NYC 9/11 Public Portal Document

lmn

Industrial Hygiene Air Sample Results

Summary for Weeks of 12/21/01 to 01/04/02

Attached is a summary of the results of the samples collected by ATC associates at the World Trade Center site for the specified week.

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

An **ozone** concentration of **81 % of the TLV** on a drill operator in the depression

A **Diesel exhaust fume** concentration of **86% of the TLV** on torch cutter in the WTC 1 depression
A **Diesel exhaust fume** concentration of **91% of the TLV** on torch cutter in the WTC 1 depression
A **Diesel exhaust fume** concentration of **102% of the TLV** on torch cutter in the WTC 1 depression
A **Diesel exhaust fume** concentration of **56% of the TLV** on torch cutter in the WTC 1 depression
A **Diesel exhaust fume** concentration of **98% of the TLV** on truck operator moving material to surface

A **quartz** concentration of **62 % of the TLV** on a slurry wall drill operator
A **quartz** concentration of **72 % of the TLV** on a jackhammer operator in the cable pit
A **quartz** concentration of **466 % of the TLV** on a jackhammer operator west of wash station
A **quartz** concentration of **96 % of the TLV** on a drill operator

An **asbestos** concentration of **56 % of the TLV** on a grappler operator

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 Analytes - This is the number of individual analysis performed. If only one analyze is determined 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.

PAHs: Acenaphthene, acenaphthylene, anthracene, benz(a)anthracene, benz(b)fluoranthene, benzo(a)pyrene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene and pyrene.

Aromatics: Benzene, ethyl benzene, toluene, and xylene.

NYC-WTC_000234895

NYC 9/11 Public Portal Document

lmn

Industrial Hygiene Air Sample Results

Summary for Weeks of 12/21/01 to 01/04/02

Silica: Respirable dust, quartz, and cristobalite.

Aldehydes: Acetaldehyde, acrolein, benzaldehyde, formaldehyde, n-butyraldehyde, propionaldehyde, and valeraldehyde.

Acids: Hydrobromic acid, hydrochloric acid, hydrofluoric acid, nitric acid, phosphoric acid and sulfuric acid

Highest Analyte - The analyte found in the highest concentration with respect to its occupational exposure limit.

Highest Result - The concentration of the highest analyte.

OSHA PEL - This is the Permissible Exposure Limit (PEL) for the highest analyte. PELs are established by an OSHA rule-making process and are the legal occupational exposure standards.

ACGIH TLV - This is the Threshold Limit Value (TLV) for the highest analyte. TLVs are voluntary guidelines for occupational exposure which are established by the American Conference of Governmental Industrial Hygienists, a private professional organization.

Highest Result / % of 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.

#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.

Donald A. Weber, Sr., IHIT
Senior Industrial Hygienist
Liberty Mutual Insurance Group

NYC-WTC_000234896