



Industrial Hygiene Air Sample Results

Summary for Week of 2/15/02 to 2/22/02

Attached is a summary of the laboratory results and direct reading measurements completed during the week of February 15, 2002 to February 22, 2002. The air samples were collected and the measurements 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 shift adjusted occupational exposure limits. The exceptions were;

- **Quartz** concentration of 733%, 237%, and 179% of the shift adjusted OEL on three tie-back hole drillers in WTC 6.
- **Quartz** concentration of 625% of the shift adjusted OEL on a laborer at SW section of slurry wall.
- **Quartz** concentration of 114 % of the shift adjusted OEL on Core driller at WTC 6 Level B2.
- **Quartz** concentration of 110 % of the shift adjusted OEL on spotter in Depression between N Tower & S Tower.
- **Lead** concentration over 1500 % and **Arsenic** concentration of 278% of the shift adjusted OEL on a Torch Cutter in Depression North from Tower 2.

In addition, the following results are at or above 50% of the shift adjusted OEL (but below 100% of the shift adjusted OEL). The operations associated with these results should receive attention to ensure that these results are an accurate reflection of actual exposures and that feasible steps are taken in an attempt to ensure that exposures do not elevate over time;

- **Asbestos** concentration of 76 % of the shift adjusted OEL on IH tech Walking all Ground Zero Work Areas.
- **Asbestos** concentration of 66 % and 54 % of the shift adjusted OEL on grappler operator in depression at 5 WTC.
- **Asbestos** concentration of 64 % of the shift adjusted OEL on Torch cutter in depression south of tower #1.
- **Asbestos** concentration of 60 % of the shift adjusted OEL on operator in depression E of 1 WTC.
- **Asbestos** concentration of 58 % of the shift adjusted OEL on spotter in depression Tower #1 & 2.
- **Quartz** concentration of 83 % of the shift adjusted OEL on Driller at 6 WTC Level B2.
- **Iron** concentration of 82 % of the shift adjusted OEL on Torch Cutter in Depression North from Tower 2.

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



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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.

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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