

Australian Standard™

**The storage and handling of
agricultural and veterinary
chemicals**

This Australian Standard was prepared by Committee CH/9, Safe Handling of Chemicals. It was approved on behalf of the Council of Standards Australia on 30 October 1998 and published on 5 December 1998.

The following interests are represented on Committee CH/9:

Air Conditioning and Refrigeration Wholesalers Association
Australasian Fire Authorities Council
Australasian Railway Association
Australian Chemical Specialties Manufacturers Association
Australian Conservation Foundation Inc
Australian Paint Manufacturers Federation
Australian Council of Trade Unions
Australian Institute of Petroleum
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New Zealand Fire Service
Plastics and Chemicals Industry Association
Tranz Rail, New Zealand
Victorian WorkCover Authority
Work Health Authority, N.T.
WorkCover New South Wales
Workplace Standards Authority, Tasmania

Additional interests participating in preparation of Standard:

Agsafe Australia
Australian Environmental Pest Managers Association
Manufacturers, distributors and users of agricultural and veterinary chemicals

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Australian Standard™

**The storage and handling of
agricultural and veterinary
chemicals**

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PREFACE

This Standard was prepared by Standards Australia/Standards New Zealand Committee CH/9, Safe Handling of Chemicals to supersede AS 2507—1984, *The storage and handling of pesticides*.

The objective of this Standard is to provide requirements and recommendations for the storage and handling of agricultural and veterinary chemicals, which may be classified as dangerous goods under the *Australian Dangerous Goods Code* (ADG Code) or as scheduled poisons by the *Standard for the Uniform Scheduling of Drugs and Poisons* (SUSDP).

The Standard is intended to be used by retailers and ‘end users’ of agricultural and veterinary chemicals, including farms and rural industries.

This Standard has been revised in order to ensure the currency of its technical information, and the opportunity has been taken to arrange the document into a format consistent with other Australian Standards for the storage and handling of dangerous goods. Major changes include the following:

- (a) The title has been changed to better describe the contents of the Standard.
- (b) Sections addressing operational and personal safety and emergency management have been expanded to align with the requirements given in other Australian Standards for the storage and handling of dangerous goods.
- (c) A Section on minor storage has been developed.
- (d) The information on waste disposal has been comprehensively revised to align with industry best practices and to address environmental concerns.

The series of Standards covering the storage and handling of dangerous goods presently comprises the following:

AS

- 1894 The storage and handling of non-flammable cryogenic and refrigerated liquids
- 1940 The storage and handling of flammable and combustible liquids
- 2022 Anhydrous ammonia—Storage and handling (known as the SAA Anhydrous Ammonia Code)
- 2714 The storage and handling of hazardous chemical materials—Class 5.2 substances (organic peroxides)
- 2927 The storage and handling of liquefied chlorine gas
- 3780 The storage and handling of corrosive substances
- 3961 Liquefied natural gas—Storage and handling
- 4081 The storage, handling and transport of liquid and liquefied polyfunctional isocyanates
- 4326 The storage and handling of oxidizing agents
- 4332 The storage and handling of gases in cylinders

AS/NZS

- 1596 Storage and handling of LP Gas
- 3833 The storage and handling of mixed classes of dangerous goods in packages and intermediate bulk containers
- 4452 The storage and handling of toxic substances

Attention has been paid to the requirements of regulatory authorities; emergency services and environmental authorities, and various publications of Worksafe Australia.

This Standard is a result of a consensus amongst Australian and New Zealand representatives on the Joint Committee that is be produced as an Australian Standard.

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

Statements expressed in mandatory terms in notes to tables are deemed to be requirements of this Standard.

Notes that appear in the main text of this Standard provide information only.

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STANDARDS AUSTRALIA

Australian Standard

The storage and handling of agricultural and veterinary chemicals

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard sets out requirements and recommendations for the safe storage and handling, by retailers and ‘end user’ industries (including farms and rural industries), of packaged agricultural and veterinary chemicals, comprising dangerous goods of Classes 3, 6.1, 8 and 9, ‘minor storage’ quantities of aerosols (UNI950) and of Class 4.3, and non-dangerous goods including scheduled poisons.

NOTES:

- 1 Examples of ‘end user’ industries are—
 - (i) pest control;
 - (ii) horticulture;
 - (iii) floriculture;
 - (iv) farms and other rural industries;
 - (v) recreation, including parks and gardens maintenance; and
 - (vi) national parks.
- 2 Agricultural and veterinary chemicals may be classified as workplace hazardous substances by NOHSC:1008 and listed in NOHSC:10005. As such they will also be subject to the legislative requirements relating to workplace hazardous substances. Recognition of the relevant requirements of the *Standard for the Uniform Scheduling of Drugs and Poisons* (SUSDP) is also necessary.
- 3 Classification and identification systems for dangerous goods and scheduled poisons are outlined in Appendix A.
- 4 A discussion of the health hazards presented by agricultural and veterinary chemicals and an outline of suitable first aid procedures are provided in Appendix B.

This Standard deals with the storage of packages, including intermediate bulk containers (IBCs) of capacity not exceeding 1.6 m³.

This Standard does not apply to—

- (a) the manufacture of agricultural and veterinary chemicals;
- (b) the bulk storage of agricultural and veterinary chemicals;
- (c) the storage and handling of Class 5.1 dangerous goods (including chlorate defoliants and ammonium nitrate fertilizers), which are addressed in AS 4326;
- (d) package filling lines;
- (e) the transport of agricultural and veterinary chemicals, which, if they are dangerous goods, is dealt with in the *Australian Dangerous Goods Code* (ADG Code); and
- (f) the use of agricultural and veterinary chemicals.

1.2 APPLICATION The requirements of this Standard apply in conjunction with, but do not take precedence over, any government regulations that apply in any area.

NOTES:

- 1 A store may come under the regulatory control of several authorities having differing areas of responsibility, and an approval from one authority does not necessarily constitute an approval from others.

- 2 Knowledge of the relevant requirements of the *Building Code of Australia* (BCA) is necessary for all matters relating to building works and fire protection.

For minor storage of agricultural and veterinary chemicals (as defined in Clause 1.4.24), only Sections 1, 2 and 7 apply. Sections 3, 4, 5 and 6 of this Standard deal with safety matters that may be pertinent to minor storage but which, for the purpose of such, may be regarded as advisory.

1.3 REFERENCED DOCUMENTS A list of documents referred to in this Standard is given in Appendix C.

1.4 DEFINITIONS For the purpose of this Standard, the definitions below apply.

1.4.1 Access—a means by which a person or vehicle can approach or leave a specific location, including walkways, platforms, stairways, ladders, roads and all provisions for safe entry and exit.

1.4.2 ADG Code—the *Australian Dangerous Goods Code*, which comprises—

- (a) the *Australian Code for the Transport of Dangerous Goods by Road and Rail*, 6th edition;
- (b) the *Rail (Dangerous Goods) Rules*;
- (c) the *Road Transport Reform (Dangerous Goods) Regulations*; and
- (d) technical appendices.

1.4.3 Aerosols—non-refillable receptacles made of metal, glass or plastics, containing gas which is compressed, liquefied or dissolved under pressure, and fitted with a relief device which allows the contents to be ejected as a gas, or as solid or liquid particles in suspension in a gas or liquid.

1.4.4 Agricultural chemical—a substance or mixture of substances that is a means of directly or indirectly—

- (a) destroying, stupefying, repelling, inhibiting the feeding of, or preventing infestation or attacks of, any pest in relation to a plant, a place or a thing;
- (b) destroying a plant;
- (c) modifying the physiology of a plant or pest so as to alter its natural development, productivity, quality or reproductive capacity;
- (d) modifying the effect of another agricultural chemical; or
- (e) attracting a pest for the purpose of destroying it.

An agricultural chemical includes any substance or mixture of substances declared by regulation to be an agricultural chemical product.

1.4.5 Approved, approval—with the agreement of, acceptable to, and meeting the prescribed standards of the relevant regulatory authority.

1.4.6 Authority—the authority having statutory (legal) control of a particular matter.

1.4.7 Boundary—the perimeter of the whole of the site under the same occupancy as that on which the storage area is located.

1.4.8 Bund—an embankment or wall which may form part or all of the perimeter of a storage area.

1.4.9 Class—the number assigned to dangerous goods which exhibit a common single or most significant risk, as determined from the criteria given in the UN *Manual of Tests and Criteria*, and listed in the *ADG Code*.

1.4.10 Combustible materials—materials of a type and quantity sufficient to constitute a significant heat radiation or fire hazard to the store.

1.4.11 Compound—an area bounded by natural ground contours, or by a bund, and intended to retain spillage or leakage.

NOTE: A containment vessel, pit or tank may be used for this purpose.

1.4.12 Container—anything in which the chemicals are wholly or partly cased, covered, contained or packed, whether empty or partially or completely full, but not including a vehicle or freight container.

1.4.13 Dangerous goods—substances and articles that—

- (a) satisfy the UN tests and criteria for determining whether they are dangerous goods;
- (b) are listed in the *ADG Code*; or
- (c) are determined to be dangerous goods by the competent authority under Regulation 2.5 of the Road Transport Reform (Dangerous Goods) Regulations.

NOTE: UN tests and criteria are specified in the UN *Manual of Tests and Criteria* and the UN *Recommendations on the Transport of Dangerous Goods*.

1.4.14 Decant—to pour from one container to another.

1.4.15 Dwelling—any building or portion of a building that is used, or intended, adapted or designed to be used for living purposes.

1.4.16 Fire resistance level (FRL)—the grading period, in minutes, determined in accordance with AS 1530.4 for—

- (a) structural adequacy;
- (b) integrity; and
- (c) insulation;

and expressed in that order (e.g. 60/60/30)

NOTE: Where an FRL is required, reference should be made to the *Building Code of Australia* (BCA) for guidance.

1.4.17 Flammable—capable of being ignited and of burning.

1.4.18 Hazardous area—an area in which an explosive atmosphere is present, or may be present, such as to require special precautions for the construction, installation and use of potential ignition sources.

NOTE: A classification system for hazardous areas is given in the AS/NZS 2430 series.

1.4.19 Ignition source—a source of energy sufficient to ignite a flammable atmosphere, including naked flames, exposed incandescent material, electrical welding arcs, mechanical or static sparks, and electrical or mechanical equipment not approved for use in hazardous locations.

1.4.20 Incompatible—in relation to substances or their containers, having the ability to react or combine with one another in a manner that increases the hazard of an individual substance, that could cause deterioration of the container or substance and increases the hazards presented by them, or that could increase the hazards in a fire.

1.4.21 Intermediate bulk container (IBC)—a rigid or flexible portable container for the transport of dangerous goods that—

- (a) has a capacity of not more than—
 - (i) for solids or liquids of Packing Groups II or III, 3 m³ or 3000 L; and
 - (ii) for solids of Packing Group I in a composite, fibreboard, plastics or wooden container, 1.5 m³; and
 - (iii) for solids of Packing Group I in a metal container, 3 m³;

- (b) is designed for mechanical handling;
- (c) is resistant to the stresses produced in usual handling and transport; and
- (d) complies with the *Specifications for Intermediate Bulk Containers for the Transport of Dangerous Goods*, published as a supplement to the ADG Code.

For the purposes of this Standard, the capacity of an IBC is limited to 1.6 m³.

1.4.22 Material safety data sheet (MSDS)—a document which provides information on the identification, health hazards, precautions for use and safe handling of a specific chemical product, and which complies with NOHSC:2011.

1.4.23 May—indicates the existence of an option.

1.4.24 Minor storage—the storage of agricultural and veterinary chemicals in quantities not exceeding those specified in Clause 2.2 of this Standard.

1.4.25 Non-combustible—material that does not support combustion or is deemed to be non-combustible when tested in accordance with AS 1530.1.

1.4.26 Package—the complete product of the packing of the goods, and consisting of the packaging and its contents.

1.4.27 Packaging—the container in which the goods are received or held, with a capacity of not more than 450 L and a net mass of not more than 400 kg.

1.4.28 Packing Group—one of the three hazard groups to which dangerous goods (of Classes other than 1, 2, 6.2 and 7) are assigned in the ADG Code, in decreasing order of hazard, by the Roman numerals 'I' (high danger), 'II' (medium danger) and 'III' (low danger).

1.4.29 Pesticide—any substance, or mixture of substances, intended to prevent or control any unwanted species of plants or animals, including any substances or mixtures of substances intended for use as plant-growth regulators, defoliants or desiccants.

NOTES:

- 1 The term 'pesticide' includes any substances used for the control of pests in the human environment, or during the production, storage, transport, marketing or processing of food for humans or animals, or which may be administered to animals for the control of insects or arachnids in or on their bodies. It does not include antibiotics or other chemicals administered to animals for other purposes, e.g. to stimulate their growth or to modify their behaviour, nor does it include fertilizers or antifouling surface coatings.
- 2 The following are examples of materials included in this definition:

Insecticides	Fungicides
Herbicides	Fumigants
Nematicides	Rodenticides
Defoliants	Plant growth regulators
Acaricides	Miticides
Termiticides	Insect growth regulators

1.4.30 Pipework—an assembly of pipes, pumps, hoses, valves and fittings.

1.4.31 Premises—the area under the control of the occupier.

1.4.32 Retail premises—a retail outlet selling agricultural and veterinary chemicals to predominantly non-domestic end users.

1.4.33 Scheduled poison—any substance which is included in the schedules of the AHMAC *Standard for the Uniform Scheduling of Drugs and Poisons* (SUSDP).

1.4.34 Segregated—isolated from each other within the store.

1.4.35 Separated—isolated by a given minimum distance.

1.4.36 Shall—indicates that a statement is mandatory.

1.4.37 Should—indicates a recommendation.

1.4.38 Static electricity—the electrical charging of a material by such processes as physical contact, separation, electrostatic induction and deposition of charged particles.

1.4.39 Subsidiary Risk (subrisk)—a reference to any additional hazard that the dangerous goods might have, indicated to the Subsidiary Risk number to which the dangerous goods are assigned.

Dangerous goods are assigned a Subsidiary Risk if they—

- (a) satisfy the criteria specified in the UN *Manual of Tests and Criteria* for their assignment to the Subsidiary Risk;
- (b) are assigned a Subsidiary Risk in the *ADG Code*; or
- (c) are assigned a Subsidiary Risk by the regulatory authority.

1.4.40 Veterinary chemical—a substance, or mixture of substances, that is for administration or application to an animal by any means, or consumption by an animal, as a means of directly or indirectly—

- (a) preventing, diagnosing, curing or alleviating a disease or condition in the animal or an infestation of the animal by a pest;
- (b) curing or alleviating an injury suffered by an animal;
- (c) modifying the physiology of an animal—
 - (i) so as to alter its natural development, productivity, quality or reproductive capacity; or
 - (ii) so as to make it more manageable;
- (d) a vitamin, mineral substance or additive, if it is used for the purpose of Items (a), (b) or (c) above.

A veterinary chemical includes any substance or mixture of substances declared by the regulations to be a veterinary chemical product. It does not include a substance or mixture of substances—

- (i) prepared by a pharmacist in accordance with the instructions of a veterinary surgeon; or
- (ii) prepared by a veterinary surgeon.

1.5 PACKAGING A packaging that is to be filled with agricultural or veterinary chemicals shall—

- (a) for use other than at the premises at which it is to be filled, if classified as dangerous goods, meet the requirements of the *ADG Code* for the packaging for dangerous goods; and
- (b) for use at the premises at which it is to be filled, be constructed—
 - (i) with sufficient strength and durability for their proposed service; and
 - (ii) such that all components of the packaging that may be directly in contact with the contents are compatible with the contents.

1.6 MARKING All packages containing agricultural or veterinary chemicals shall be labelled in accordance with the requirements of the National Registration Authority for Agricultural and Veterinary Chemicals (NRA). In addition, any package containing agricultural or veterinary chemicals shall—

- (a) for use other than at the premises at which they are to be filled, meet, where appropriate, the marking requirements of the *ADG Code*, the SUSDP and relevant State or Territory legislation; and

- (b) for use at the premises at which they are to be filled, be marked in accordance with relevant State or Territory legislation.

NOTE: Where packages are opened, or goods are repackaged, workplace hazardous substances regulations may also apply.

1.7 REPACKAGING Except when dealing with leaks or spills, or for immediate use, agricultural and veterinary chemicals shall only be repackaged in accordance with appropriate State or Territory regulations and under the direct quality control of the supplier.

Any repackaged product which consequently cannot be used shall be labelled in accordance with Clause 4.4.4 for disposal purposes.

1.8 SECURITY OF STORAGE AREAS All storage areas shall be appropriately secured against access by unauthorized persons.

SECTION 2 MINOR STORAGE

2.1 SCOPE OF SECTION This Section specifies the criteria for ‘minor storage’ of agricultural and veterinary chemicals, and the requirements for such storage.

NOTE: Sections 3, 4, 5 and 6 of this Standard deal with construction and safety matters that may be relevant to minor storage but may be regarded as advisory for minor storage.

2.2 CRITERIA FOR CLASSIFICATION AS MINOR STORAGE Storage of agricultural and veterinary chemicals, in quantities not greater than those in Table 2.1, shall be classified as minor storage.

TABLE 2.1
MAXIMUM QUANTITIES OF AGRICULTURAL AND VETERINARY
CHEMICALS PERMISSIBLE AS MINOR STORAGE

Location	Packing Group (PG)	Maximum quantity		
		Liquids L	Solids kg	Class 4.3 kg†
Areas or buildings not normally associated with dangerous goods (e.g. dwellings, offices, workshops, club houses, pool sheds), or where the requirements for larger quantities cannot be complied with fully	PG I	0	0	0
	PG II	5	5	0
	PG III and non-DG* combined	50	50	0
Areas where packages are opened by trained staff only (e.g. for decanting, diluting or use)	PG I	1	1	1
	PG II	250	250	5
	PG III and non-DG* combined	1000	1000	10
Areas where packages are always kept closed and trained staff are present during operating hours (e.g. warehouses, retail premises)	PG I	5	5	5
	PG II	250	250	25
	PG III in packages ≤ 210 L	1000	1000	100
	Non-DG*	1000	1000	N/A

* Non-DG—non-dangerous goods

† Indoor minor storage only

NOTES:

- 1 All quantities are cumulative, i.e. the storage of each or all maximum allowable quantities combined are permissible.
- 2 Although this Standard does not cover the storage of Class 4.3 dangerous goods in greater than minor quantities, the presence of Class 4.3 dangerous goods shall be considered when determining the maximum quantities of chemicals stored.
- 3 For the purposes of Table 2.1, aerosols (UN 1950) are regarded as PG III.

2.3 MINOR STORAGE REQUIREMENTS

2.3.1 Construction of the minor storage area The following requirements apply:

- (a) The floor or base of the storage area shall be impermeable to the chemicals being stored.

- (b) Where there is a possibility of soil or water contamination from the goods being stored, a method of containing any leaks or spills within the storage area shall be provided. This may be achieved by using a bund or a sloping floor.

NOTE: Portable bunding may be acceptable.

- (c) The storage area shall be well ventilated. In areas where packages are opened, ventilation shall be sufficient to maintain exposure levels to any vapours or dusts below recommended workplace exposure limits.

NOTE: NOHSC *Exposure standards for atmospheric contaminants in the occupational environment* apply.

- (d) Where reasonably practicable, the storage area shall be protected against heat and exposure to sunlight.
- (e) The storage area should not be located in an area that is prone to flooding. In any case, it should be located above the highest recorded flood level.

2.3.2 Separation of the minor storage area The minor storage area shall be separated by—

- (a) at least 3 m from any unrelated work area, office, amenities, storage area for gas cylinders, or readily combustible or flammable materials or fuel storage area; and
- (b) at least 5 m from any watercourse, body of water, drain or sewer that is not confined to the premises.

Where there are two or more minor storage areas on the same property, each may be treated as a separate storage if they are at least 100 m apart.

These distances may be measured horizontally around a liquid-tight partition that is at least as high as the packages or the place being protected, whichever is the higher. Where a fire hazard is involved, such a partition—

- (i) shall have a fire resistance level (FRL) of at least 60/60/60; or
- (ii) should be constructed of solid masonry or reinforced concrete, at least 100 mm thick and at least 3 m high.

2.3.3 Housekeeping The following requirements apply:

- (a) Agricultural and veterinary chemicals shall not be stored, handled or used where they could jeopardize escape from a building in an emergency.
- (b) The storage area shall be kept clear of any residues or combustible waste materials.

2.3.4 Handling precautions The following precautions shall be taken when handling packaged agricultural and veterinary chemicals:

- (a) Containers shall be kept closed when not in use.
- (b) Containers shall be labelled at all times.
- (c) Containers shall only be opened in a well-ventilated area.
- (d) A self-closing safety tap should be used when dispensing or transferring flammable or combustible liquids.

NOTES:

- 1 AS/NZS 1020 advises on the control of static electricity.
- 2 A safe method of transferring liquid is to use a hand-operated pump.

- (e) Personnel who handle agricultural or veterinary chemicals shall be made aware of their potential hazards.

2.3.5 Special requirements for the minor storage of Class 4.3 dangerous goods

Solid fumigants that are dangerous goods of Class 4.3 shall always be protected from any possible contact with water (including firefighting water). A lockable metal cabinet is suitable for the storage of these substances, provided that—

- (a) the cabinet is marked with the Class 4.3 label; and
- (b) there are no electrical switches, motors or lights within 3 m of the storage.

2.4 OUTDOOR MINOR STORAGE The maximum quantities of agricultural and veterinary chemicals allowed as outdoor minor storage is as given in Table 2.2. These quantities are permissible only provided that—

- (a) such chemicals are not intended for resale;
- (b) the area of such a farm is at least 2 ha and is used for, or intended to be used for, agricultural, horticultural, floricultural or pastoral purposes.

The following requirements apply to such storage:

- (i) Class 4.3 dangerous goods shall not be stored outdoors.
- (ii) The ground around the store shall be kept clear of combustible vegetation or refuse for at least 3 m.
- (iii) Any potential flow of spillage shall be prevented from reaching any protected place, watercourse or property boundary. This may be achieved by the use of natural ground slope, or the provision of a diversion channel, kerb or bund.
- (vi) The store shall be separated from any dwelling or protected place on the property by at least 10 m.
- (v) The store shall be separated from the property boundary by at least 15 m.

TABLE 2.2
MAXIMUM QUANTITIES OF AGRICULTURAL AND VETERINARY
CHEMICALS PERMISSIBLE FOR OUTDOOR MINOR STORAGE

Maximum quantity, kg or L		
PG I	PG II	PG III
10	500	3500

NOTE: Class 4.3 dangerous goods shall not be stored outdoors.

SECTION 3 DESIGN AND CONSTRUCTION OF STORAGE AREAS

3.1 SCOPE OF SECTION This Section sets out requirements and recommendations for planning, designing and building a store for agricultural and veterinary chemicals, in quantities greater than those defined as minor storage.

NOTE: Appendix D provides an outline of a hazard assessment which should be carried out when setting up the storage area.

3.2 TYPES OF STORAGE AREA A storage area for agricultural and veterinary chemicals may be one, or a combination of, the following:

- (a) An outdoor storage area which has a security fence, and may have a roof.
- (b) A free-standing, roofed building.
- (c) A room, enclosure or area within a building.
- (d) A building that is attached to another building.

3.3 PLANNING AND DESIGN As a general principle, agricultural and veterinary chemicals should be stored under cover. Uncovered storage, although sometimes unavoidable, should only be for short-term storage, and should be confined to materials that are known to be stable under such conditions.

When planning a storage area for agricultural and veterinary chemicals, the following factors need to be considered:

- (a) The types and quantities of chemicals to be stored.
- (b) The required separation distances to boundaries and other buildings and facilities, both on- and off-site.
- (c) The segregation of goods within the storage area.
- (d) Special facilities such as decanting and repacking areas.
- (e) Sufficient space to safely operate equipment such as forklifts, and to handle the daily turnover of goods.
- (f) Safe entry to and exit from all work locations.
- (g) Prevention of any contamination of soil and water.
- (h) Sufficient space between bund walls, storage areas and other structures, for maintenance and emergency access.
- (i) A means for reducing emissions of vapours to the outside atmosphere.
- (j) Water supplies.
- (k) Electrical installations sufficient to supply the required number of general purpose outlets, welding outlets, light fittings and other power requirements.
- (l) Fire protection equipment.
- (m) Means of evacuation.
- (n) The protection of personnel responding to an emergency.
- (o) The containment of leaks, spills and run-off including the risk of pollution to water sources in the locality.
- (p) The location of the emergency plan (see Clause 5.2.2) and the safety information board (see Clause 5.5.3).
- (q) Sufficient space for parking vehicles.

NOTE: Some State and local authorities require plans for facilities storing dangerous goods to be assessed or approved before construction is commenced.

3.4 LOCATION OF STORAGE AREAS

3.4.1 General The following principles apply when determining the location of the storage area.

- (a) Any local government zonings and other ordinances shall be observed.
- (b) The storage area shall either be built above the highest known flood level, or shall be otherwise protected from flooding.
- (c) The storage area shall be accessible to emergency services under all foreseeable weather conditions.
- (d) Storage areas for flammable and combustible liquids shall be at or below ground level.

3.4.2 Separation The following separation distances apply:

- (a) Separation distances set out in other relevant Australian Standards (such as AS/NZS 1596, AS 1940, AS 3780, AS 4332 and AS/NZS 4452) shall apply.
- (b) The storage area shall be separated by at least 5 m from—
 - (i) any stores for agricultural and veterinary chemicals that are not on the same premises; and
 - (ii) any drains, sewers, watercourses or bodies of water, in order to reduce the likelihood of contamination.

NOTE: This does not apply to purpose-built internal collection systems.

- (c) The storage area shall be separated by at least 3 m, or by a screen wall having an FRL of at least 60/60/60, from—
 - (i) any unrelated work area;
 - (ii) any storage area for gas cylinders, liquid fuels or corrosive substances;
 - (iii) offices and amenities; or
 - (iv) any accumulation of combustible materials, e.g. pallets.

Where the storage area is surrounded by walls that are essentially vapour-tight, the distance may be measured from any wall openings, e.g. vents, doors and windows.

3.5 CONSTRUCTION REQUIREMENTS

3.5.1 General Storage areas for agricultural and veterinary chemicals shall comply with the following requirements, as appropriate:

- (a) Floors shall be of concrete or other material that is impervious and resistant to attack by the chemicals being stored.

NOTE: Earth, unsealed timber and unsealed masonry are examples of materials that are unsuitable for floors.

- (b) Floors shall be designed and constructed so that, in a fire, molten chemicals are safely diverted into a suitable area for their disposal.
- (c) Any drainage system for spills and leaks shall be directed away from other storage areas, buildings or combustible materials, to an area where the chemicals can be readily collected (see also Clause 3.5.7). Environmental Protection Authority (EPA) requirements also apply.
- (d) Any structure shall be non-combustible within the context of AS 1530.1.

NOTE: A hardwood frame with non-combustible cladding is acceptable.

- (e) All building components up to the maximum bund height shall—
 - (i) be resistant to attack by the chemicals being stored; and
 - (ii) have non-absorbent surfaces where contact with the stored chemicals might occur.

3.5.2 Security All storage areas shall be secured against unauthorized access. The security area shall either be attended by a responsible person or securely locked.

3.5.3 Outdoor storage areas The following requirements apply to outdoor storage areas:

- (a) An outdoor storage area shall be secured by a fence complying with AS 1725 or equivalent, having two strands of barbed wire on top.
- (b) The emergency escape route from the storage area shall not run through the storage area.
- (c) Where a gate is required, it shall be lockable, for security purposes. Such a gate should open outwards from the storage area.

NOTE: If an outdoor storage area is within adequately secured premises, additional fencing may not be required. For example, where a retailer's entire site is surrounded by a fence as described in Item (a) above, and is inaccessible to the public when unattended, the additional fence may not be required.

3.5.4 Fixed electrical equipment All fixed electrical equipment within the storage area shall comply with the following requirements:

- (a) Fixed electrical installations, including lighting, gate openers, airconditioning units, computer terminals, telephones and power outlets, shall be kept to a minimum.
- (b) Fuse boards shall be installed outside the building, in order to permit their ready access under all foreseeable circumstances.
- (c) Electrical wiring shall comply with AS 3000 and other appropriate rules.

3.5.5 Storage of flammable and combustible liquids Agricultural and veterinary chemicals that are flammable or combustible liquids shall be stored in accordance with AS 1940 and the requirements below:

- (a) An assessment of hazardous areas, as given in the AS/NZS 2430 series of Australian Standards, shall be made and any ignition sources dealt with accordingly.
- (b) Roofing over driveways and loading areas, which could impede firefighting or increase the fire risk (e.g. by fire plumbing), shall be subject to specific assessment, even if added after the storage area is built.

3.5.6 Ventilation

3.5.6.1 General Each storage area shall be ventilated in accordance with the following requirements:

- (a) The ventilation system shall be capable of diluting and removing the normal level of vapour generated within the storage area.

NOTE: Air dilution of vapours should be sufficient to maintain the storage below recommended workplace exposure standards and any lower explosive limits.

- (b) A natural ventilation system that complies with Clause 3.5.6.3 shall be deemed to comply with Item (a).
- (c) A mechanical ventilation system that complies with Clause 3.5.6.4 shall be deemed to comply with Item (a).