 9/11 Public Portal Document

LIBERTY MUTUAL

Industrial Hygiene Air Sample Results

Summary for Week of 03/01/02 to03/08/02

Attached is a summary of the laboratory results reported and direct reading measurements completed during the week of March 1, 2002 to March 8, 2002. The air samples were collected and the measurements were made by ATC Associates at the World Trade Center site.

The majority of the samples collected by ATC are "personal samples", meaning that the worker wore the sampling device. Most of results have shown exposure levels to be below 50% of the shift adjusted occupational exposure limits. The exceptions were:

- Elevated **quartz** concentrations as follows:
  - **15000% and 204%** of the shift adjusted OEL while **using Brokk hammer** in WTC 6.
  - **3433% and 1262%** of the shift adjusted OEL while **using jackhammers** in WTC 6.
  - **958% and 725%** of the shift adjusted OEL on a **Bobcat operator** in WTC 6.
  - **488% and 258%** of the shift adjusted OEL while **breaking concrete** in WTC 6.
  - **258%** of the shift adjusted OEL on a **spotter** in WTC 6.
  - **154% and 238%** of the shift adjusted OEL while **drilling** in WTC 6.
  - **117%** of the shift adjusted OEL while **driving** in WTC 6
  - **62%** of the shift adjusted OEL on a **spotter** at WTC 1 site.

- Elevated **diesel fume** concentrations as follows:
  - **98%** of the shift adjusted OEL while **working around heavy dump truck** in pit.
  - **85%** of the shift adjusted OEL on a torch **cutter** in the WTC 5 area.
  - **63%** of the shift adjusted OEL on a torch **truck washer**.

- Elevated **respirable dust** concentrations as follows:
  - **103%** and **59%** of the shift adjusted OEL on a **jackhammer operators** in WTC 6.

8 hour equivalent time-weighted average **noise levels** above 90 dBA as follows:

- **99 dBA** for a **laborer and Brokk operator** in WTC 6.
- **87 dBA, 86 dBA** for **torch cutters** WTC 5.
- **91 dBA** for an **asbestos handler** in WTC 6.
- **102 dBA, 97 dBA** for a **Bobcat operator** in WTC 6.
- **96 dBA, 92 dBA,89 dBA, 88 dBA** for a **driller** in WTC 6.
- **97 dBA, 94 dBA** for **Bobcat operator** in WTC 6, depression
- **98 dBA** for a **Water Truck operator**
- **92 dBA, 87 dBA** for a **Brokk operator**
- **89 dBA** for a **laborer** in WTC 6.

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Elevated exposures to **asbestos** are based on the results of analysis by phase contrast microscopy (PCM). This method counts all fibers detected that meet the criteria of "fiber". Materials that are not asbestos may be included in the reported analysis. These samples have been submitted for further analysis by transmission electron microscopy (TEM) to make a definitive determination of the fibers detected by PCM analysis.

Although no elevated **hydrogen sulfide** results were found during the week, Liberty Mutual has recommended continuous monitoring for hydrogen sulfide during work in excavations. In past weeks, we have had a few quantifiable hydrogen sulfide results (one area sample was actually above the OEL). Also, there have been many anecdotal reports of hydrogen sulfide smells. Because of the insidious nature and serious effects of exposures to excessive levels of hydrogen sulfide , we feel that it is important to continuously monitor occupied spaces which are subject to build-up of "sewer gases".

Some of the columns in the attached summary may require explanation:

Analyte Class - This column includes general category of the agents (substances) which were sampled.

# of Samples - This indicates how many individual samples were collected for the agent class listed.

# of Analysis - This is the number of individual analyses performed. If only one analysis is performed on each sample, then the number of analytes will equal the number of samples. However, most samples are analyzed for more than one agent as follows:

> **Metals:** Aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, selenium, silver, thallium, tin, titanium, vanadium, and zinc. Metal samples are sometimes also analyzed for total particulate.
>
> **Silica:** Respirable dust, quartz, and cristobalite.
>
> **Acids:** Hydrobromic acid, hydrochloric acid, hydrofluoric acid, nitric acid, phosphoric acid and sulfuric acid
>
> **Sulfides:** Hydrogen sulfide and sulfur dioxide

OEL - Occupational Exposure Limit is the lower of the OSHA PEL or ACGIH TLV. PELs are established by an OSHA rule-making process and are the legal occupational exposure standards. TLVs are voluntary guidelines for occupational exposure which are established by the American Conference of Governmental Industrial Hygienists, a private professional organization.

Highest % OEL - This is the percentage of the occupational exposure limit (OEL) that the highest result represents. This is the value in the "Highest Result" column divided by OEL and converted to a percentage.

Shift Adjusted OEL - The OEL reduced to compensate for the reduced recovery time and longer exposure time posed by a 7 day per week , 12 hour shift work schedule.

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Highest % of Shift Adjusted OEL - This is the percentage of shift adjusted OEL that the highest result represents.

#of NQs - This is the number of analyses that reported that concentration as "not quantifiable" (NQ).

% of NQ - This is the percent of the total analyses which were reported as "not quantifiable".

If you have any questions concerning this information or would like further details about these results, feel free to contact the Liberty Mutual Industrial Hygienist on duty @ 917-566-2576.

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Liberty Mutual Group

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