

conditions that are actually met with in a spillage of diisocyanate, where there is poor dispersion of material in the presence of sediment or soil, the aquatic concentration of amine produced is even lower than in laboratory studies and therefore the ecological risk is lower.

The production of carbon dioxide during reaction of a spillage of diisocyanate with water could have an indirect effect, albeit minor and temporary, on an aquatic ecosystem. Such was indeed noted, but only at a very high loading of polymeric MDI, in the following ecosystem study.

Ecosystem (pond) study

This study (Heimbach *et al.*, 1996) investigated the effects on an aquatic freshwater ecosystem arising from a simulated accidental pollution of a pond with polymeric MDI. Three interconnected ponds (see Figure 4.7), each of volume 4.5 m^3 , contained groundwater above natural lake sediment. Rainbow trout (*Oncorhynchus mykiss*), caged separately to reduce feeding pressure on plankton, were added to each pond and the ponds were allowed to equilibrate for 6 months, to establish nearly identical physicochemical and biological conditions in each. During this period, a biological community of natural variability was established, with a natural relationship between prey and predator organisms. The ponds were then isolated from one another, and polymeric MDI was added onto part of the sediment of two of the ponds, at loadings of 1 and 10 g/l. The third pond constituted an untreated control.

Water chemistry, MDI and MDA concentrations, and the population and diversity of different trophic levels were monitored over 112 days. Neither

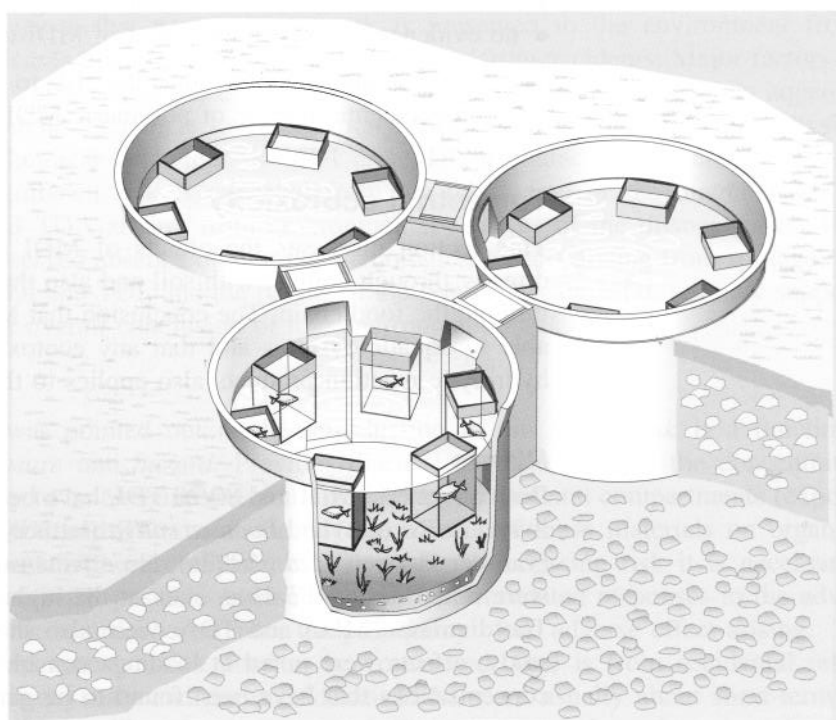


Figure 4.7 Pond study