Human Error and Time of Occurrence in Hazardous Material Events in Mining and Manufacturing

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ABSTRACT

Human error has played a role in several large-scale hazardous materials events. To assess how human error and time of occurrence may have contributed to acute chemical releases, data from the Hazardous Substances Emergency Events Surveillance (HSEES) system for 1996–2003 were analyzed. Analyses were restricted to events in mining or manufacturing where human error was a contributing factor. The temporal distribution of releases was also evaluated to determine if the night shift impacted releases due to human error. Human error-related events in mining and manufacturing resulted in almost four times as many events with victims and almost three times as many events with evacuations compared with events in these industries where human error was not a contributing factor (10.3% vs. 2.7% and 11.8% vs. 4.5%, respectively). Time of occurrence of events attributable to human error in mining and manufacturing showed a widespread distribution for number of events, events with victims and evacuations, and hospitalizations and deaths, without apparent increased occurrence during the night shift. Utilizing human factor engineering in both front-end ergonomic design and retrospective incident investigation provides one potential systematic approach that may help minimize human error in workplace-related acute chemical releases and their resulting injuries.