

Managing the risks from hazardous chemicals



Hazardous chemicals are a common cause of injuries and fatalities at sea so there is a need for more information about them and effective chemical risk management systems, says **Professor David Walters** of the Seafarers International Research Centre

The limit of our knowledge about the extent and effect of hazardous substances in the working environment of seafarers suggests the need to exercise a precautionary principle in managing their risks. To manage the risk effectively requires better understanding of the nature of the problem, what constitutes best practice in chemical risk management on board ships and how such practice can be effectively stimulated and supported. These issues are central to some new research that is currently being developed at the Seafarers International Research Centre (SIRC).

Chemical substances make an essential and important contribution to the quality of modern life. They are used and transported in great variety and quantity, with a substantial proportion of global chemical production

being carried by sea from producers to users. Many other substances are in daily use in ship operation, cleaning and maintenance, with further substances used in ship construction and repair. We know some of these substances are hazardous to health but our knowledge concerning the hazards of exposure to many more is so limited that we simply do not know the extent of their risks to health.

Despite the gaps in our knowledge, we know, for example, that more than one third of recognised occupational diseases are caused by exposure to chemical hazards, and that 22 per cent of employees throughout the European Union (EU) consider themselves to be exposed to dangerous substances for at least a quarter of their working time. We also know that some 24 million workers in EU countries are exposed

to occupational carcinogens. No such detailed information on the exposure of seafarers has ever been gathered systematically. But such surveys that exist suggest substantial exposures. In a recent study, 55 per cent of a sample of over 6,000 seafarers thought themselves to be exposed to chemicals, with the highest exposures experienced, not surprisingly, on tankers. Some health effects of chemical exposure at sea are documented, especially the elevated cancer-incidence demonstrated among merchant seafarers generally, and specifically in relation to working on tankers, and in engine rooms where exposures to known carcinogens are commonly reported in studies of seafarers. Other than carcinogens, chemical substances have been associated with other kinds of health problems such as the neurotoxic effects of organic solvents among seafarers.

Hazardous chemicals are also a common cause of accidental injuries and fatalities on board ships, in particular in the loading and unloading of cargo, during



A large proportion of global chemical production is carried by sea. (Photo: Graeme Cookson)

cleaning operations, in fires and explosions and as a result of accidental leakages and spills. In addition, previous use of substances such as asbestos in ship structure has created a mounting legacy of suffering and financial liability in the industry.

All this suggests the need to manage chemical risks on board vessels effectively. Of course there is a plethora of

regulatory requirements to achieve this, but it is striking how little we know concerning their effectiveness or what the drivers are that help make them effective. What is known, however, in combination with knowledge of analogous situations in land-based industries, leaves little room for complacency. On land, for example, a series of failures in the application of regulatory provisions for chemical risk management in most workplaces is well documented.

As with the situation at sea, in land-based industry proper risk assessment is necessary to ensure safety in carriage and when working with hazardous chemicals. Good quality suppliers' information is essential to achieve this, yet it is well documented that despite detailed and extensive regulatory requirements at both national and international level, the quality of such information, both in terms of labelling and in manufacturers' safety data sheets (MSDS) is not fit for purpose. An indication of similar inadequacy in the maritime sector is seen in the many reported situations where chemical and

biologically active cargoes are not properly documented. This flouts the requirements of the International Maritime Dangerous Goods (IMDG) code, leading to hazardous exposures of seafarers through lack of safety information. Annual inspections of containers in member states demonstrate significant deficiencies, including in the marking of containers, documentation of contents and in labelling.

For the hazardous substances used routinely in ship operation, cleaning and maintenance, it is unclear whether a similar situation exists on board to that demonstrated on land, where the poor quality of MSDS for hazardous substances is well known. Accounts provided by ships' officers and company personnel, collected in the course of our present research at SIRC, suggest that at very least there is considerable variation in both quality and clarity of such information.

Provision of good hazard information may be the first requirement for risk assessment and management, but also necessary is the ability of users to understand the

information and to respond to it appropriately. There is plenty of evidence from land-based experience to show that such abilities cannot be taken for granted, especially in smaller companies and in workplaces outside the chemical industry itself. Again, little is known of the extent of good or bad practice in the maritime sector, but the anecdotal evidence gathered in our preliminary study suggests that, again, there is considerable variation, with some companies able to demonstrate that effective chemical risk management systems are in place, while many others are unable to do so. Others still are even unaware of the need for such approaches.

Equally important, therefore, is the need to understand what it is that stimulates and sustains implementation and operation of good practice in chemical risk management at sea. Given the experience of regulatory failure on land, it would seem unwise to place excessive faith in the effectiveness of regulatory approaches alone. One interesting but little researched element at sea is

the actual or potential role of economic drivers and leverage in relation to achieving improved and largely self-regulatory approaches to health and safety. It is quite possible that, by investigating the role of such economic drivers in determining best practice in chemical risk management at sea, and by documenting what works and why it works in these situations, significant lessons may be learned. They may even have a wider application in other sectors.

Of course there will be some limits to the extent to which economic drivers can be utilised to bring about improved chemical risk management, since there are always those companies that fail to see the commercial advantages of improved quality and are unresponsive to economic pressures to achieve it, opting instead to compete for business by cutting costs. But this also suggests there is room for further study, concerning "best fit" in the relationship between economic drivers and international regulation and its enforcement in achieving improved working practices on board ships.