

**FIRES AND EXPLOSIONS RESULTING FROM WELDING
AND FLAMECUTTING OPERATIONS****Notice to Owners, Masters and Officers of all Merchant Ships and
to Shiprepairers**

This Notice supersedes Notice No. M.268

1. There have been a number of fires and explosions in ships which, on investigation, have been traced to welding or flamecutting operations. The Department therefore wishes to draw attention to the danger of fire and/or explosion due to these operations when repair work is in progress.
2. Fires arising from welding and flamecutting operations occur from a number of various causes but often involve sparks or debris falling onto and igniting flammable material. A further cause is heat developed during the processes being transmitted to flammable material positioned immediately behind the point of welding or flamecutting, the material smouldering and an outbreak of fire occurring at a later period.
3. Other serious fires and explosions have occurred when welding or flamecutting operations are being carried out in, on or near cargo tanks, cargo holds or other spaces that contain or have contained flammable substances or substances that emit flammable vapours.
4. When a ship is in general service it is the responsibility of the owner, or master, to ensure that suitable precautions have been taken against fire and explosion prior to the commencement of welding and flamecutting operations.
5. However, where a ship is undergoing major repair this responsibility may fall on the shiprepairer and the Department recommends that in these circumstances there should be a clear written agreement confirming that the responsibility for taking suitable precautions against fire, the testing and certification of spaces for 'hot work', etc, has passed to the ship repairer. An acknowledgement of the acceptance of this responsibility should always be provided by the shiprepairer to the shipowner, or the master.
6. Whoever has this responsibility should ensure that welding and flamecutting operations are properly supervised and are kept under regular observation.
7. Precautions to be taken against fire prior to the commencement of welding and flamecutting operations will generally involve a check that there are no flammable materials at, below or adjacent to the area or work. This check

should include the area behind any plating under repair for the proximity of flammable substances and items such as electric cables that could be damaged. Particular attention should be paid to open hatches, ventilators and tank openings down which sparks and debris may drop unobserved. It may be necessary to erect suitable screens and to move cargo or dunnage to a safe distance before the operation is commenced.

8. Cargo tanks, cargo holds or other tanks or spaces that have contained flammable substances should be certified as being free of flammable gases before any repair work is commenced. The testing should include, as appropriate, the testing of adjacent spaces, cofferdams, etc. As a number of explosions have occurred some days after the initial testing of a tank following a build up of gas in the intervening period routine testing should always be conducted immediately prior to and during the period that any repair work is being carried out in the space. In this respect the positive ventilation of any space in which 'hot work' is being carried out is an aid to the dispersal of any flammable gases that may be inadvertently generated during the welding or flamecutting operation.

9. The preparation of a tanker or similar ship so it will remain safe for the repair period is dependent on the thorough cleaning of all tanks and pipelines, with particular care being taken with the draining and cleaning of those pipelines which cannot be directly flushed by use of the ship's pumps. It is also necessary to consider any redundant systems, either those disconnected or currently out of use.

10. Attention is also drawn to Chapter 13 of the Code or Safe Working Practices for Merchant Seamen, which refers to welding and flamecutting operations.

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