

Australian Standard[®]

General fumigation procedures



This Australian Standard® was prepared by Committee CH-005, Pesticides. It was approved on behalf of the Council of Standards Australia on 27 March 2008.
This Standard was published on 28 April 2008.

The following are represented on Committee CH-005:

- Aerosol Association of Australia
 - Australian Environmental Pest Manager's Association
 - Australian Pesticides and Veterinary Medicines Authority
 - Department of Primary Industries and Fisheries, Queensland
 - CSIRO
-

This Standard was issued in draft form for comment as DR 07309.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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General fumigation procedures

Originated as AS 2476—1981.
Second edition 2008.

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Published by Standards Australia GPO Box 476, Sydney, NSW 2001, Australia

ISBN 0 7337 8634 0

PREFACE

This Standard was prepared by the Standards Australia Committee CH-005, Pesticides, to supersede AS 2476—1981.

The Standard refers to general principles of fumigation based on good commercial practice leading to safe and economical use of fumigants and control of the infesting organism. Detailed safety instructions are given by fumigant manufacturers and suppliers, and there may also be relevant codes of practice published by the National Health and Medical Research Council and the various publications of departments such as state departments of agriculture or health.

It should be noted that fumigant chemicals, while invariably toxic and requiring considerable care in application, are also chemically reactive and in some cases may affect the end use properties of the materials being fumigated. Materials known to be affected by fumigants should not be exposed to those fumigants.

Incorrect use of fumigants may adversely affect the environment or their continuing efficacy against specific pests, and so need to be used in accordance with the manufacturer's label.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendix to which they apply. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix is only for information and guidance.

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STANDARDS AUSTRALIA

Australian Standard

General fumigation procedures

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out general procedures and precautions to be used when chemical fumigation for the eradication of pests is being carried out in an enclosure. This Standard includes fumigations applied using a single dose, staged or continuous release of fumigant. This Standard does not include requirements for in-transit fumigation and soil fumigation.

1.2 APPLICATION

This Standard recommends the general principles for the use of gases for the fumigation of buildings, enclosures such as watercraft, aircraft, freight containers, silos and dedicated fumigation structures, and materials under sheeting. It includes fumigations carried out on farms for agricultural purposes (such as silos, grain bins, rabbit burrows etc). This Standard should be used in conjunction with any current code of practice or State requirements applicable to the particular fumigation being carried out, where this is available.

1.3 REFERENCED DOCUMENTS

AS

- 1216 Class labels for dangerous goods
- 1319 Safety signs for the occupational environment

AS/NZS

- 1715 Selection, use and maintenance of respiratory protective devices
- 1716 Respiratory protective devices
- 1891 Industrial fall-arrest systems and devices
- 1891.1 Part 1: Harnesses and ancillary equipment
- 2161 Occupational protective gloves (Series)
- 2865 Safe working in a confined space
- 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules)
- 4332 The storage and handling of gases in cylinders
- 4360 Risk management
- 4452 The storage and handling of toxic substances
- 60079 Explosive atmospheres
- 60079.11 Part 11: Equipment protection by intrinsic safety 'i'
- HB 436 Risk management guidelines—Companion to AS/NZS 4360:2004

NOTE: Further guidance documents are listed in Appendix F.

1.4 DEFINITIONS

For the purpose of this Standard, the following definitions apply:

1.4.1 Exposure Standard

Levels of exposure to fumigants which are considered suitable for safe working environments, as published by the office of the Australian Safety and Compensation Council.

1.4.2 Freight container

A reusable container intended for the carriage of goods by one or more modes of transport (including sea, air, rail and road transport), as is commonly used for the international traffic of goods.

1.4.3 Fumigant

A toxic chemical which at a particular temperature and pressure can exist in a gaseous state in sufficient concentration and for sufficient time to be lethal to pests or disease organisms.

1.4.4 Fumigation

The application of a fumigant to a fumigation enclosure for the eradication of pests.

1.4.5 Fumigation enclosure

An enclosure into which a fumigant is deliberately applied.

1.4.6 Fumigator in charge

The person designated to be in charge of achieving a safe and effective fumigation.

1.4.7 Operator

A person involved in fumigation work, under the supervision of the fumigator in charge.

1.4.8 Risk area

The area surrounding the fumigation enclosure into which there is any reason to suspect that the fumigant may escape in concentrations considered hazardous to man.

1.4.9 Structure

An enclosed space such as, but not limited to, a building, silo, freight container, bulkhead or bunker.

1.4.10 Unstuffing

The process of removing goods from a freight container.

The term 'unloading' refers to the removal of containers or other goods from a trailer, carriage or vessel.

1.5 SPECIFIC REQUIREMENTS

1.5.1 General

While this Standard has been written for the full range of toxic fumigants currently in use, there are external documents that set out specific requirements for certain fumigants, as given below.

NOTE: Specific requirements for further fumigants may become available after the publication of this Standard.

1.5.2 Fumigation of goods in-transit

Requirements for in-transit fumigations on ships are given in the *International Maritime Dangerous Goods Code*, published by the International Maritime Organisation.

Requirements for in-transit fumigations on road or rail vehicles are given in the *Australian Code for the Transport of Dangerous Goods* (ADG Code).

1.5.3 Methyl bromide

The use of methyl bromide in Australia is restricted to specific applications, and it should only be used where approved by the relevant regulator. Fumigations for quarantine purposes shall be carried out in accordance with the requirements of the Australian Quarantine and Inspection Service, and this Standard.

1.5.4 Ethylene oxide

Guidelines for the use of ethylene oxide are given in the NOHSC publications, *National code of practice for the safe use of ethylene oxide in sterilisation/fumigation processes* (1992), and *Guidance note for the safe use of ethylene oxide in sterilisation/fumigation processes* (1992).

SECTION 2 PRIOR TO FUMIGATION

2.1 DECISION TO FUMIGATE

The decision to fumigate shall be made only after an assessment of the appropriateness of both the designated site and the selected fumigant, including assessment of the fumigant's suitability for use on the commodity to be treated and in the particular application.

2.2 FUMIGATION PLAN

A fumigation plan shall be prepared for each fumigation, including the following items:

- (a) Item(s) to be fumigated.
- (b) Choice of fumigant.
- (c) Location of the fumigation site, enclosure and risk area.
- (d) Physical dimensions of the site.
- (e) Quality of the surface (level, smooth, impervious, free from cracks, away from drains).
- (f) Ventilation.
- (g) Shelter from weather.
- (h) Electrical supply (for fans, heaters, lights, etc.).
- (i) Water supply (for clean-up and emergency washing area).
- (j) Lighting.
- (k) Date and times of specific activities.
- (l) Role of individual personnel.
- (m) Exposure and venting procedures.
- (n) Emergency procedures and evacuation points, including communication with emergency services.
- (o) Emergency venting and entry procedures.
- (p) Control measures to address those hazards identified by a risk assessment (see Clause 2.3).
- (q) Compliance with the requirements of state and local authorities, including any notification and reporting requirements.

While the fumigation plan shall be completed for each fumigation, it may be based on an appropriate generic document.

2.3 RISK ASSESSMENT

Each fumigation shall undergo appropriate risk assessment to determine any hazards which may be present, the potential consequences (to fumigation personnel, other nearby persons, surrounding residents, to the environment, and any others), and the appropriate control measures to address the hazards identified.

Where the fumigation being carried out is similar to previous work in terms of the location, material, goods, etc. a generic risk assessment may be used as a basis, with the addition of any hazards specific to the particular job, in consultation with site representatives and any other appropriate personnel.

The risk assessment documentation may be incorporated into the fumigation plan documentation.

The risk assessment shall consider all possible hazards associated with a particular fumigation, which may include (but is not limited to) the following:

- (a) Leakage through cracks, drains, soil, etc. (including potential effects on nearby plants, animals, people, materials etc.).
- (b) The fumigant material and form.
- (c) Handling and application.
- (d) Protective Equipment (see Section 3).
- (e) Ventilation—rate, location, direction, effects, etc.
- (f) The need to notify occupants of surrounding buildings or areas, within or adjacent to the risk area.
- (g) Work in confined spaces.
- (h) Work at heights.
- (i) Site security (breaching of the fumigation enclosure or risk area, either inadvertent or deliberate).
- (j) Likely effectiveness of the fumigation.
- (k) Potential adverse effects on materials, commodities, structures, etc due to reactions with the fumigant.
- (l) Emergency procedures, including emergency venting of the enclosure, emergency entry of the enclosure while under fumigation, and response to accidental breach of the enclosure while under fumigation.
- (m) Any other relevant factors.

Risk assessments shall be subject to on-going review during a fumigation, to ensure that any additional hazards are assessed and, where necessary, appropriate control measures are introduced. Where necessary, documentation should also be revised.

NOTE: Information on risk management may be found in AS/NZS 4360 and HB 436.

2.4 PERSONNEL

The supervision of a fumigation, and the release and ventilation of fumigant, shall be carried out by the fumigator in charge, who is qualified as required by the relevant Commonwealth and State authorities. The fumigator in charge shall ensure that all personnel receive appropriate instruction in safe work procedures, protective equipment and first aid procedures specific to each fumigation.

2.5 NOTIFICATION OF AUTHORITIES AND PERSONS CONCERNED

2.5.1 Fumigation of a building or structure

Where considered necessary by the risk assessment, the fumigator in charge intending to fumigate a building, or structure, shall deliver a notice in writing as shown in Appendix A, at least 24 h prior to the fumigation commencing. Acknowledgement of the notification shall be retained by the fumigator in charge. Such notification is not required where the site has been approved for fumigations by the relevant local, state or Commonwealth agencies or authorities.

In areas where there may be a delayed response time for emergency services, prior notification of police, Rural Fire Service, state fire brigade, or other appropriate services shall be considered.

NOTE: Different states or local government areas may have specific requirements for the notification of certain bodies.

2.5.2 Fumigation of a watercraft or aircraft

The fumigator in charge, when intending to fumigate a watercraft or aircraft, shall deliver a notice in writing as shown in Appendix A, prior to the fumigation commencing to—

- (a) the appropriate port or airport authority; and
- (b) for a watercraft, the Master or other person in charge of the vessel.

2.6 RISK AREA

The dimensions of the risk area should be set as indicated by a risk assessment appropriate to the site and fumigant to be used.

Where the fumigation enclosure is located inside a building or structure, the risk area shall be a minimum of 6 m wide, from the boundary of the fumigation enclosure and from any fumigant supply, recirculation or extraction equipment in use.

Where the fumigation enclosure is located in an area with unrestricted air movement (such as outdoors), the risk area shall be a minimum of 3 m wide, from the boundary of the fumigation enclosure and from any fumigant supply, recirculation or extraction equipment in use.

The dimensions of the risk area may be reduced where the fumigation enclosure abuts an impervious wall or boundary, which then becomes part of the perimeter of the risk area.

2.7 SECURITY AND WARNINGS

2.7.1 Fumigation warning signs

The fumigator in charge of fumigation of any building, watercraft, aircraft or structure shall, before the application of fumigant, affix to the perimeter and each means of access to the fumigation enclosure, a warning sign as shown in Appendix B with a white background on which there shall be printed the words 'DANGER KEEP OUT', followed by the words 'FUMIGATION BY (name of fumigant)' in capital letters not less than 10 cm high, in contrasting colour to the background.

The emergency contact and telephone number of the fumigator in charge or the firm should be clearly shown at the foot of the notice. All warning notices shall be located such that they are clearly visible.

The risk area shall be marked with a physical barrier at the perimeter.

2.7.2 Security measures

Where a risk assessment determines that access to the fumigation enclosure and risk area cannot be made satisfactorily secure by existing fences, gates or other security measures, a watchman shall be present from the introduction of fumigant into the enclosure until clearance of the enclosure. Other security measures may be sufficient where determined by a risk assessment.

2.8 PRECAUTIONS AND TESTS OF EQUIPMENT

No person shall commence a fumigation until the following conditions apply:

- (a) The fumigator in charge has by personal inspection ascertained that all portions of the fumigation enclosure and risk area have been vacated.