



IMCO

INTERNATIONAL CONFERENCE ON
MARINE POLLUTION, 1973
Committee II
Agenda item 2

CONSIDERATION OF THE DRAFT TEXT OF ANNEX I OF THE
INTERNATIONAL CONVENTION FOR THE PREVENTION OF
POLLUTION FROM SHIPS, 1973

Comments on the Environmental Impact of Proposed
Category II Oils

A possible basis for control of their introduction to the
marine environment from routine discharges during tanker operation

Submitted by the United Kingdom

The draft regulations for the control of oil contained in Annex I have evolved from the 1954 IMCO Convention and relate primarily to the regulation of the discharge of persistent oils, which might otherwise form long lasting slicks capable of stranding on beaches or fouling seabirds. These regulations were not framed to minimise damage to marine biological resources other than seabirds, or from the point of view of the protection of public health. The control of operational discharges of the proposed Category II oils should on the other hand be primarily related to resource damage since their toxicity in this respect is generally the governing criteria, and is higher than that of Category I oils, but their ability to form persistent slicks is very much less.

A number of refined petroleum products have already been dealt with by the joint IMCO/GESAMP Panel of Experts, set up to review for this Conference the environmental hazards of noxious substances other than oil. In so doing they

recognized that these products might in a future Convention be included within a revised definition of "oil". It must be recognised, as it was recognized by the joint IMCO/GESAMP Panel when considering substances primarily from the point of view of their impact on marine organisms, that toxicity, although a highly relevant factor, is not the only factor which must be taken into account. For a toxic material to create damage when introduced to the marine environment it must persist there long enough, at a toxic concentration, in order to exert its toxic effects. It may have to persist at such concentrations for days or weeks if promotion of its toxic effect is dependent on bio-accumulation. This is especially true in the context of public health where bio-accumulation is an essential first stage.*

The crucial consideration therefore is the rate of introduction to a given sector of marine environment under given conditions which will maintain a toxic concentration long enough to permit the material to exert toxic effects.

The IMCO/GESAMP Panel approaches this problem by assigning aquatic hazard ratings to each material according to its 96 hour TLM value (conc. of substance during 96 hours exposure, required to kill 50% of the exposed organisms) and whilst realizing that this provides only a crude guide to toxic effects under natural conditions in the marine environment, consider it a suitable rationale to provide guidance on rates of introduction which would not lead to unacceptable effects. On this basis, and taking also into account their bio-accumulative properties and possible hazards to public health, these materials are assigned to categories in Annex II and varying controls placed on their rate of discharge (Ann.II Reg.5(1)(2)(3)).

Ideally therefore what is required in relation to Category II oils is some measure of their toxicity together with some knowledge of their persistence when introduced to the marine environment. Toxicity ratings for some refined products

* Evidence from studies undertaken by the United Kingdom Fisheries Authorities shows that these materials are not highly bio-accumulative and where evidence of bio-accumulation exists materials are rapidly lost when the concentrations in the water fall.

are already available from the IMCO/GESAMP Panel report (MP/CONF/INF.5) and others from the US report (MP/CONF/INF.15/9). Some knowledge of the persistence of proposed Category II oils at either end of the spectrum is available from the UK studies (PCMP/4/33).

Using the data on TLM 96 hrs. from the US report a range of representative category II oils may be assigned provisional IMCO/GESAMP type aquatic hazard ratings:

<u>Material</u>	<u>TLM 96 hrs.</u>	<u>IMCO/GESAMP Aq. Hazard Rating</u>	<u>Toxicity Range ppm</u>
Fuel oil No. 2	4	3	1 - 10
Fuel oil No. 6	28	2	10 - 100
Jet fuel	100	1	100 - 1000
Loaded gasoline	260	1	100 - 1000

Given these ratings and formulating a judgement on other characteristics of these materials, such as their bio-accumulative properties, on the basis of the values assigned to other refined petroleum products by IMCO/GESAMP Panel a tentative listing of their Annex II categorization may be made. It is interesting to note that none of the refined products reviewed by IMCO/GESAMP received a significant rating in terms of human health hazard.

<u>IMCO/GESAMP Aq. Hazard Rating</u>	<u>Toxicity Range ppm</u>	<u>Ann. II Category</u>	<u>Limiting Conc. in Vessel Wake</u>
3	1 - 10	B	1 ppm
2	10 - 100	C	10 ppm
1	100 - 1000	less than C	less than 10 ppm
1	100 - 1000	less than C	less than 10 ppm

For the purpose of comparison the limiting values for vessel wake concentration may be considered alongside those found in the UK study (PCMP/4/33)

<u>Material</u>	<u>Conc. measured immediately, below slick</u>	<u>1½ hours later</u>	<u>Acceptable Conc. Limit Ann. II</u>
Leaded Gasoline	0.44 ppm	not detectable	10
Heavy gas oil (Fuel Oil No.2?)	1.52 ppm	0.46	1

Furthermore it must be emphasised that the concentrations found in the UK study were obtained at introduction rates of the order of 10^4 litres per mile (of 60 litres per mile for persistent oils) and even so that they only persisted for very short periods.

Summary

The foregoing indicates that there are sound reasons for controlling discharges of some categories of oil on a different basis from that proposed for persistent oils. Recent UK and US data reviewed in the light of the approach used by the IMCO/GESAMP Panel of Experts for the control of noxious substances other than oil suggests that a similar approach would be suitable for the non-persistent oils proposed as Category II oils.
