Whilst maior oil spills in Europe from shipping, refineries and oil-related activities have been reduced over the past years, they can, nevertheless, still occur. The consequences of oil spills are now more fully understood and the involvement of biologists has been shown to provide valuable assistance to clean-up teams on deciding priorities and details of clean-up. The involvement of biologists in spill planning can lead to both financial and manpower economies.

The development of strategies for oil spill studies requires an understanding of the effects of oil on marine organisms. Short term toxic effects have been mostly associated with the presence of light hydrocarbons, but physical conditions influence the rate at which oil disappears from the receiving environments, hence determining the duration of exposure of the various communities.

Spilt oil causes most damage in receiving environments where the exposure time and toxicity are maximised. Sheltered habitats are most susceptible while exposed rocky headlands are least susceptible. The relative impact can be described by a Vulnerability Index.

In discussing the susceptibility of organisms to oil, wide ranges of tolerance are observed from highly resistant brown seaweeds to the highly sensitive larval stages of fish and crustaceans.

At the water surface marine birds are at risk, together with neuston and plankton. The latter are organisms of importance in the food chain. In the water column, localised and temporary effects can be seen on plankton, which in some cases can lead to increases in primary production. Fish, eggs and larval stages can be sensitive to low concentratinns of oil. Adult fish and invertebrates are susceptible to tainting by oil but because of their high mobility they may only be exposed for short periods of time. Micro-organisms play an important role in the removal of oil in the water column. In deep water, oil is unlikely to affect the seabed, but on the shoreline there can be effects varying from subtle changes through to mortalities, depending on the degree of oiling.

In considering oil spill clean-up activities, the response action must be related to the impact, e.g. mechanical clean-up could result in crushing of vegetation, whilst the application of dispersant might produce a less obvious impact.

Contingency planning should be done well in advance of the spill.

Decisions should be taken on whether or not to protect certain habitats and on the selection of suitable clean-up activities for particular areas. It is suggested that a biological co-ordinator should liaise with the clean-up co-ordinator for the whole area.

Non-experts can be used sucessfully, bearing in mind that the objects of the Siological survey are to detect changes, determine the rate of recovery, and hence provide information on which decisions can be made in relation to insurance, compensation, etc.

In this respect local knowledge can be of great advartage, but sampling must be carried out in a uniform manner and, together with analysis, should be accurate and repeatable.

A general strategy protocol is discussed, and follow-up in the medium term is considered. Longer term studies should concentrate on areas of identified oil impact.