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OSHA SAMPLING RESULTS SUMMARY AS OF 11/7

Asbestos: A total of **642** air monitoring samples for asbestos have been taken. From 9/13 -9/21, 177 samples were taken in the financial district. They were taken on OSHA personnel as they walked within certain predetermined zones. Results revealed asbestos concentrations ranging from ND to .037 f/cc., well below OSHA's permissible exposure limit (PEL) of .1 f/cc.

After 9/21, sampling focused on the rubble pile and those workers working on or immediately next to it. **63** of **465** samples exceeded OSHA's limit via PCM analysis. However, upon further analysis using discriminating counting methods and/or TEM analysis, the number of asbestos fibers found dropped dramatically to below detectable levels or well below .1 f/cc.

Carbon Monoxide: A total of **47** personal samples of workers on the rubble pile showed results ranging from 1 ppm to 34 ppm which are well below the OSHA 50 ppm permissible exposure limit.

Noise: OSHA has been conducting noise monitoring in the rubble pile. Twelve personal samples have been conducted on employees performing (or working near) various operations such as jack hammering. Employee's exposure to the noise range from 80.6 dBA to 89 dBA. OSHA's permissible noise exposure for construction is 90 dBA

Respirable Silica: The overwhelming majority of the **226** silica samples show no detectable levels of airborne silica. The highest sample result was approximately twice the OSHA limit, whereas the next highest level was less than half of this limit. Both of these levels were found on personnel working in the rubble pile; an area where OSHA continues to encourage the use of respiratory protection.

Volatile Organic Compounds: OSHA has taken **366** samples for (VOCs) such as acetaldehyde, acrolein, acrylonitrile, benzene, 2-butanone,, carbofurans, chlorodiphenyl (PCB), ethyl benzene, formaldehyde, freon, hexone, isocyanates (e.g. MDI, TDI), perchloroethylene, phosgene, styrene, toluene, 1-3 butadiene, trichloroethylene, vinyl chloride, and xylene. Screening samples initially showed elevated levels of some organic chemicals resulting from the fires burning in the rubble pile. Subsequent personal and area samples show worker exposure levels to be below OSHA limits. However, one personal sample result for benzene was found to be at the 8-hr. OSHA Allowable Limit concentration of 1 ppm. This was found on a backhoe operator moving debris. See information below for polynucleated aromatics, Freon R-22, and dioxin.

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Oxides of Nitrogen/ Sulfur: Sampling on grappler operators on the rubble pile, and on employees manning truck wash stations revealed trace levels of nitric oxide and nitrogen dioxide. SO_2 results are pending.

Metals: As of 11/3/01 OSHA has taken **368** air samples to monitor worker exposures to dusts, fumes, oxides, and other compounds of metals such as antimony, beryllium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, vanadium, zinc, cadmium, magnesium, arsenic, and mercury. Results from these samples are generally well below the applicable OSHA limits. However, torch cutting and burning structural steel at the rubble pile have resulted in instances of overexposures as follows: copper (9); iron oxide (11); lead (6); cadmium (2); berylium (1); and vanadium (1). Accordingly, OSHA is recommending that workers engaged in these operations wear appropriate respiratory protection.

Ionizing Radiation: A survey of the rubble pile was conducted on 10/22-10/23 to check for latent radiation with particular attention to alpha radiation. Preliminary results show no elevated levels.

Dioxins: The single sample taken by OSHA and analyzed by the EPA, representing exposure on the pile, showed elevated levels of dioxins. These levels were substantially higher than background levels but comparable to levels found by the EPA on the rubble pile. The dioxins found here are emitted from the on-going rubble fire. OSHA does not have a worker standard for dioxins. Dioxins are considered collectively as suspect human carcinogens. Some of the individual compounds are considered to be known human carcinogens. OSHA has taken additional samples which have all been forwarded for analysis. OSHA is coordinating with EPA, and Salt Lake City Analytical Laboratory to more fully characterize exposure and risk around the rubble pile.

Polynucleated Aromatic Hydrocarbons: OSHA identified several elevated samples, three of which reached or exceeded OSHA's coal tar pitch volatiles PEL of .2mg/m^3. These personal samples were taken on the pile on iron workers and grappler operators. OSHA continues to strongly recommend the use of respiratory protection when working on the rubble pile.

Freon R-22: OSHA has conducted sampling for Freon R-22 (chlorodiflouromethane) and the sample results are pending. In response to information about exposure to the decomposition by-products of Freon 22 used in the air conditioning systems of WTC towers, sampling for hydrofluoric acid (HF) had been conducted. Results of

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the HF revealed non-detectable levels. Additionally, sampling for phosgene has also been conducted and the sample results are pending.

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