

THE HUMAN ELEMENT

THIS SECTION of the book deals with contributions of people in achieving safety.

There are two causes for accidents: unsafe conditions and unsafe acts. Engineers deal mainly with unsafe conditions. The major role of engineers is prevention through hazard recognition and controls in design of equipment, environments, vehicles, and facilities.

Preventing unsafe acts often is viewed as largely a people problem. Rarely, however, is either an unsafe act or an unsafe condition the lone cause of an accident; the causation and correction approaches normally involve an interaction between the two. To prevent accidents by preventing unsafe acts, one must prevent behaviors that lead to accidents or mitigate the effects of unsafe acts in the causal chain. To deal with unsafe acts and their roles in accidents requires an understanding of human behavior.

Engineers can contribute to safe behaviors through design because designs can eliminate the need for unsafe behaviors. Designers need to understand human behavior and human capabilities and limitations. By making designs fit people, rather than changing people to fit designs, engineers can reduce the role of unsafe acts in the accident equation.

This section looks at procedures and training to be sure that people follow safe procedures. There are methods for identifying what behaviors are correct and safe for various jobs. This section also considers some characteristics of people and the importance of design features that can help minimize behavioral impact on accidents.

