



Industrial Hygiene Air Sample Results

Summary for Week of 04-15-02 to 04-19-02

Attached is a summary of the laboratory results completed during the week of April 15, 2002 to April 19, 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. Those results which were higher than the shift adjusted occupational exposure limits were:

- **Three Quartz** concentrations as follows:
 - 791 % of the shift adjusted OEL on a spotter at WTC 1 Depression.
 - 625 % of the shift adjusted OEL on a laborer WTC 5, B2.
 - 279 % of the shift adjusted OEL on operator middle of south slurry wall
- **Three Diesel exhaust fume** concentration as follows:
 - 225 % of the shift adjusted OEL on a laborer in WTC 5.
 - 212 % of the shift adjusted OEL on a bobcat operator in WTC 5, B2.
 - 145 % of the shift adjusted OEL on a laborer cleaning beams WTC 5, B1.

In addition, the following results were 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;

- **Five Quartz** concentrations of 96 %, 92 %, 88 %, 79 % and 70 % **of the shift adjusted OEL** on a laborer in WTC 6, B2- core drilling, area- mid bridge, WTC 5 torch cutting, WTC 5 B1- scaffold area, WTC 5, B2 breaking concrete.
- **Four Diesel Exhaust Particulate** concentration at 85 %, 71 %, 71 %, 51 % and 50 % **of the shift adjusted OEL** on a torch cutter on scaffold at truck exit, laborer WTC 5 sublevel, Torch cutter in depression WTC 5, excavator operator WTC 4.

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:



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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".

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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