

Guest Editorial

Safety technology advances should not depend on major disasters

Historically, major disasters have provided the driving force for sponsoring research into improving the technology of safely processing, storing, and transporting hazardous materials. Learning by experience is a costly mode. Fortunately, there are farsighted organizations and individuals willing to sponsor research in the technology of safety on a preemptive rather than a reactive basis.

Industrial consortia dedicated to safety issues are to be commended and encouraged. The Emergency Response Planning Guideline Committee of the American Industrial Hygiene Association is one such organization, and their work is highlighted in this issue. The Center for Chemical Process Safety (CCPS) of the American Institute of Chemical Engineers (AIChE) is another, along with AIChE's Design Institute of Emergency Relief Systems (DIERS) and the Joint Research Center at Ispra sponsored by the European Economic Community (EEC). Recently my own company, DNV Technica Inc., has been able to assemble a confederation of industrial sponsors to develop an Offshore Hazard and Risk Analysis toolkit (OHRA) as well as the confederation of sponsors for SAFETI-92 (Software for Assessment of Flammable, Explosive, and Toxic Impact). These organizations provide more than economic support. They provide encouragement and intellectual stimulation as well as "real world input" to the entire community of safety professionals, researchers, and practicing engineers.

A related development is also to be commended, the application of quality control methodology to assess and improve the management in the processing industry. Recently, with sponsorship by the European Economic Community, TNO in The Netherlands and SRD in the UK have begun developing the SMART mode and associated tools. SMART is based on the ISO 9004 guideline for quality control, thereby emphasizing that safety and quality are achieved concomitantly. The DNV ISRS auditing system is a similar methodology, just coming into application.

This special issue focuses on process and transportation safety. The issue is, in fact, a product of research sponsored by a variety of industrial consortia, governmental bodies, and academic institutions. Among these sponsors are the Canadian Department of National Defence, the UK Health and Safety

Executive, and the U.S. National Institute of Standards Technology. Other papers come from interactions within the DIERS program.

Some of the issues addressed in this special edition are: Why are detonations a sometime occurrence? How are ERPG values established? What is the best way to calculate a “toxic load” representing a specified level of toxicity for risk analyses? Does rail or road transportation of hazardous materials pose the greater risk in the UK? Should a particular reactor vessel be insulated or not?

In addition, important new models are discussed for the phenomena of a descending smoke plume from a large fire, for discharge from a spherical vessel, and for the “expansion zone” portion of a discharging jet. I wish to thank and commend the contributing authors for the quality of their work.

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