Session: 2 Paper Number: 32

A Systems Approach to the Socioeconomic Impacts of Workplace Injuries

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The goal of this research project is to determine the impacts of occupational injuries and fatalities in terms of both economic costs and social consequences. This will provide a new basis for targeting and evaluating the effectiveness of investments in prevention research.

Each day in the United States an average of 16 workers die from an injury at work, and an additional 9,000 workers sustain disabling injuries on the job. This amounts to well over 5,000 deaths and 3.2 million disabling injuries each year. Typically, the focus of attention in evaluating a workplace injury is the direct medical, employment and earnings consequences for the employer and the injured worker. However, the medical and labor market consequences are only a fraction of the ultimate consequences for the worker. Economic consequences may also extend to the worker's family, co-workers, employer, and community. In addition, researchers are finding substantial non-economic, social consequences of workplace injuries affecting both physical and psychological functioning.

The National Institute for Occupational Safety and Health estimates the economic burden of these injuries to be over $141 billion in direct and indirect costs annually, and the total federal investment in research to prevent occupational injuries and illnesses was $266 million dollars in 2000. There are many avenues of research/ prevention methods, engineering design, economics, human behavior, decision theory, organizational structure, intervention effectiveness, etc. that address various aspects of workplace injuries and fatalities and their consequences. Deciding which research should be funded, and which research will have the most effect, can be difficult. By applying a systems approach incorporating engineering, economics, psychology, and sociology, the impact of occupational injuries and fatalities can be better understood. Basing the research on the theory that the workers are part of an interconnected system of processes and relationships, the resulting investigation will provide an understanding of fatality and injury with a richness and subtlety that results from a multidisciplinary approach.

This multi-disciplinary approach provides a reliable new basis for targeting and evaluating the effectiveness of investments in prevention by studying the impacts on the interrelated system of the injured worker, coworkers, family, and the community, as well as the organizational structures that were the setting for the incident. This poster session presents an introduction to systems theory applied to traumatic injury and socioeconomic consequences research. Case studies from mining (one of the occupations with the highest national fatality and injury rate) are used as examples of applying this approach.

NORA Symposium 2003

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June 23-24, 2003

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