G98 Workplace Fatalities: A Case Example of Asphyxia Due to Occupational Exposure to Airborne Chemicals

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After attending this presentation, attendees will understand the types of fatal occupational injuries, the demographics of the victims, and the trends in fatalities nationwide.

This presentation will impact the forensic science community by increasing awareness of workplace fatalities, detailing the various injuries, associated occupations, and personal risk factors.

Although worker injury and fatalities have decreased since adoption of the Occupational Safety and Health Act (OSHA) in 1970, they remain an important safety issue.[1] In 2010, 4,690 workers were killed at work, which averages nearly 13 deaths per day.[2] The United States Bureau of Labor Statistics calculates the number of fatal occupational injuries by detailed event or exposure, with transportation incidents being the number one cause (40%) of work-related fatalities nationwide. Other major types of fatal injury include assaults and violent acts (18%), contact with objects and equipment (16%), falls (14%), exposure to harmful substances or environments (9%), and fires and explosions (4%).[3]

Presented will be the case of a 27-year-old white male who was found unresponsive in a chemical dryer at an industrial plant where he and his coworkers had been pressure washing the containers. He had entered the container in order to rescue a coworker who had lost consciousness. After lifting his coworker to safety, he was overwhelmed with the chemical fumes and became unresponsive. Resuscitation efforts were unsuccessful. Toxicological analysis did not reveal an etiology, but possible exposures included cyanuric chloride, cyanuric acid, or high concentrations of nitrogen. As a result of this incident, the company was fined by OSHA for serious violations including failure to post danger signs, lack of a ventilation procedure in confined spaces during cleaning, and failure to develop emergency rescue procedures.[4]

Discussed will be several notable trends in the last several decades, both in the types of injuries and the occupations associated with the fatalities. These include decreases in workplace homicide and work-related highway incidents, but increases in fatalities from fires and explosions, exposure to harmful substances or environments, and falls. The occupation with the highest number of fatalities is construction, but the highest rate of fatalities per 100,000 full-time equivalent workers is in agriculture, forestry, fishing, and hunting.[3]

Additionally, other personal risk factors such as age, gender, chronic disease, smoking, and alcohol and drug use have been implicated in workforce health and safety.[5] Examined will be the differences in types of workplace fatalities in male and female workers, as well as the disproportionate number of fatal injuries involving men.[3] Other significant populations considered include workers over the age of 55 and workers born outside of the United Sates.

Explored using this case example will be the role of the forensic pathologist in the investigation of workplace deaths as a joint effort with police, the district attorney, and OSHA.[6] The function of OSHA, including the standards set and penalty for violation of these standards, will also be reviewed. Finally discussed will be the future of occupational safety and the current improvements brought about by such incidents.

References:

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