MDI nor MDA was detected in water or fish at any stage. The detection limits were 4 and 10 μg/l in water, and 0.5 and 1.4 mg/kg in fish, respectively. The polymeric MDI reacted to inert solid polyurea on the sediment of the test ponds, and release of bubbles of carbon dioxide was observed. Solubilization of some of the carbon dioxide reduced the water pH, initially about 9, to 7.0 and 8.3 in the higher and lower dosed ponds, respectively.

Neither loading caused any direct effect on the free moving community comprising phytoplankton, zooplankton, fish and macrophytes (including algae). Some minor indirect effects caused by the production of carbon dioxide were observed in the phytoplankton and zooplankton structures of the higher-loaded pond, and an increase in macrophyte growth was noted. Organisms living in the untreated part of the sediment in the higher-dosed pond were temporarily affected by physical obstruction, caused by spillage and movement (flotation by trapped carbon dioxide) of test substance onto this habitat. These populations, however, regained densities equivalent to those of the control after some weeks, with the exception of Bivalvia which have too long a generation time for the test period of this study.

It will be appreciated that the results and observations of this study have significant relevance to most of the facets of the aquatic physicochemical and ecotoxicological behaviour of MDI already discussed, and indeed provide an experimental assessment of the risk associated with a spillage.

The most important observations can be summarized as:

- a relatively slow heterogeneous reaction of water with polymeric MDI lying on the sediment, gradually forming solid polyurea;
- no MDI or MDA detectable in the water at any stage;
- no direct ecotoxic effects even at the higher application rate (10 g/l);
- no evidence for bioaccumulation of MDI or MDA in fish.

The overall conclusion was that the risk to the aquatic environment arising from an accidental release of polymeric MDI is very low.

Terrestrial ecotoxicity

This section discusses the effects of MDI and TDI on organisms affected directly through contact with soil and also those affected by indirect exposure through the food chain. The conclusion that MDI and TDI are almost unavailable to aquatic systems and that any ecotoxicity observed is due to soluble hydrolytic reaction products also applies to this environmental compartment.

Plants

Both polymeric MDI and 80/20 TDI, have been shown to have low toxicity to *Avena sativa* (oat) and *Lactuca sativa* (lettuce) in the OECD Guideline 208 test (van der Hoeven *et al.*, 1992a). No effects on emergence, survival or growth were noted during 17 days, even at the highest application rate, 1000 mg/kg. The diamines, MDA and TDA, were also shown to have low toxicity in this study; effects were noted at loadings considerably above the highest aquatic concentrations that have been found to be generated by reaction of the diisocyanates with water. As noted earlier, no diamines have been detected from reaction of MDI and TDI with soil.