99.

NIOSH EVALUATION OF AIR SAMPLING METHODOLOGIES FOR *BACILLUS ANTHRACIS* IN A UNITED STATES POSTAL SERVICE PROCESSING AND DISTRIBUTION CENTER. R. McCleery, K. Martinez, G. Burr, D. Mattorano, NIOSH, Cincinnati, OH.

Introduction. During the week of February 4–7, 2002, NIOSH conducted a health hazard evaluation at the Trenton Processing and Distribution Center in response to a request from the United States Postal Service for collaborative research to evaluate air sampling methods for *Bacillus anthracis* spores prior to and subsequent to operation of a delivery bar code sorter (DBCS). **Methods.** Two hundred and fifty-six air samples were collected using mixed cellulose-ester filters, polytetrafluoroethylene filters, gelatin-coated filters, dry filter units which used polyester felt filter disks, and Andersen single-stage cascade impactors using trypticase soy agar plates with 5% sheep blood. One hundred and six wipe samples were collected using sterile polyester/rayon pads moistened with sterile water. **Results and Conclusions.** Initial sample analysis for *B. anthracis* indicated that prior to operating the DBCS, all MCE, PTFE, GEL, and DFU filters were negative; however, 19% of Andersen samples were positive. Subsequent to operating the DBCS, all sample media indicated some positive samples, which included 91% of Andersen samples. The re-analysis of the remaining sample pellet of previously negative filter samples collected prior to and subsequent to DBCS operation resulted in additional positive samples. This clearly demonstrates that not only are all evaluated methods capable of collecting *B. anthracis* spores to some degree, and re-aerosolization is possible through mechanical means. Additionally, since positive samples were found at various locations prior to operation of the DBCS, it suggests that walking and light work in the enclosure may have been sufficient to re-aerosolize *B. anthracis* spores at low concentrations. The positive samples from the re-analysis indicate that if the complete specimen pellet is not consumed in the initial analysis, then there exists a potential for false negative results. This determination can play a significant factor in the selection of air sampling methodologies when considering the intent of sampling, e.g., screening, characterization, or clearance.

300. _____

EMERGENCY RESPONSE IN THE EVENT OF A BIOTERRORIST EVENT: SHIPPING AND ANALYTICAL CONSIDERATIONS FOR COLLECTED ENVIRONMENTAL SAMPLES. K. Martinez, NIOSH, Cincinnati, OH.

Environmental sampling is conducted to determine the presence of bioterrorism (BT) agents in environments to assess exposure risk; to determine the extent and degree of contamination; to support decisions regarding the need for medical treatment or cleanup; and to provide guidance regarding when cleanup is adequate to permit re-entry into an area. The types of methodologies used in a sampling strategy may include the collection of bulk, surface (wipe and vacuum), and/or air samples. Due to the degree of complexity and safety required for BT agents, presumptive identification should only be conducted by laboratories that are a member of the CDC Laboratory Response Network (LRN). Any other support efforts risk the health and safety of your occupational work force, the security of the nation, and the stability of the national public health system. During the anthrax outbreak investigation, over 120,000 environmental workups were conducted of which approximately 50% were handled by the LRN system.

The initial preparedness for a BT response was based on a clinical model. Supporting laboratories were not amenable to the appropriate processing of these environmental specimens in a manner that would maximize the probability of finding a positive but also provide semi-quantitative information. NIOSH participation brought an environmental (industrial hygiene) perspective to the outbreak investigations that proved beneficial to the epidemiologic assessments. Environmental microbiology perspectives are now viewed positively as a component of the response model and advances have been made regarding recovery efficiencies, semi-quantification, and validation. As a result, processing of higher-risk environmental samples, i.e., other than swab samples including bulks, wipes, vacuum, and air samples, are recommended to be analyzed at an appropriate LRN Level B or C laboratory using BSL-3 facilities.

The shipping of collected environmental samples poses an additional challenge. Samples should be considered as potentially infectious substances and therefore handled appropriately.

301. _____

CDC/NIOSH INVOLVEMENT IN THE ANTHRAX RESPONSE—A LOOK AT REMEDIATION. G. Burr, NIOSH, Cincinnati, OH.; M. Gillen, NIOSH, Washington, DC.

Field investigators from the Centers for Disease Control and Prevention's National Institute for Occupational Safety and Health (NIOSH) have been extensively involved since October 2001 in anthrax responses in Florida, New York, New Jersey, Connecticut, Missouri, and Washington, D.C. The main objectives of these investigations were to provide the initial assessment of environmental contamination, develop and evaluate environmental sampling techniques, and provide recommendations to minimize exposures. NIOSH investigators then provide input to remediation plans, especially in the review of verification sampling used to evaluate the results of remediation to eventually "clear" the facility. Our goal is to insure that the most current and valid methods are used, and that sampling plans are rigorous. This presentation will discuss technical issues involved in creating effective clearance sampling plans for facilities contaminated with *B. anthracis*, including the types of environmental samples to collect, the rationale for their collection, coverage goals, and comparison with previous remediation efforts. The framework of a remediation plan utilized in two large buildings in Washington, D.C. that were contaminated with *B. anthracis* will be examined, including the usefulness of information from focused, biased, and random environmental sampling to assess if a building is safe for re-occupancy. This presentation will also examine the knowledge gaps which continue to exist for *B. anthracis*, such as the lack of validated environmental sampling methods and uncertainties regarding dose-response relationships for inhalational and cutaneous anthrax, and how these uncertainties influence the determination of when a workplace contaminated with *B. anthracis* is "safe" to reoccupy.

302. _____

OCCUPATIONAL HEALTH AND SAFETY ISSUES FOR EMERGENCY RESPONDERS. T.Seitz, B. Bernard, NIOSH, Cincinnati, OH.

This presentation includes a discussion of occupational health and safety (OH&S) issues in emergency response. It is based on experience gained from responses at the World Trade Center and anthrax-contaminated sites, and includes considerations for future response and preparedness efforts. Occupational health and safety specialists play an important role on emergency response teams. Responsibilities may include providing guidance to other response team members as well as the first responder community and downstream health care workers caring for sick or injured persons. OH&S specialists will be required to fit into an Incident Command Structure and deal with multiple bureaucracies, contentious situations, and constantly evolving work environment issues. Medical concerns facing OH&S specialists may include vaccination considerations, prophylactic antibiotic use and side effects, fatigue, stress, and physical and mental fitness for duty. Responders may be asked to facilitate worker notification regarding exposure and risk of disease, as well as overall worker surveillance. Worker health and safety issues must be approached with prevention in mind using the traditional hierarchy of controls. Administrative controls include such things as pre-event training, on-site training, adequate staffing, and preventing persons that are not adequately trained and protected from entering contaminated areas or situations of unknown risk. Conducting exposure assessments and ensuring the adequacy of engineering controls and personal protective equipment are also important considerations. Using smallpox as an example, potential roles and responsibilities of OH&S responders will be discussed.

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