Assessment of Chemical Exposures: Investigations after Large-Scale Chemical Releases

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ABSTRACT

Introduction: Every year there are thousands of chemical releases resulting in significant public health consequences such as evacuations, decontaminations, injuries and fatalities. In response to the gap in knowledge of the public health consequences of these incidents, the Agency for Toxic Substances and Disease Registry (ATSDR) developed the Assessment of Chemical Exposures (ACE) program. ACE provides state and local health departments with technical assistance in responding to large-scale toxic chemical spills.

Methods: The ACE team consists of a variety of trained specialists who can report quickly to a site and offer assistance in one or more of the following areas: 1) registering exposed persons; 2) surveying exposed persons to determine the extent of their exposure, health effects, and needs resulting from the release; 3) surveying hospitals about their response and lessons learned; 4) reviewing medical charts of persons treated for chemical exposure; and 5) facilitating biological sampling or environmental sampling.

Results: ACE was piloted in a smaller-scale chlorine release from a pierced tank at a metal recycling facility in California in June 2010 in which 23 persons received medical care at seven hospitals. In August 2010, an ammonia release from a ruptured pipe at a refrigeration facility in Alabama exposed over 800 individuals; the investigation included interviewing 113 people and abstracting 152 medical charts at five hospitals. In June 2011, the ACE team reviewed medical charts for 170 individuals at five hospitals, in conjunction with a National Institute of Occupational Health and Safety Health (NIOSH) Health Hazard Evaluation (HHE), after a chlorine release at a poultry processing facility.

Discussion: After each investigation, we made specific recommendations that are being followed up on to improve emergency response and to prevent similar future accidents. These include a chemical release alert, initiating reverse 911 warning systems, improving communications with hospitals, and following up on injured persons. The ACE program compliments other federal agency programs such as NIOSH HHEs and worker rosters and the U.S. Chemical Safety and Hazard Investigation Board investigations and have led to considerable interagency collaboration.