
Oil Pollution of the Sea: An Assessment [and Discussion]

Hans Kornberg and R. J. H. Beverton

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Oil pollution of the sea: an assessment

BY SIR HANS KORNBERG, F.R.S.†

*Royal Commission on Environmental Pollution, Church House, Great Smith Street,
London SW1P 3BL, U.K.*

Like other meetings in the Royal Society's programme, this Discussion Meeting is concerned primarily with science: in the present case, the scientific evaluation of the consequences of polluting the marine environment with oil. This has, of course, also formed an important part of the study of oil pollution of the sea undertaken by the Royal Commission on Environmental Pollution (1981), but in its role as an advisory body on pollution matters to government, the Commission's interest is much wider. Government must be concerned not only with the threat that oil pollution may pose to the marine environment or to human health, as seen by the scientific community, but with many other aspects that affect public perception of the problem and that have a bearing on decisions on the means of dealing with it. Oil spills appear to generate wider concern than do most other forms of pollution, even among people whose interests are not directly affected. The environmental insult of a large spillage of black oil is so apparent that emotions are deeply stirred; these emotions are aroused especially by the distress caused to seabirds. The strength of feeling here reflects not only a civilized revulsion, that animals deserving our protection should be wantonly destroyed, but perhaps also reflects a collective guilt that a substance on which our way of life so much depends should cause such havoc. At any rate, the public's response to oil spills is a real factor that must be recognized in considering policies for control. Against this, it was important for the Commission to be always aware that its task was to see the threat posed by oil pollution in perspective. It would have failed in its task had it allowed an emotional reaction to the grosser manifestations of oil pollution to persuade it to advocate inadequately considered countermeasures, which might well have been costly and of doubtful effectiveness.

The Commission's starting point was to consider the effects of oil on marine organisms. By its general terms of reference the Commission is required to advise, *inter alia*, on 'future possibilities of danger to the environment'; this emphasis on long-term threats is an important aspect of the Commission's remit. It was clear from the outset that there is public anxiety, reflected in much of the evidence submitted, that the large quantities of oil reaching the sea (whether from accidental spills or routine discharges) might threaten long-term and perhaps irreversible damage to the marine ecosystem. The Commission's first priority was, therefore, to examine the grounds for these fears.

It will come as no surprise to those present at this meeting that the Commission's findings are generally reassuring: that oil spills are unlikely to cause any long-lasting damage to the marine environment, and that oil pollution generally does not constitute a chronic threat to the marine ecosystem or, indirectly, a threat to man. The Commission thus concludes that the threat of long-term and perhaps irreversible damage to the sea by oil pollution is insubstantial

† Present address: Department of Biochemistry, University of Cambridge, Tennis Court Road, Cambridge CB2 1QW, U.K.

and less serious than that posed by other potential sources of danger, such as pollution by heavy metals or radioactivity. These views accord with those expressed by the Royal Society's Study Group in its valuable evidence to the Commission, which has since been published (Royal Society 1980).

On the other hand, the short-term effects of oil spills, though local in character, can be serious. These effects are obvious enough and scarcely need stating; they include damage to beaches and amenity (with consequent costly clean-up operations), damage to fisheries, and the killing of seabirds. Although oil spills are unlikely to cause permanent damage to the overwhelming majority of seabird species, the Commission expresses its revulsion at this destruction (especially when it results from avoidable and illegal discharges from shipping) and endorses the view that preventing it must be an important aim for any civilized society.

Against this background, the Commission considered the various sources of oil in the sea and the means that exist to control routine discharges, to prevent concentrated discharges that may lead to the problems referred to above, and to deal effectively with such releases when they do occur.

The paper by Whittle *et al.* at this meeting presents estimates of the inputs of petroleum hydrocarbons to the sea that are closely similar to those in the Commission's Report. Since these discharges are generally diffuse, the Commission is satisfied that they do not pose a serious problem and that the controls that apply to them are broadly adequate.

Similar conclusions arise from consideration of the routine discharges that are associated with offshore oil developments. The main concern here is the risk of accidental spillages from oil exploration or production operations (especially from 'blow-outs') close to the shore. The Commission considers that there may be areas of exceptional conservation importance where oil developments should not be permitted; such areas are likely to be rare but should be identified early on, preferably at the licensing stage. In the Commission's view the present licensing arrangements do not ensure that the environmental consequences of offshore developments are adequately considered, and new arrangements for consultation with environmental interests are proposed. It is also recommended that, where oil production operations are proposed in environmentally sensitive areas, licensees should provide impact studies, so as to ensure that environmental aspects are taken into account in decisions on development options and that the public can be informed on these decisions.

The main threat of serious oil pollution incidents arises from tanker accidents; it was concern about this threat (particularly in the wake of the *Amoco Cadiz* disaster of March 1978) that led the Government to request advice from the Commission. It must be conceded that some accidents involving tankers are inevitable; moreover, the flow of tanker traffic around the U.K. is such that there is no part of U.K. waters or coastline that is not at risk. There are great difficulties in dealing with oil once it has been spilled: this, as well as the costs of cleaning operations, emphasizes that prevention is very much better than cure. Although the main cause of tanker accidents is human error, many other factors have a bearing on accident prevention including, for example, design and maintenance of ships and equipment, navigational aids and crew competence and training. To a large degree, progress in improving standards must be sought through international agreement, especially through the Intergovernmental Maritime Consultative Organization (I.M.C.O.).

While much has been achieved in dealing with the problem of substandard tankers, the Commission considers that there is need for more vigorous action both within the U.K. and

internationally. Regional cooperation is important on a European basis; regional action to impose standards in advance of their general entry into force might be justified in some circumstances and should be considered. The U.K., still a major maritime power wielding considerable influence in international negotiations, should play a leading part in these initiatives.

Various other recommendations are made that relate to accident prevention, or to the reduction of pollution when accidents do occur. For example, the Commission recommends immediate extension of U.K. territorial waters to 12 nautical miles (about 22 km); the inadequate state of hydrographic survey of waters around the U.K. in relation to the needs of large tankers is deplored and it is urged that additional resources should be allocated to this work; and the present arrangements for intervention to deal with a damaged tanker at sea should be strengthened.

A major aspect of the Commission's study was to consider the organizational arrangements that should be made to deal with oil spills that threaten our coasts. The vast majority of spills are small and essentially of local concern; the responsibility for dealing with them should continue to rest with local (or port) authorities. But the few very large spills, which mainly arise from tanker accidents, pose clean-up problems beyond the resources of local authorities; for these, the involvement of central government is inevitable. And for central government to be involved effectively – even if the need occurs but rarely – it needs to have available a central and expert operational unit that is able to act swiftly in taking charge of clean-up operations. It is also essential that this swift response to a major spill should be conducted as a single, coordinated operation embracing action at sea, in inshore waters, and on the land.

Judged against these requirements, the present arrangements appear inadequate. There is an uncertain division of responsibility between the Department of Trade's Marine Pollution Control Unit (M.P.C.U.), which is concerned with action at sea, and the local authorities and other interests concerned with action near and on the shore; there is a considerable potential for confusion and delay. For these reasons, the Commission concludes that an efficient response to an oil spill emergency can be ensured only by arrangements which, to some extent, cut across the normal divisions of organizational responsibilities. For major incidents, central government, acting through a strengthened M.P.C.U., should assume control of counter-pollution operations as a whole, and statutory powers should be provided to support the Unit in this role. Moreover, the Government should be ready to meet initially the exceptional costs of dealing with such incidents, pending their recovery through compensation machinery.

In addition to these organizational matters, various other aspects of the problem of dealing with oil spills are discussed. For example, the Commission believes that there has been an excessive reliance on the use of dispersants and that, in fact, the circumstances in which these chemicals can be used with advantage are likely to be very limited. But this brief outline may suffice to give some indication of the Royal Commission's assessment of the severity of the environmental threat posed by oil in the sea, and its recommendations on the actions that Government should take to prevent oil spills and to minimize their effects.

I thank Mr L. F. Rutterford (Department of the Environment), formerly Secretary of the Royal Commission on Environmental Pollution, for his help in preparing this paper.

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Discussion

R. J. H. BEVERTON, F.R.S. (55 Sandown Avenue, Swindon, U.K.). Both the *Torry Canyon* and *Amoco Cadiz* disasters involved coordinated action by the U.K. and France. A major spill further up the English Channel, in the region of the Straits of Dover or off Europort, could well also involve Belgium and the Netherlands.

In view of the criticisms made by the Royal Commission of the inadequacy of emergency action within the U.K., is there not a more serious problem in achieving prompt and efficient action in a multilateral situation? and is this a matter that would fall to the E.E.C. to organize?

SIR HANS KORNBERG, F.R.S. As Mr Beverton rightly implies, oil spill disasters may affect more than one country. Clearly, in such an event, an effective response will call for cooperation between the countries concerned. Bearing in mind the scale of the resources needed to deal with a major spill and the rarity of such pollution incidents, it would thus seem desirable for countries in a region like northwest Europe to try, as far as practicable, to pool resources and even to do so whether or not a particular spill threatens their own shores. As is described in the Commission's Report, these needs have been to some degree recognized in developments like the so-called 'Bonn Agreement' and, in particular, the *Mancheplan* involving the U.K. and France. There may also well be scope for Community action in providing a framework for such cooperation, and indeed the European Commission has already taken some initiatives in this area; however, non-E.E.C. European maritime states, such as Norway and Sweden, would also be concerned and should also be involved in such cooperative arrangements.

I do not agree with one implication of the question asked. Although the Commission does find present contingency arrangements within the U.K. to be inadequate, it does not imply that even more serious deficiencies exist in our capacity to cooperate with other countries in clean-up operations. Indeed, I do not think that this is so. The Commission's main concern in the U.K. context was the need for operations onshore, offshore and at sea to be properly coordinated. However, cooperation with other countries would be mainly in terms of operations at sea, and on this aspect the Commission was broadly satisfied with the effectiveness of our present system, involving the M.P.C.U. Of course, there is still plenty of scope for exploring other types of cooperation with other countries, for example in mounting clean-up operations or on the problem of substandard tankers. The Commission strongly believes (and says so in its Report) that the Department of Trade should take the lead in furthering investigation of these matters.