



Industrial Hygiene Measurements

Summary for Week of 04/05/02 to 04/12/02

Attached is a summary of the laboratory results completed during the week of April 5, 2002 to April 12, 2002. The air samples were collected 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. In addition, the majority of results have shown exposure levels to be below shift adjusted occupational exposure limits. The exceptions were the following:

- Elevated **Quartz** concentrations were as follows:
 - 1500% of the shift adjusted OEL on a laborer, WTC 6, B2,
 - 625% of the shift adjusted OEL on a jackhammer operator at the south projection,
 - 133% of the shift adjusted OEL on a Bobcat Operator, WTC 5,
 - 54% of the shift adjusted OEL on a Spotter on surface at Church and Liberty Streets,
 - 63% of the shift adjusted OEL on a laborer, B1, WTC6,
- Elevated **Respirable Dust** concentrations were as follows:
 - 76% of the shift adjusted OEL on a laborer, WTC6, B2.
- Elevated **Diesel Exhaust Particulate** concentrations were as follows:
 - 369%, 327%, and 103% of the shift adjusted OEL on Bobcat Operators, WTC5,
 - 273% of the shift adjusted OEL on a laborer cleaning debris, WTC5,
 - 139% of the shift adjusted OEL on a laborer, sublevel, WTC5,
 - 128% of the shift adjusted OEL on a laborer, S4B Level, WTC5,
 - 68% of the shift adjusted OEL on a torch cutter, WTC5,

It is not possible to report all of last week's elevated carbon monoxide and noise exposures at this time. The remainder will be reported next week. Two that can be reported are the following:

- Elevated **Carbon Monoxide** exposure as follows:
 - 100% (201 ppm) of the 15 minute STEL OEL on a torch cutter, WTC 5, B2.
- Elevated **Noise** exposure as follows:
 - 197% (95 dBA) of the OEL on a Bobcat operator, WTC5, B2 (no hearing protection worn).

Contractors: Please note that OSHA regulations require that results of IH measurements be communicated to exposed workers. This is covered by the Hazard Communication Standard as well as other standards for specific substances such as lead, cadmium, asbestos, and others. It has come to our attention that some contractors do not feel that they have an obligation to do this. Not only is it required, but it is the right thing to do.

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.

Victor Hillman, CIH, CSP
Liberty Mutual Group



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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 the lower of either the PEL or TLV 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.

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".