

Title	IMDG Code 2016 / SUPPLEMENT / Recommendations on the Safe Use of Pesticides in Ships / Annex 1
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ANNEX 1

Pesticides suitable for shipboard use

The materials listed should be used strictly in accordance with the manufacturer's instructions and safety precautions given on the label or package itself, especially in respect of flammability, and with regard to any further limitations applied by the law of the country of loading, destination or flag of the ship, contracts relating to the cargo, or the shipowner's instructions.

Materials may be used by ship's personnel unless the contrary is indicated. A space-application insecticide may be used in conjunction with a residual insecticide.

It should be especially noted that some materials listed may taint sensitive commodities, e.g. coffee and cocoa, and special care should be taken when stowing these commodities in order to prevent this. The reason for naming purified grades in the list below is to minimize tainting.

A Contact insecticides in a cargo space

A1 Fast-acting insecticides for space application, e.g. against flying insects:

Pyrethrins (with or without synergist)

Bioresmethrin

Dichlorvos

A2 Slower-acting residual insecticides for surface application:

Malathion (premium grade)

Bromophos

Carbaryl

Fenitrothion

Chlorpyrifos-methyl

Pirimiphos-methyl

B Contact insecticides and baits in accommodation

B1 Fast-acting insecticides for space application, e.g. against flying insects:

Pyrethrins (with or without synergist)

Bioresmethrin

Dichlorvos

B2 Slower-acting residual pesticides:

Malathion (premium grade)

Diazinon

Fenitrothion

Propoxur

Pirimiphos-methyl

Chlorpyrifos-ethyl

Chlorpyrifos-methyl

Bendiocarb

Permethrin

B3 Insecticides for use against particular pests and as an additional treatment:

Diazinon, as an aerosol spray or lacquer against ants, cockroaches and flies

Dieldrin and Aldrin, in lacquers for control of ants and cockroaches

Methoprene bait, for control of Pharaoh's ants

Chlorpyrifos-ethyl, as a bait and as a lacquer

C Rodenticides

C1 Chronic poisons in baits:

- Calciferol
- Any anticoagulant in the following two classes:
 - Hydroxycoumarins (e.g. Warfarin, Fumarin, Coumatetralyl, Difenacoum, Brodifacoum)
 - Indanediones (e.g. Pival, Diphacinone, Chlorophacinone)

C2 Acute poisons in baits or liquids:

- TO BE USED ONLY IN PORT AND BY QUALIFIED OPERATORS
 - Barium fluoroacetate
 - Fluoroacetamide
 - Sodium fluoroacetate
 - Zinc phosphide

D Fumigants

TO BE APPLIED ONLY BY QUALIFIED OPERATORS

Additional information on methyl bromide and phosphine (hydrogen phosphide) to be read in conjunction with 3.1.3

Methyl bromide

Methyl bromide is used in situations where a rapid treatment of commodities or space is required. It should not be used in spaces where ventilation systems are not adequate for the removal of all gases from the free space. In-ship in-transit fumigations with methyl bromide should not be carried out. Fumigation with methyl bromide should be permitted only when the ship is in the confines of a port (either at anchor or alongside) and to disinfest before discharge, once crew members have disembarked (see 3.1.3.3). Prior to discharge, ventilation must be done, forced if necessary, to reduce the gaseous residues below the TLV in the free spaces. (See procedures for ventilation in 3.4.3.17 to 3.4.3.19).

Phosphine (hydrogen phosphide)

A variety of phosphine-generating formulations are used for in-ship in-transit or at-berth fumigations. Application methods vary widely and include surface-only treatment, probing, perforated tubing laid at the bottom of spaces, recirculation systems and gas-injection systems or their combinations. Treatment times will vary considerably depending on the temperature, depth of cargo and on the application method used. Clear written instructions must be given to the master of the ship, to the receiver of the cargo and to the authorities at the discharging port as to how any powdery residues are to be disposed of. These will vary with each formulation and the method of application. Prior to discharge, ventilation must be done, forced if necessary, to reduce the gaseous residues below the TLV in the free spaces (see procedures for ventilation in 3.4.3.17 to 3.4.3.19). For safety aspects during the voyage see 3.4.3.3.

D1 Fumigants against insects in empty cargo spaces and against rodents anywhere aboard ship:

- Carbon dioxide
- Nitrogen
- Methyl bromide and carbon dioxide mixture
- Methyl bromide
- Hydrogen cyanide
- Phosphine (hydrogen phosphide)

D2 Fumigants against insects in loaded or partially loaded cargo spaces:

CARE IS NEEDED IN SELECTING TYPES AND AMOUNTS OF FUMIGANTS FOR TREATMENT OF PARTICULAR COMMODITIES

- Carbon dioxide
- Nitrogen
- Methyl bromide and carbon dioxide mixture
- Methyl bromide
- Phosphine (hydrogen phosphide)