Proactive Risk Management in a Dynamic Society

The objectives of the present study are to better understand the mechanisms of major accidents in the present dynamic and technological society. From this understanding, guides to improved strategies for industrial risk management are sought. It is important to consider carefully the present changes in a modern society when planning for industrial risk management. We are facing a period of technological change, deregulation, fierce competition, and increasing public concern. In a dynamic environment, hazard sources, their control requirements, and sources of disturbances change frequently and risk management can no longer be based on responses to past accidents and incidents, but must be increasingly proactive. That is, risk management must apply an adaptive, closed loop feedback control strategy, based on a measurement or observation of the level of safety actually present and an explicitly formulated target safety level. Due to human flexibility and creative intellectual powers, a human organization presents a particular potential for such an adaptive control, given the right conditions - people are a very important safety resource, not only an error source. In this approach, risk management can only be discussed in depth when considering carefully the decision making involved in the normal operation of the hazardous processes posing potential for major accidents. A key problem in this context is the information flow among the decision-makers at all levels of society: How are objectives, values, and operational targets communicated? How are the boundaries of safe operation identified and communicated? How is operation monitored through routine operational reports and reports from incidents and accidents? What do guidelines look like when an improved, consistent "safety control" must be established from a proactive control point of view? The book discusses these issues on the basis of the present rapid evolution of new cognitive approaches to the study of decision making in action and dynamic, learning organizations, and the rapid change of modern information technology with its potential for design of effective decision support systems.