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Readiness thru Health

64-004-0302

Just the Facts...

# *Health Information for World Trade Center Support Personnel*

**Background:** As an individual who provided support to the WTC efforts following the 11 September 01 incident, you may be concerned about potential impacts this may have had on your health. If you believe that the support you provided to the World Trade Center has worsened any existing health condition or created new ones, you should contact your own health care provider to discuss your concerns.

**General information.** A great deal of environmental sampling was conducted at the WTC site and surrounding areas by the Occupational Safety and Health Administration. This data has been evaluated to determine the likelihood of health effects. However, sampling results varied from location to location and by date of sampling. Clearly, the most substantial exposures occurred very soon after the incident and decreased over time. Activities that disturbed the rubble and raised dust would likely produce a greater exposure to some hazards. Proximity to burning materials or certain equipment might also result in increased exposures. The use of respiratory protection would greatly reduce exposure to airborne hazards. If you are exposed to a hazard, many factors will determine whether harmful health effects will occur and what the type and severity of those health effects will be. These factors include the dose (how much), the duration (how long), the route or pathway by which you are exposed (breathing, eating, drinking, or skin contact), the other chemicals or hazards to which you are exposed, and your individual characteristics such as age, gender, nutritional status, family traits, life-style, and state of health. Information is provided below on hazards known to be present at the WTC site.

**Asbestos.** Asbestos is the name given to a group of fibrous minerals that occur naturally in the environment. These minerals are made up of fibers that vary in length and may be straight or curled. Asbestos fibers do not have any detectable odor or taste. You are most likely to be exposed to asbestos by inhaling asbestos fibers suspended in air. Asbestos was used in insulation and ceiling and floor tiles because of its fire-resistant properties. Asbestos fibers are also commonly found in outdoor air in New York City. Although variable amounts of asbestos were found in bulk debris and rubble at the WTC site, the Occupational Safety & Health Administration and the U.S. Environmental Protection Agency found that **the airborne levels (what is breathed in) of asbestos generated when the WTC fell did not indicate a concern.**

Low levels of asbestos that are not likely to be harmful to your health can be detected in almost any air sample. As the number of fibers increases, the risk of harm increases. If asbestos fibers get into your lungs, some of the fibers will be deposited in the air passages and on the cells that make up your lungs. Most fibers are removed from your lungs within a few hours by being carried away or coughed up in a layer of mucus to the throat, where they are swallowed into the stomach. Fibers that are deposited in the deepest parts of the lung are removed more slowly and may even remain in place for many years or may never be removed from your body.

Information on the health effects of asbestos in people comes mostly from studies of people who were exposed in the past to very high levels of asbestos in the workplace. Workers who breathe in asbestos may develop a slow buildup of scar-like tissue in the lungs and in the membrane that surrounds the lungs. This scar-like tissue does not expand and contract like normal lung tissue and so breathing becomes difficult. Blood flow to the lung may also be decreased and this causes the heart to enlarge. This serious disease is called asbestosis. People with asbestosis have shortness of breath, often accompanied by a cough. However, we have not seen asbestosis in people exposed to the low levels of asbestos documented at the WTC Asbestos workers routinely exposed to very high levels of asbestos fibers have increased chances of getting cancer of the lung and mesothelioma, a cancer of the thin membrane that surrounds the lung. These diseases do not develop immediately, but appear only after a number of years. There is also some evidence from studies of workers that breathing asbestos can increase the chances of getting gastrointestinal cancers but this is less certain. Members of the public who are exposed to lower levels of asbestos may also have increased chances of getting cancer. However, we have not seen lung cancer or mesothelioma develop in people exposed to the low levels of asbestos documented at the WTC site.

Several factors affect your risk of disease. The most important of these are (1) how long you were exposed, (2) time since your first exposure, and (3) whether you smoked cigarettes. The most common test used to determine if there is a health impact is a chest x-ray that can detect early signs of lung disease caused by asbestos. This test is usually reliable for detecting asbestos-related effects and high-resolution computed tomography (CAT scan) is the gold standard for detecting changes in the lungs.

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The Occupational Safety and Health Administration (OSHA) has established a safe and enforceable limit (0.1 f/cc) for an average 8-hour daily concentration of asbestos allowed in air in the workplace. Airborne area samples and breathing zone samples taken on workers at the WTC indicate that airborne levels of asbestos did not exceed OSHA's occupational exposure limits. Although variable amounts of asbestos were found in bulk debris and rubble at the WTC site, OSHA and the Environmental Protection Agency data indicate that medical surveillance is not necessary for soldiers who responded to the WTC.

**Dust and Soot.** Individuals working in and around debris piles may have been exposed to dust, soot, and pulverized building materials. This dust could contain metals, silica or asbestos, although studies of the size and composition of these dust particles continue. Dusts concentrations around the rubble pile during activities that disturbed the rubble were higher than is acceptable by OSHA standards for a worksite. Intense exposures to any type of dust and smoke can cause irritation of the eye, nose, throat and lungs, and coughing and sneezing. However, the use of respiratory protection would make the likelihood of any effect minimal. If exposed to high levels of dust and soot, the body would attempt to clear this dust from the airways by increasing mucous production (tearing of the eyes, coughing). These symptoms subside shortly after exposure ends. Most dust-induced eye, nose and throat irritation does not result in long-term health effects. However, the potential for chronic effects, particularly to the lungs, are still being evaluated. If you believe the support you provided to the World Trade Center has worsened any existing health condition or created new ones, you should contact your own health care provider to discuss your concerns.

**Carbon Monoxide.** Carbon monoxide is a colorless and odorless product of incomplete combustion. It is usually present as a hazard in enclosed or poorly ventilated areas. Symptoms of carbon monoxide exposure begin with headache, dizziness, chest discomfort, and nausea. Exposures that produced this level of effect are reversible when fresh air is supplied. OSHA monitored workers on the rubble pile and all carbon monoxide values were below occupational exposure limits, and thus would not be associated with any health effects.

**Respirable Silica**. Crystalline silica is present in brick, concrete and glass and could also have been present in the rubble dust at the WTC. It irritates the respiratory tract if inhaled. Very high levels of exposure over a short period of time can lead to acute silicosis, a condition that progresses rapidly over several months to extreme difficulty in breathing. Longer exposures to lower levels may cause some respiratory difficulty. Measurements made by OSHA at the WTC indicated that the vast majority of samples taken did not show detectable levels of silica. However, some operations including jack hammering, drilling, rubble removal, chipping, and breaking up concrete could have put workers at a slightly higher risk. The use of respiratory protection during these activities should have provided sufficient protection.

**Volatile organic compounds.** These are compounds that may have been released to the air from fires burning in the rubble pile. Although this is a broad class of compounds, in general, acute (immediate) symptoms include headache, irritability, lightheadedness, lack of coordination or clumsiness, and sometimes nausea and vomiting. In all but the most severe cases, symptoms will resolve within hours to days. If any of these symptoms occurred due to acute exposure, they should have subsided by now. The potential for long-term effects is very minimal, because air sampling except in one instance, did not detect the presence of these compounds above the allowable workplace limits.

**Metals.** Metals in dusts and fumes, particularly lead may have been present at the WTC site. Metals can affect different organs including the kidneys, and lungs. Metal dust can be inhaled or absorbed through the skin. Inhaled dust poses minimal risk for chronic or longer-term health effects because dust settles and becomes less of an inhalation hazard. Air sampling conducted for 18 metals generally confirmed that exposure levels were below the OSHA allowable exposure. Air samples taken near torch cutting and burning structural steel at the rubble pile detected copper, iron oxide, lead and cadmium. However, workers performing these cutting operations were required to wear respiratory protection and were completely protected.

**Noise.** Various operations conducted generate noise, particularly jack hammering and drilling. Some noise measurements exceeded OSHA allowable exposure limits. Individuals routinely conducting such operations should utilize hearing protection during such operations and get tested for hearing difficulty.

**Dioxins and polynuclear aromatic hydrocarbons.** A few samples taken from the rubble pile were higher than the background level for dioxin. They can be found at higher concentrations in the residue resulting from fires. However, the levels found are not associated with any known health effects. Likewise, polynuclear aromatic hydrocarbons are typically found after wood or other products are burned. Most environmental samples were negative for these compounds, and the few that were positive did not exceed workplace exposure standards for PAHs. Thus, soldiers do not require monitoring for exposure because of the limited period and nature of exposure.

**Inorganic Acids.** This includes chemicals such as hydrochloric, phosphoric and sulfuric acid. These compounds may be found as byproducts of combustion. They irritate the respiratory tract, and can cause fluid to collect in the lung. Most air samples taken were negative so it is unlikely personnel were exposed to harmful levels of inorganic acids.

**Traumatic Stress after Horrific Events**. Witnessing a tragic event with loss of human life and destruction may have an impact on individuals. It is possible to experience depression, grief, or inability to function. Normal activities and relationships may no longer produce a sense of enjoyment. It is important to seek assistance or counseling if you have such a response.

**Summary.** This information has been provided in order for you to get a better understanding of what may have been present at the WTC site while you were there. Because your continued health is the most important thing, we encourage you to see your own physician if you think your support to the WTC has affected you in any way.