



## IMCO

### INTERNATIONAL CONFERENCE ON MARINE POLLUTION, 1973

#### CONSIDERATION OF A DRAFT INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973

##### Comments and observations on Regulation 5 of Annex II (Discharge of Noxious Substances) of a draft text of the Convention

Submitted by the Government of the Kingdom  
of the Netherlands

Studies and research have been undertaken in the Netherlands on the subject of discharge of noxious substances from chemical tankers. A memorandum on the research work carried out is available at the IMCO documents desk at the Conference. As a result of this research work we herewith submit the following observations and comments concerning the discharge criteria for effluent containing noxious substances as laid down in Regulation 5 of Annex II:

1. The determinant factor for dilution of noxious substances discharged from a ship is the volume of turbulent water in which mixing will occur. Turbulence which will effectively mix effluent from a ship is generated in the ship's boundary layer. Model tests\* have shown that the flux of effluent discharged from a ship does not pierce the boundary layer and that the effluent is dispersed in the boundary layer like a plume of smoke in the air with a spreading angle of about six degrees.

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\* One copy per delegation of the Model Test will be distributed during the Conference.

It follows from this that the volume of turbulent water generated in the boundary layer of the ship should be regarded as the determinant factor of the dilution which can be expected in the wake of the ship, but that this volume of water is not instantaneously mixed with the effluent discharged because of the gradual dispersion of the effluent in the turbulent water caused by the "plume" effect. This means that it will take some time before the total volume of turbulent water generated by the ship or the greater part of it will be mixed with the effluent discharged.

2. Results from model tests indicate that with a practical rate of discharge of noxious substances an adequate dilution so that the concentration of the substance discharged will not exceed one part per million in the wake immediately astern of the ship cannot be expected. The requirement of a concentration of one part per million in the wake of the ship will most likely be met at some distance behind the ship, i.e. a short period of time from the moment of discharge of the effluent. Especially for smaller ships like coastal tankers which generate a much smaller amount of turbulent water in their boundary layers than ocean going chemical tankers will it be impossible to meet the one part per million criterion in the wake immediately astern of the ship at least when a practical rate of discharge of effluent is to be realized.

It is therefore proposed that the criterion mentioned in Regulation 5(2)(b) should be changed so as to read that the substances discharged may be expected not to exceed one part per million in the wake of the ship after  $\sqrt{100}$  seconds from the moment of discharge from the ship.

3. The dilution which can be expected in the wake of the ship should be based on the total volume of turbulent water generated in the boundary layer of a ship. A calculation method to quantify the dilution in the wake of the ship should be the basis for procedures and arrangements for the discharge of effluent containing noxious substances. Such a calculation method as well as the procedures and arrangements for discharge should be uniform to avoid widely differing interpretations by Administrations. It is therefore proposed that the Organization shall undertake the development of a uniform calculation method and of uniform procedures and arrangements.

Paragraph (2)(b) of Regulation 5 should read:

- (b) Procedures and arrangements for the discharge shall be such as to assure the Administration that the concentration of the substance discharged may be expected not to exceed one part per million in the wake astern of the ship after 100 seconds from the moment of discharge from the ship.

A similar requirement should also be laid down for the discharge of Category C products in paragraph (3)(b) of Regulation 5.

The figure of 10 p.p.m. for the concentration of Category C substances to be retained.

A new paragraph (7) should be inserted:

- (7) The Organization shall develop a calculation method as well as procedures and arrangements for the discharge of noxious substances to meet the requirements in paragraphs (2)(b) and (3)(b) of this Regulation.
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