Esswein, R. McCleery, B. Lushniak, NIOSH, Cincinnati, OH.

As part of a CDC first responder team, two representatives from NIOSH traveled to New York City within 24 hours of the attack. Within one week, additional NIOSH personnel were on site to collect air samples to identify occupational health risks among rescue and construction workers at "Ground Zero" and to prepare recommendations regarding respirator selection, worker exposures, blood borne pathogens, confined spaces, and handling human remains. This presentation reviews the chaotic conditions and multiplicity of local, state, and federal agencies and private organizations which were present at both "Ground Zero" and the WTC Emergency Command Center sites following September 11th, and how these impacted our ability to identify occupational health problems, track disease and injury trends, identify medical surveillance needs, and disseminate information. During our response, over 1200 air and bulk samples were collected and analyzed for asbestos, carbon monoxide (CO), chlorodifluoromethane, diesel exhaust, hydrogen sulfide, inorganic acids, mercury, metals, polynuclear aromatic hydrocarbons, respirable and total particulate, respirable crystalline silica, and volatile organic compounds from locations on or in close proximity to the "pile." Of these, exposures to CO were the most significant problem. PBZ concentrations were above the NIOSH REL of 35 ppm and the OSHA PEL of 50 ppm. Some concentrations were above the NIOSH IDLH limit of 1200 ppm. Elevated CO levels resulted from workers using oxy-acetylene cutting torches and gasoline-powered cutting saws. Recommendations were made to ensure adequate ventilation and worker understanding of CO sources, health effects, and factors that can increase or decrease exposures when using these tools. Preliminary data from medical screening programs growing out of the disaster response indicate increased numbers of adverse health outcomes even though industrial hygiene data suggest workers' exposures, overall, were low.

296.

CDC/NIOSH EMERGENCY RESPONSE: PHYSICAL AND MENTAL HEALTH OUTCOMES FOLLOWING EXPOSURE AT THE WORLD TRADE CENTER DISASTER. L. Tapp, S. Baron, B. Bernard, R. Driscoll, NIOSH, Cincinnati, OH.; K. Kelly, D. Prezant, New York City Fire Department, Brooklyn, NY.; R. Herbert, S. Levin, Mt.Sinai Medical School, New York, NY.

In the 18 months since the collapse of the World Trade Center on September 11, 2001, a number of medical screening and assessment studies have been conducted which better define the type and magnitude of both physical and mental health consequences for those who had work-related exposure during and shortly after the WTC collapse. This 20-minute session will summarize the findings from several of these studies including both rescue and recovery workers and workers who were exposed because their workplace was close to the WTC site. Data to be presented from rescue workers includes respiratory health effects and respirator use among the New York City firefighters and preliminary results from an ongoing NIOSH funded screening program of respiratory and mental health outcomes in 9000 WTC rescue, recovery, and restoration workers and volunteers conducted by Mt. Sinai Medical Center in New York City. The results of a NIOSH questionnaire survey of physical and mental health of about 1250 workers employed near the WTC site including public school workers, community college workers, office workers, and transit workers will also be presented. All of these studies have shown significant upper and lower respiratory health symptoms and/or physical examination abnormalities as well as elevated rates of post-traumatic stress disorder and depression. Many of these findings were still present many months after exposure at the WTC site had ended.

297.

THE NIOSH RESPONSE TO A BIOTERROR ATTACK: AN OVERVIEW OF THE ENVIRONMENTAL CHARACTERIZATIONS OF BUILDINGS POTENTIALLY CONTAMINATED WITH BACILLUS ANTHRACIS. B. King, NIOSH, Cincinnati, OH.

Introduction. NIOSH industrial hygienists and engineers were essential in the national emergency response to the Bacillus anthracis bioterror attack of the fall of 2001. During October 2001 through September 2002, NIOSH scientists, in collaboration with other agencies, helped direct and/or perform characterizations of over 100 buildings in six states and the District of Columbia thought to be potentially contaminated with anthrax. **Methods.** During these characterizations, sampling strategies were developed to provide direction for assessing the extent of contamination. Depending on the demands and circumstances of a particular location, flexibility in the use of these strategies was important. However, they did provide a framework around which the characterizations could be built. These strategies included a focus on sampling mail pathways, ventilation systems, and high-traffic areas. The methods of sample collection included traditional industrial hygiene methods such as surface wipe samples, surface vacuum samples, and area air samples. **Results and Conclusions.** The results from these characterizations helped provide a base of knowledge on which further action could be performed. One example includes Capitol Hill in Washington, D.C., the results of which formed the basis for an even more extensive characterization performed by the EPA during their remediation phase. Another example is the results of building characterizations throughout Connecticut which provided supporting data for the epidemiologic investigation there. Additionally, information on the efficacy of various environmental sampling methods for anthrax was developed by NIOSH during the work at certain locations. Such sites included the Brentwood and Hamilton post office facilities in Washington, D.C., and Trenton, New Jersey, respectively. The lessons learned from the experience (including laboratory and administrative needs, sampling logistics, and cooperation between agencies) will be invaluable in responding to future attacks. Specifically, industrial hygiene practices and strategies used will be essential in directing sampling and remediation efforts in the future.

298.

EQUIPMENT AND SUPPLY LOGISTICS DURING EMERGENCY RESPONSE. D.E. Booher, NIOSH, Cincinnati, OH.

Initial provision and continued supply of appropriate materials is paramount to the success of any emergency response effort. This holds true for emergency response activities of the Hazard Evaluations and Technical Assistance Branch of NIOSH. Our role has typically involved monitoring and protecting the health and safety of responders, as well as supplying specialized sampling and analytical technical experts. Based upon the experience gained during numerous emergency responses, we have concentrated logistics preparation on (1) staging areas, (2) electrical supply, (3) provision of clean water, (4) shipping and receipt of dangerous goods and controlled substances (involved with our environmental sampling and analytical activities), and (5) a reliable source of equipment and supplies in the event of a prolonged response.

For on-site staging, a large canvas tent with cooling/heating capability provides a base of operations. High capacity electrical generators provide power for heating/cooling, recharging of equipment, and communications. Water is brought on site and stored in appropriate containers. Shipping containers for hazardous materials have been acquired and pre-cleared for all appropriate shipping regulations. In addition to establishing and continually interacting with contacts at local, regional, and national supply houses, large stock piles of equipment and supplies are maintained at our headquarters. In the near future, our response capability will be augmented with a truck/trailer mobile unit designed for nuclear, biological, and chemical emergency response. By addressing these logistic problems in advance, more effort and efficient actions can be directed to the emergency response efforts.

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