

sure was associated with bone pain, and dust exposure with eye strain and viral exposure. Based on these results, a proposed chemical exposure rating was performed. For example, an exposure rating estimate of zero means no exposure either through dermal contact or inhalation. Moderate exposure is given an estimate of 2 which means that the subject is exposed for <50% of the total 8-hour workday. Very high exposure is above the TLV, which varies per chemical, and the exposure time >8 hours.

Conclusion: This is a significant study that looked into the actual amount of worker exposure to chemical, which may result in a chemical disaster.

Keywords: chemicals; exposure; hazards; health; occupational setting
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(247) Multidisciplinary Approach in Environmental Assessment of Chemical Spill Due to Mining in the Philippines

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Objective: The purpose of this study was to determine the health epidemiology associated with chemical spills in mining industries.

Methods: This was a preliminary study to establish a framework on how to investigate and manage chemical spills in the metallic mining industry in The Philippines. Consultations with experts from other disciplines such as sociology, epidemiology, occupational and environmental health, engineering, applied chemistry, and social work were obtained.

Chemical spills from mining industries are not uncommon in The Philippines. When such events arise, there is a need for a standard procedure for the proper investigation, gathering of data, and overall management of the situation. The basic elements of this process should include investigations of the workplace, of the immediate environment, and the community health in order to establish parameters of emergency management. Investigation of the workplace involves a detailed account of the industrial accident, the causes of leaks or spillage into the river system, and the breakdown of the work process, machines, and other facilities. Samples of water and soil are taken on a spatial basis in order to establish distance of affectation. Air sampling during chemical exposures provides data on concentrations.

Conclusions: This is a significant study that developed a standard management procedure on how to investigate chemical spills and contaminations from mining industries.

Keywords: chemical spills; consultation; management procedure; mining industries; The Philippines

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Oral Presentations—Theme 16: Types of Disasters

Session 1: Chemical, Biological, Radiological, and Nuclear 1

Chairs: Victor Koscheyev; M. Ruijten

Standardization of Mobile Analytical Equipment for Chemical, Biological, Radiological, and Nuclear Agents in a European Country

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Background: Tactical hazardous materials (HAZMAT) response, medical treatment, and logistics are highly dependent on early identification of the chemical, biological, radiological, and nuclear (CBRN) agents involved.

Discussion: In 1998, the German federal government modernized its fleet of CBRN detection vehicles. By 2001, 371 vehicles were delivered to local fire stations. These “CBRN explorers” have been placed in strategic, geographically important locations in the country in order to assure shorter response times by rapid deployment of high-tech analytic capabilities. These vehicles are equipped with comprehensive CBRN analysis and measurement technology, telecommunication, geopositioning, meteorological, and personal protective equipment. The German government distributed these uniformly equipped CBRN explorers to assure more timely and consistent analytic capabilities in all geographic areas during HAZMAT disasters. In the United States, the fire departments’ HAZMAT teams and other agencies own a variety of non-standardized analytical CBRN tools. The national standardization of analytical CBRN equipment for all US HAZMAT teams should be considered seriously.

Conclusions: The rapid and precise chemical and physical identification of HAZMAT is essential in order to adjust and optimize tactical, medical, and public safety responses. The German federal government has delivered standardized, high-tech analytic CBRN equipment throughout the county. This model of equipment standardization and widespread distribution of mobile CBRN units could serve as an international model.

Keywords: chemical, biological, radiological, and nuclear; Germany; hazardous materials; standardization; vehicles

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Dirty Bomb or Radiological Dispersion Device: Preparedness and Management Priorities

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Background: The detonation of a radiological dispersion device (RDD) has become a realistic scenario. The presence of radionuclides at an explosion site, along with triage, medical management, and logistics, will be made more difficult and complex by the unfamiliarity of rescue and medical personnel with how to prioritize exposed bomb victims.