Agrichemical Warehousing Standard Association

WAREHOUSING STANDARDS BULLETIN

UPDATED JANUARY 2006 **NUMBER 1**

WHO MUST MEET THE AWSA'S WAREHOUSING STANDARDS?

Background

All pest control products for which federal registration is granted are classified under one of three categories: Domestic, Commercial or Restricted.

1. **Domestic** - these products are sold for non-commercial purposes for use in and around the home.

2. **Commercial** - designed for commercial operators in agriculture, forestry and industry.

   Also classified as:

   (a) agricultural
   (b) industrial

3. **Restricted** - commercial-level products with certain limitations regarding storage, display, distribution, usage or qualification of users.

The AWSA Standards apply to the storage of crop protection products based on their registration classification, and on their user. There is no distinction based on the volume or weight of pesticides in storage or on the length of time agrichemicals are in storage.

There are some storage facilities to which the Standards may not apply, ***at this time.*** Nevertheless, anyone storing pesticides should do so in a way that will minimize risk to human health and the environment, to the greatest degree possible. There also may be provincial, federal or municipal legislation, regulation, bylaws or Codes that might apply to a specific location, and may supersede the AWSA Standards. Vendors, warehousers, custom applicators and users of pesticides should be aware of any of these that might apply to their situation.

Application of the AWSA

The AWSA's Standards apply to the storage facilities of pesticides, classified as agricultural or industrial (i.e.: commercial pesticides). Also included are commercial-level restricted pesticides. Industrial includes pesticides used in forestry or for structural pest control use. The Standards also apply to the storage facilities of custom applicators (i.e.: ground or aerial crop sprayers). The Standards ***do not*** apply, at this time, to storage facilities that only contain:

1. Domestic pesticides - home and garden pesticides fall into this category.

2. Animal health pesticides - barn fly spray, fly tags and rodenticides, for example, would fall into this category.

However, if the storage facilities contain pesticides other than, or in addition to those listed in (1) and (2) above, the Standards do apply.

The Standards ***do not*** apply to the storage facilities of someone who is only an end user in the following categories:

- farmers/growers
- seed treaters
- fertilizer impregnators
- railways
- utilities
- golf course operators
- forestry end users
- industrial/structural pest control applicators and end users
- lawn and garden pest control applicators/landscapers
- governments (federal, provincial municipal, Crown corporations)
- universities, post-secondary education institutions, schools.

The Standards do apply to the storage facilities of any end user who is also a vendor; that is, sells to someone else for their application or use, or resells or redistributes. Examples here include farmers and seed treaters who are also dealers, or rural municipalities who are also vendors.

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UPDATED JANUARY 2002 **NUMBER 3**

VENTILATION
(Standard 3.8a - Phase I)

Standard 3.8a states:

Building ventilation must be provided to control vapours and odour in the storage area. Ensure good ventilation of storage areas. Advice should be obtained from the appropriate provincial Ministries.

Does this mean mechanical ventilation is required and, if so, what are the specifications?

Yes, mechanical ventilation is required.

> *Mechanical ventilation must be provided to control vapours and odour in the storage area, as well as in the flammable and combustible liquid storage areas.*

and references the specific sections of the National Fire Code (NFC) that are relevant to meeting this requirement.

They are:
- NFC 4.2.9.3 Ventilation
- NFC 4.1.7.3 Location of Air Inlets and Outlets
- NFC 4.1.7.4 Location of Mechanical Ventilation
- NFC 4.1.7.7 Exclusive Use of Ducts
- NFC 4.1.7.8 Maintenance

In addition, the number of air changes per hour need not exceed six, but at least two air changes per hour must be maintained.

Therefore, design for $18 m^3/hr/m^2$ of floor area, if the number of air changes exceeds six, design for six; if the number of air changes per hour is less than two, design for two air changes per hour.

Rationale - The minimum ventilation rate, as established by the NFC, cannot be less than 250 m^3/hour. The cut-off point for the area of the building or room is 13.8 m^2, based on the 18 m^3/ hour/m^2 of area. If this room has a height of 3 m, the volume is 41.4^3. Air changes would be 250 ÷ 41.4 = 6/hour.

Meeting these particular specifications may go beyond what is required by the NFC for some facilities. However, to ensure both the public's and employees' safety, and to minimize the risk of explosion, they have been established as the AWSA's minimum standard.

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UPDATED JANUARY 2002 **NUMBER 4**

EXTERIOR WALLS

The exterior walls of a warehouse shall be constructed such that the fire resistance rating shall be not less than one (1) hour, or shall be of non-combustible construction. The walls can be constructed of combustible materials, provided the materials meet the fire resistance rating.

Can I use a steel building?

Yes. Steel is non-combustible, and the Agrichemicals Warehousing Standards do not require exterior walls constructed with non-combustible materials to have a fire resistance rating, unless they are required to comply to the National Building Code (NBC) 3.2.3; i.e.: *"Spatial Separation and Exposure Protection of Buildings"*. If compliance to NBC is a requirement, fire proofing and/or insulation as per the NBC, *Combustible Insulation and its Protection,* can be applied to the steel interior to a thickness to provide for the required fire resistance rating.

UPDATED JANUARY 2002 **NUMBER 6**

AGRICHEMICAL PRODUCTS: FIRE CONTROL TACTICS

Analysis of major fires over the past 15 years that involved pesticides in pre-packaged containers indicate that these products in and of themselves do not constitute a special risk when stored in industrial warehouses. In no case was there any evidence to suggest that the pesticide, even with a flammable formulation, provided the source of ignition or cause of the fire. Occasionally however, pesticides do become involved when a fire erupts in a facility; when this occurs, special fire control tactics are required.

Experience from documented incidents involving pesticides in structural fires has shown that standard fire fighting techniques can create additional and more serious problems than that posed by the original fire.

A typical industrial occupancy, storing or processing pesticides will have a combination of various formulations which can range from relatively non-toxic, non-flammable products to those which are either extremely toxic, highly flammable or both. It must be assumed when developing and implementing emergency response plans for these facilities that fire control and extinguishment tactics must address the worst of these products.

ENVIRONMENTAL CONCERNS

Historical evidence has shown that environmental damage, resulting from fires involving pesticides, increases in proportion to the volumes of water used in an attempt to control and extinguish the fire. First and foremost is the fact that the resulting effluent is normally heavily contaminated with toxic compounds and is extremely difficult to contain on other than very heavy clay soils with diking. Secondly, products of incomplete combustion due to low temperature burns, tend to be substantially more toxic and less stable than the original compounds.

Air quality during a pesticide fire, at or near ground level, will deteriorate dramatically as the combustion temperature is reduced. A combustion temperature of 982° Celsius, for example, provides complete thermal decomposition of pesticides with resulting emissions of primarily carbon and water. At this temperature, all contaminants are carried high into the atmosphere where dispersion ensures that toxic levels at or near ground level do not occur.

As the combustion temperature is reduced, various noxious and toxic gases can be created; in addition, steam generated from the addition of water to the fire carries contaminated particles into lower levels of the atmosphere where they return quickly to the ground. As an example, air dispersion models run on pesticides indicate that where exit temperatures drop from 650° Celsius to 400° Celsius, the level of ground level contaminants rises by a factor of three.

LIFE SAFETY CONCERNS

Protection of first responders and the public is a major concern with fires involving pesticides. Historically, pesticides have not been the cause of serious casualties amongst the public and first responders who have been adequately trained.

As demonstrated in the previous discussion on air quality, the management of respirable contaminants at ground level hinges on the temperature of combustion, and the exit temperature from a structure. Where fires have been allowed to burn at high temperatures, the risk has been lowered significantly.

First responders at an incident involving pesticides must be protected with a minimum of self-contained breathing apparatus and standard turn-out gear. If a facility is fully involved or free burning, life safety is greatly enhanced by remaining outside the structure upwind of smoke and exhaust gases to protect exposures of other buildings, while the pesticides structure burns itself out.

FIRE CONTROL TACTICS

Fire control tactics where pesticides are involved, should follow protocols developed by the National Fire Academy of the U.S. Federal Emergency Management Agency. Where an incident cannot be addressed at the incipient (initial) stage, and where it is possible to ventilate and ***let burn***, these policies must be given serious consideration. You should discuss this approach with local fire departments and your insurance carrier, and recommend it for their serious consideration in the event of a fire.

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UPDATED JANUARY 2002 **NUMBER 7**

INDUSTRY POSITION
BUILDING, ELECTRICAL & EQUIPMENT CLASSIFICATION FOR THE STORAGE OF AGRICULTURAL CHEMICALS

BUILDING CLASSIFICATION

Agricultural chemical warehouses can be classified as an F2 or F1 depending upon the nature and quantities of material stored.

The definitions for the two classifications are:

F2 - medium hazard industrial occupancy in which the combustible content is more than 50kg/m^2 or 1200 MJ/m^2 of floor area and which is not classified as high industrial occupancy.

F1 - high hazard industrial occupancy containing sufficient quantities of highly combustible and flammable or explosive materials which, because of their inherent characteristics, constitute a special fire hazard.

The products stored as agricultural chemicals include dangerous goods as defined by the TDG regulations and the NFC TDG regulated flammable liquids and combustible liquids are defined by the NFC All products are regulated by the Federal Pest Control Products Act (P.C.P.) and the products are stored as agrichemical as defined by the TDG regulation.
To secure maximum safety for the health and safety of employees working within the storage facility and to ensure the integrity of the structure itself, numerous factors must be considered.

These factors include:

1) Methods of storage
2) Characteristics of the products
3) Ventilation of the rooms and/or building
4) Potential sources of ignition
5) Accidental spill and contaminated fire water containment
6) Exterior wall construction
7) Fire rated separation walls and closures
8) Sprinkler systems
9) Employee training

10) Personal protective equipment
11) A management system to include:
    a) A risk assessment
    b) An emergency response plan
    c) Product inventory control
    d) Written safe operating procedures
    e) Maintenance programs
    f) Safe work permit system

DISCUSSIONS ON FACTORS

1. The storage methods of the products meet the NFC table 3.2.7.6 and table 4.2.7.5 A & B.

2. The product characteristics range from NFC defined Class 1B and 1C flammable liquids and Class II and IIIA combustible liquids to a P.C.P. LD hazard rating of VH (very high hazard) to VLH (very low hazard). NFC requires separation as per the compatibility table 3.2.7.6..

3. The complete warehouse and/or rooms within the warehouse will have positive mechanical ventilation to provide at least 2 air changes/hr.

4. The industry standard is no open flames in the warehouse, regardless of the products stored.

5. From time to time, accidental spills are created by material handling equipment and failure of containers. Because of this, internal containment (10 cm high) is required for the entire warehouse so spilled products cannot leave the warehouse. The warehouse must also be 50 m from storm and catch basins, ditches, open bodies of water, schools, hospitals, nursing homes, detention centres, etc. If closer than 50 m, local authorities (fire department, MOE) must approve and the facility must have a diked area for containment of spills and/or fire fighting water. The industry promotes a "fire control tactics" policy for these facilities, concentrating on protecting adjacent structures/property.

6. The exterior wall construction can be of non combustible materials (masonry, concrete fibreglass or steel) or if combustible, must have a minimum 1 hr fire resistance rating.

7. Fire rated separation walls within the building where required to meet the occupancy requirements be 2 hr. except when NFC requirements are greater.

8. Sprinkler systems shall be installed when required to meet the NFC requirements.

9. Documented employee training will cover the following areas:

a) M.S.D.S./WHMIS
b) Fire Extinguisher
c) TDG
d) Fork lift truck safe operating procedures
e) Employee induction
f) Emergency response rules
g) First aid and CPR training
h) First aid training

10. A comprehensive management system with controls to ensure effective operation of the warehouse shall be in effect.

Understanding the industry's Warehousing Standards and knowing that a facility can lose the right to store products if not successful in complying with these standards (determined by an independent third party audit based on audit protocols) the industry views the classification as follows:

A warehouse which stores only products in pre-packaged containers in conformance with the industry standards, national and local codes, the building be F2.

A warehouse which dispenses flammable liquids, the building be F1. Dispensing of flammable liquids must be separate from the rest of the building by a 2 hour fire resistance separation and the room must be provided with explosion venting to the outdoors.

The storage only of flammable and combustible liquids (no 1A products) in sealed containers in rooms or building do not need explosion venting.

Flammable liquids in sealed containers offer very little hazard by themselves. When these containers are exposed to open flames, they become hazardous as the heat may cause them to burst, thus allowing the liquid to escape and adding to the intensity of the fire.

Flammable liquids themselves do not burn, it is the vapours from the liquids which burn. The rate at which different liquids vaporize varies greatly depending on their vapour pressure characteristics. Vaporization increases with a rise in temperature, therefore more flammable vapours are present above the flammable liquid at elevated temperature than above the same liquid at normal temperature.

There is more potential hazard associated with flammable liquids with a lower flash point.

ELECTRICAL CLASSIFICATION

Provided the industry standards, NFC, and the NBC are followed, the electrical classification for individual storage areas (ISA) will be as follows:

1. a) Class I, Div. 1 within 3 ft. in all directions where dispensing occurs (flammable only).

   b) Class I, Div. 2 from 2 ft. beyond the Class I Div.1 area and 20 ft. horizontal up to a level 3 ft. above the floor where dispensing occurs (flammable only).

2. Prepackaged product storage area does not need electrical classification unless storage of NFC Class 1A flammables. Lights should have protective lenses.

EQUIPMENT CLASSIFICATION

Fork lift trucks

- In areas of the warehouse classified as Class 1 Div. 1 electrical, a fork lift truck classified as EX is required.

- In areas of the warehouse classified as Class 1 Div. 2 electrical, a fork lift truck classified as EE or DY is required

- All other areas in the warehouse a fork lift truck need not be classified.

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REVISED JULY 1996 **NUMBER 9**
REVISED JANUARY 2006

SITING OF WAREHOUSE – PROTOCOL A2

Where a site has been certified for the storage of agrichemicals prior to January 1, 1999, expansion of the warehouse on the site or new construction (a new building) that may encroach on the 50 metre buffer zone *is permitted*, provided that the requirements for approval of Protocol A2 are met.

In cases where a single property may be zoned residential and all surrounding properties are zoned commercial, industrial, or agricultural and you wish to acquire the use of an adjoining property which encroaches on the 50 metre buffer zone, we would suggest rezoning for the residential property. The residential property owner should agree, in writing, for existence of the pesticide warehouse. Additional conditions of Audit Protocol A2 would apply.

From what reference point do I measure my warehouse to ensure the 50 metre buffer zone?

The measurements will be the closest point of the warehouse to
a) residential properties, the measurements to the nearest point of the zoned residential lot line;
b) for all other buildings, eg., hospitals, schools, etc., the measurement is to the nearest point of the building.

If the warehouse is a room within a building, the measurements will be taken from the closest point of the room to the sensitive areas.

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REVISED JULY 1996 **NUMBER 10**

MOVEABLE PAYLOADERS - 1000L CONTAINERS

Do I have to store these large, portable containers in a diked area?

These types of containers are classified as pre-packaged containers because they are portable; that is, they are not in a fixed location and can be moved about within a warehouse.

The standards require (see Protocol B18, scoreable at 30 points and B19, mandatory) that, within the warehouse, a minimum 10 cm retention curbing be installed.

Usually, these units are used in conjunction with dispensing and your filling area would include a scale or metering device, localized ventilation, and a sump to collect spills. If dispensing of flammable liquids or combustible liquids is occurring, the electrical service (wiring, fixtures, switches, etc.) within the immediate area would require proper rating and the building may require explosion venting. This can be determined by consulting you local design engineer prior to obtaining approval from your provincial or municipal authority.

REVISED JANUARY 1, 2006 **NUMBER 11**

AUDIT PROTOCOL NO. A2

If my warehouse is grandfathered and it is closer that 50 metres to sensitive areas, the following sample document is required for Protocol A2.

SAMPLE DOCUMENT

Our agrichemical warehouse has been in use for the continuous storage of agrichemicals prior to January 1, 1999 and our warehouse is closer than 50 metres (164 feet) to:

- Residential lot lines
- School
- Restaurant
- Processing facilities for feed or food
- Hospital
- Shopping Centre
- Building with High Occupancy

The AWSA has developed standards for the storage of these products which we intend to meet. These standards involve meeting current building codes, fire codes and electrical codes, operator training and documentation. These standards are now in place.

We have completed a site evaluation to identify all possible risks to the community (the major risk being fire) and we have included controls in our emergency response plan for such risks.

We believe that by meeting the industry standards and with the implemented controls, reduces the level of risk to the community. Because of these factors, we are asking you,

- Our Fire Chief
- Our Local M.O.E. Representative
- Our Local Planning Authority

if you concur the perceived risks can be controlled adequately with the level of control implemented.

Yours truly,

_____	_____
Manager	Fire Chief Local Planning Authority M.O.E. Representative
Date: _____	Date: _____

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AUGUST 1994 **NUMBER 12**
REVISED JULY 1996

BULK INSTALLATIONS

An installation is considered bulk when products are stored in fixed containers.

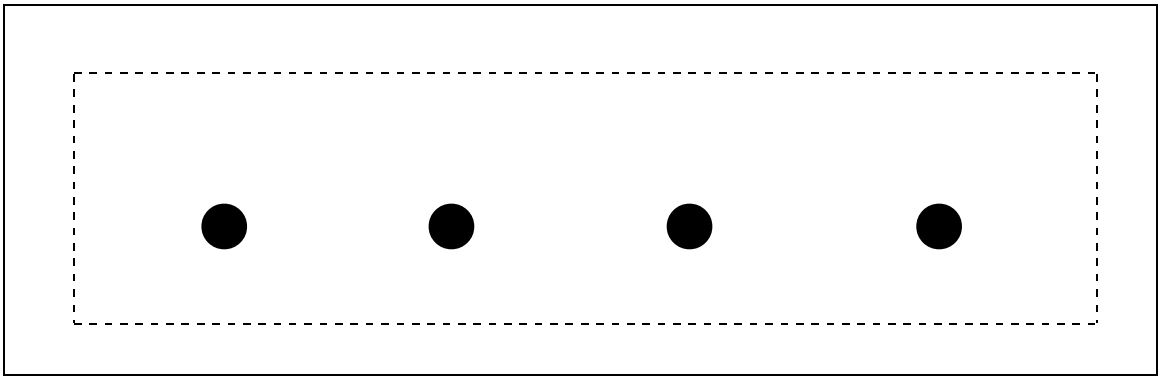
Q1. To meet the AWSA audit protocols, must my bulk installations be located in a building?

A1. No.

Q2. If however, my bulk installation is located within a building, do I require a one hour fire resistance rating on the exterior walls of the building to meet protocol B1?

A2. When the bulk tank installation is located within a stand alone tank facility, that is, the tanks are located in a building and no other function is performed within the building, then the building does not have to meet protocol B1 and protocol B20.

Stand Alone Tank Facility



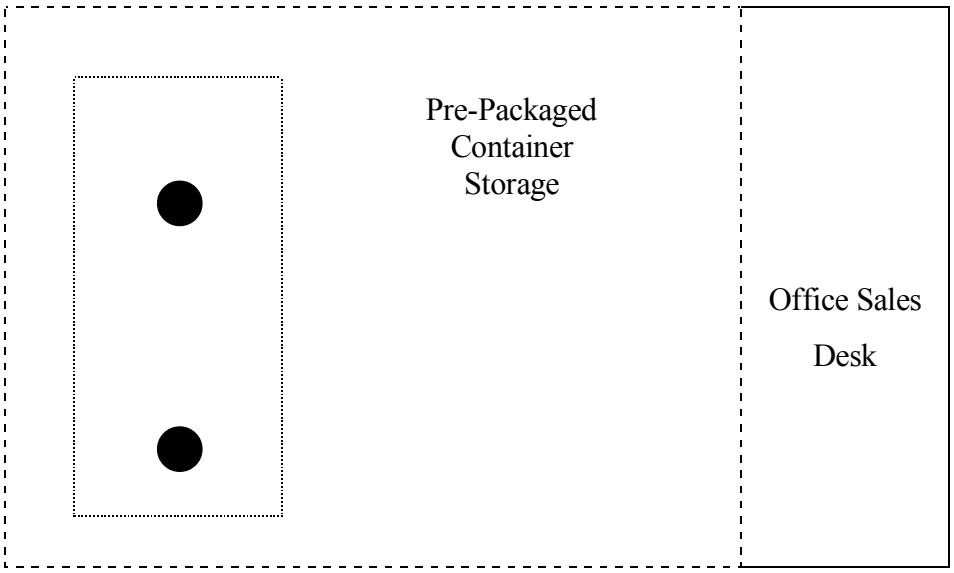
_____ NO FIRE RATING REQUIRED

---------- DIKE WALLS

Q3. When my bulk installation is located within the same building as my pre-packaged products storage, how must the exterior walls be rated to meet the AWSA audit protocol B1?

A3. The exterior walls of the building must meet the 1 hour rating or be of non-combustible construction to meet protocol B1.

Bulk Facility In Warehouse



---------- 1 HOUR RATED/NON-COMBUSTIBLE

_____ NO FIRE RATING REQUIRED

..... DIKE WALLS

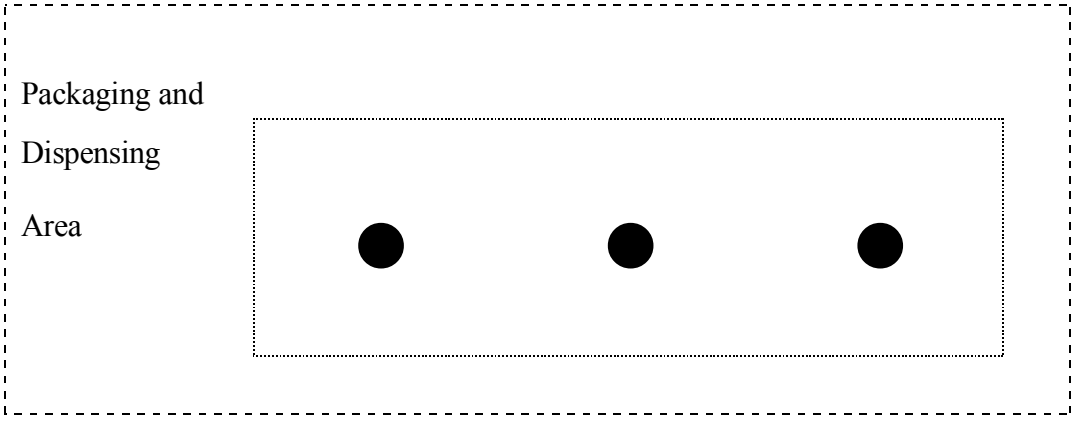
In the event you are dispensing flammable or combustibles liquids in this warehouse, you should first consult with your local design engineer to ensure your drawings and specifications will comply with local provincial and municipal codes.

Some questions to ask:

1) Is a fire separation wall required?
2) Should the electrical installation be rated?
3) Will I need localized ventilation at the dispensing station?

Q4. If I have a stand alone bulk facility where I also do packaging and dispensing within the building, how must it be rated to meet protocol B1?

Stand Alone Bulk Facility
With Packaging/Filling Work Area

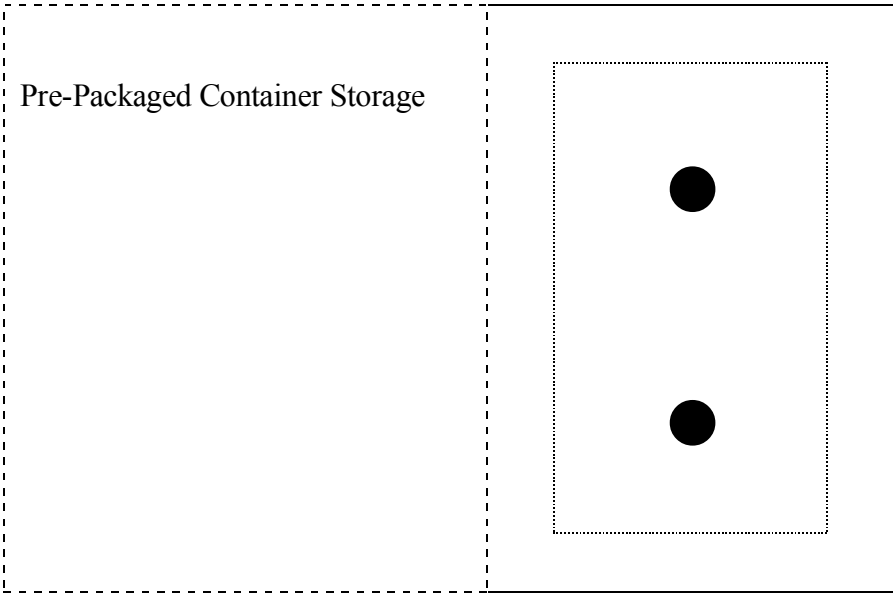


---------- 1 HOUR RATED/NON-COMBUSTIBLE
..... DIKE WALLS

A4. This scenario is the same as a warehouse with a bulk installation, with dispensing and storage, and would require the 1 hour rating or non-combustible construction with appropriate dikes.

Q5. If my bulk installation is located at the end of my storage area in a weather shelter, how must it be rated to pass audit protocol B1?

External Bulk Facility Attached to Warehouse



---------- 1 HOUR RATED/NON-COMBUSTIBLE

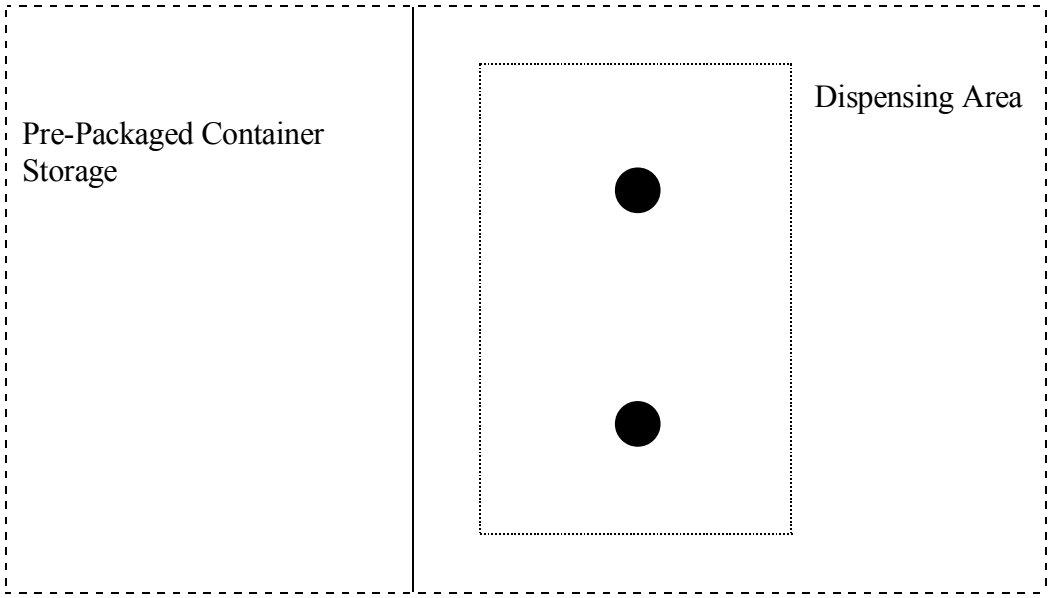
_____ NO FIRE RATING REQUIRED

..... DIKE WALLS

A5. Because the bulk installation is technically not in a building (one side not enclosed) the sides of the weather shelter need not be rated. However, the common wall between the pre-packaged Container Storage and the bulk installation must be rated.

Q6. If my bulk installation is located at the end of my storage area in a building where I dispense, how must this building be rated to pass audit protocol B1?

Bulk Facility Attached to Warehouse



---------- 1 HOUR RATED/NON-COMBUSTIBLE

_____ NO FIRE RATING REQUIRED

..... DIKE WALLS

A6. Provided there is no dispensing of flammable or combustible liquids, the common wall between the two areas need not be rated. However, the complete exterior walls for the warehouse must be 1 hour fire resistance rated or be of non-combustible construction.

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AUGUST 1994 **NUMBER 13A**
REVISED JULY 1996

AIR CHANGES PER HOUR VENTILATION

Q. Is there an alternative process to meet audit protocol No. B20 if I am unable to achieve a minimum of 2 air changes per hour?

A. Yes. The intent of this protocol is to provide a minimum level of safety for employees continuously working in a storage warehouse and to ensure there is no build-up of explosive or toxic vapours.

This revised Technical Bulletin Number 13A addresses Audit Protocols B20 and B21 from "performance" criteria as follows:

1) The air within the warehouse must be monitored and analyzed by a professional Registered Occupational Hygienist (RCH) to determine if existing ventilation is adequate under different operating conditions.

2) The ROH will consider the acute and chronic health effects of potential contaminants when selecting marker substances.

3) The results of air monitoring must meet the American Conference of Governmental Industrial Hygienists (ACGIH) Standards (latest edition) or provincial standards if more stringent.

4) Risk level assessments must include TLV-TWA (Threshold Limit Values - Time-Weighted Average) values where applicable.

5) The air monitoring Protocol is subject to a yearly review, in addition to a review when operating conditions change to any significant extent.

6) The air monitoring Protocol must include measures to deal with "spills" response.

7) The above Protocol items are applicable in those facilities where there is no dispensing of product. If dispensing of flammable and/or combustible liquids occur, then mechanical ventilation is required.

UPDATED JANUARY 2002 **NUMBER 13B**

PROTOCOL B21
VENTILATION

The flammable and combustible liquid storage areas ventilation system is designed to control explosive vapours.

The most common acceptable method of achieving this has been to control heavier than air vapours by at least one air inlet and one exhaust outlet systems within 300mm of the floor. This method of ventilation is commonly referred to as a *"Local Extraction"* system.

The American Conference of Government Industrial Hygienists also recognizes the *"General Dilution"* method as an acceptable alternative when contaminants cannot be confined to a controlled emission point. The warehouse operator may meet protocol B-21 by ensuring a homogeneous air quality throughout the building. This can be accomplished by installing ceiling fan(s) with a minimum rating of 4cfm per sq. ft. of floor area in the warehouse and positioning air inlets and exhaust outlets at any location within the building, without ducting to within 300mm of the floor. Ceiling fans MUST operate continuously when occupied.

Note: Audit Protocol B-22 – The heating system for the warehouse has no open flames (i.e. pilot lights) which could come into contact with explosive vapours. This protocol (B-22) requires a ventilation system without mechanical agitation, where ceiling mounted units with open flames are installed. Therefore, the *"General Dilution"* method using ceiling fans would **not** be an acceptable alternative in this situation or where flammable or combustible liquids are being dispensed.

UPDATED JANUARY 2002 **NUMBER 14**

STORAGE LOCATIONS (INSIDE OR OUTSIDE) FOR CONTAINERS

a) All full multi-trip and pre-packaged containers must be stored inside a certified warehouse facility.

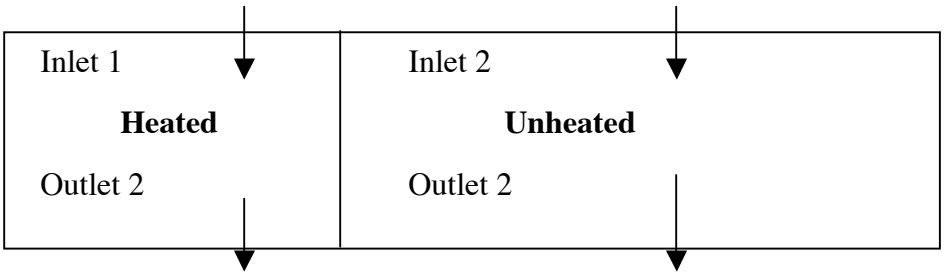
b) Storage of any empty multi-trip and one way trip containers may be stored outside with bungs or caps securely closed.

Container type		Storage location	
		Inside	Outside
Pre-packaged	Full/Partially Full	required	Not acceptable
	empty	optional	optional
Totes/ Returnables (multitrip)	Full/Partially Full	required	Not acceptable
	empty	acceptable	acceptable
Bulk		optional (preferred)	optional

REVISED OCTOBER 1994 **NUMBER 15**

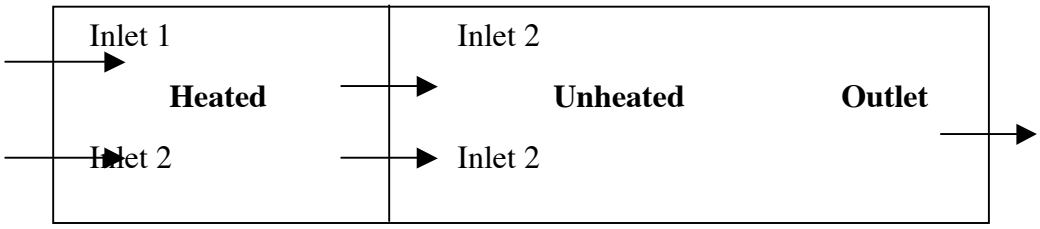
VENTILATION OPTIONS FOR A PARTITIONED STORAGE AREA

Q1. I want to partition off 1/3 of the warehouse for heated storage. This partition is not a fire separation wall but only a partition to contain heat in the heated area. How should I do this? I will be storing flammable and combustible liquids in both areas of the warehouse.



A1. The preferred method is to have two (2) systems. Inlet 1 and 2 and Outlet 1 and 2 will have their pick up points 300 mm (12") off the floor.

Q2. Can I install one system with only one fan in the warehouse when I have it partitioned off (not a fire separation wall) for winter storage?



A2. Yes, one exhaust fan assembly with all inlet and outlet points at 300 mm (12") off the floor should be considered. One inlet, however, is still sufficient.

When employees are in the warehouse during the winter, the system will draw warm air from the heated storage area into the cold unheated area. Note that the openings in the partition wall must not be blocked by pallets to impede air flow. To maintain the efficiency of the total system, maintain a clear access aisle of 1 metre distance on both sides of the partition wall.

Because of the restrictions in the partition wall, the fan assembly should be larger than normally specified. As an alternative, increase the size of the openings in the partition wall.

Q3 Can I reverse the ventilation system and have the exhaust fan assembly in the heated section?

A3. Yes. This method is also acceptable but not the most economical because if:

Employees are working in the unheated area of the warehouse, the fan assembly would be drawing cold air inside.

In the event that the partition wall is required to be a fire rated separation wall, the openings in the fire separation wall must be equipped with a properly rated fire damper.

Note that in the event that the warehouse is separated into more than two sections, a single ventilation system is not acceptable.

Some provincial jurisdictions may also require at least one natural air vent in each warehouse or room. Check with your provincial jurisdiction

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JANUARY 1995 **NUMBER 16**
REVISED JANUARY 2005

PROTOCOL I1
INSURANCE
CONFIRMATION OF COVERAGE FORM APPENDIX II - INSURANCE PACKAGE

In August 1994, a package outlining insurance requirements necessary to comply with Protocol I1 was sent out to all warehouse operators across Canada. This package included details of the insurance program administered by the insurance brokerage of AON Reed Stenhouse.

The package outlined 2 options:

1. After having a successful audit completed (with the exception of insurance protocol I1), apply for and purchase the package offered by AIC Environmental of Canada (formerly Commerce & Industry Insurance Company) through the brokerage firm of AON Reed Stenhouse, and provide a completed signed copy of Appendix II)

– or –

2. If you have or are intending to seek insurance from another source, have the Confirmation of Coverage Form (Appendix II) signed by your insurer or insurance broker and provide a copy to the auditor during your audit. This form MUST BE SIGNED and made available to the auditor at the time of audit.

A confirmation of coverage form must be fully completed for each certified warehouse location. No changes are permitted to the form.

Special Note – Effective January 2005, the only acceptable confirmation of coverage form is the version dated 1/1/2005 in the lower right corner of the form. (See page 118)

Self Insurance

Large organizations that choose to self insure may be eligible for this option by providing AWSA with one of the following:

a. Arrange for a licenced insurer to issue the insurance to the required limits, subsequently executing a reimbursement agreement with that insurer in an amount which is equal to that limit.

– or –

b. If a company's net worth is $3,000,000 or greater in the most recent fiscal year as evidenced by audited financial statements, and a confirming letter is issued by a Director, CFO or CEO supporting coverage, the site may be eligible for self insurance status.
c. The organization is permitted to make specific application to AWSA in order to provide other means of proof of coverage to the minimum limits.

REVISED JANUARY 2006 **NUMBER 18**

POLICY STATEMENT ON SHIPMENTS AND TRANSPORTATION OF AGRICHEMICALS FROM A CERTIFIED WAREHOUSE (EFFECTIVE APRIL 1, 1995)

Agrichemicals must only be shipped from a Certified warehouse into either another Certified warehouse or directly to an end user location.

Trucks cannot be used for warehousing or temporary storage.

The Standards do not place any restrictions on the sale of product. Product may be sold to and/or by individuals or companies that do not have a Certified warehouse, provided that the product is shipped directly from a Certified warehouse to the end user location. In all cases, documentation must be prepared by the Certified warehouse, consigning each individual drop-off shipment to each end user (grower) location.

Applicable Federal and Provincial regulations (eg., Transportation of Dangerous Goods/Provincial Vendor's licensing requirements/grower certification number) must be adhered to at all times.

Agrichemical Warehousing Standard Association
WAREHOUSING STANDARDS BULLETIN

REVISED JULY 1995 **NUMBER 19**

POLICY STATEMENT
MULTIPLE WAREHOUSES ON A SINGLE SITE FOR PHASE III CERTIFICATION, RENTED SPACE & RENOVATIONS

One site may have more than one Phase III Certified structure if there are multiple warehouses on the site or a portion of a warehouse is rented, as follows:

1. **Multiple Warehouses on a Single Site**
   Multiple warehouses on a single site may have one overall certification number, or may be separately certified, at the option of the owner. If separate certification numbers are requested, the auditor must identify each storage area seeking Phase III Certification and each must individually meet all siting, structural, insurance and other relevant protocol items (i.e., these must be separately audited) with training and documentation being audited for the entire site.

2. **Policy on Rented Space in a Phase III Warehouse**
   If a Phase III warehouse is rented and the rented space is not segmented by walls, one certification and one site number will apply. The renter's warehouse employees, if any, must meet the training and documentation requirements for the Phase III location.

   If the renter's area is separated by a wall and the rented area is the full responsibility of the renter, a separate certification and site number may be requested at the option of the owner, and in this case all protocols must be met for the rented area, eg., insurance.

3. **Renovation of Storage Facilities or Additions or New Structures Post Phase III Audit and Certification**
   Following the initial Phase III audit certifying the existing storage facility, all renovations must comply with applicable Phase III requirements, but will be subject to a third party Phase III audit at the time of the next round of audits. However, additions or new structures (eg. bulk storage) must be re-audited prior to use in order for the site to maintain Phase III status.

Agrichemical Warehousing Standard Association

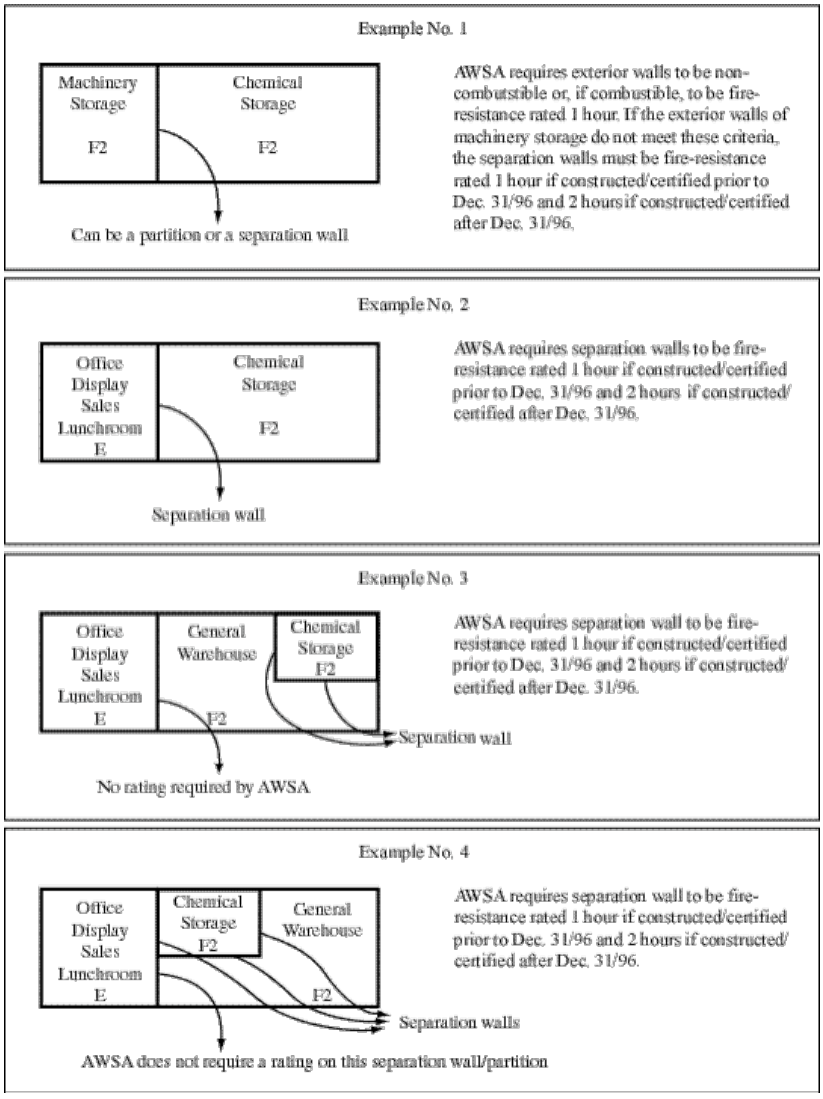
WAREHOUSING STANDARDS BULLETIN

SEPTEMBER 1996 **NUMBER 21**
REVISED JANUARY 2006

DEFINITION AND FIRE RATING OF INTERIOR FIRE COMPARTMENT SEPARATION WALLS (RELATING TO PROTOCOL B1)

The National Fire Code defines a "fire compartment" as an enclosed space in a building that is separated from all other parts of the building by enclosed construction providing a fire separation having a required fire-resistance rating.

Examples of interior fire compartment separation walls and their fire-resistance rating follow.



Agrichemical Warehousing Standard Association
WAREHOUSING STANDARDS BULLETIN

NOVEMBER 1997 **NUMBER 22**

PROTOCOL B27–FIRE DETECTION SYSTEM

PROTOCOL B-27 IS BASED ON THE 1995 BUILDING CODE SECTION 3.2.4 – FIRE ALARM AND DETECTION SYSTEMS

Historically, Fire Alarm Systems have proven their worth by providing early detection of fires and greatly improving reaction times. The application of this section of the building code varies based on the type or occupancy, adjoining occupancies, occupant load, and several other factors. The AWSA Protocol B27 requires the installation of a monitored fire alarm system for the agri-chemical storage area as well as the entire building in which it is housed.

This requirement is based on Section 3.2.4.2 of the Building Code, entitled **Continuity of Fire Alarm System**, and states in 3.2.4.2.3, "*If a fire alarm system is required in any portion of a building, it shall be installed throughout the building*."

Fire alarm systems can be made up of many different types of detectors, annunciators, auto dialers, and may vary from water flow alarms in a protected facility to smoke and heat detectors of various types in non-protected facilities. For Auditors and building owners/operators to determine the application and effectiveness of a fire alarm system can be a difficult task. In instances where it is not readily apparent that an adequate system exists, auditors can accept a written statement from the alarm installation company that states one of the following:

1. "The system installed at _____ is in conformance with the National Building Code of Canada."
2. "The system installed at _____ is in conformance with CAN/ULC-S537-M, Standard for the Verification of Fire Alarm Systems."

Note: In certain circumstances, exception are permitted. When referring to warehouses as part of a multi-purpose building, such warehouses could be

(a) located within the building, and called "rooms,"

- or -

(b) "attached structures" – to the exterior of the building.

In case a), that is a "room" within a building, the entire building requires a fire detection system to meet the National Building Code, unless the interior walls of the "room" are 4 hour fire rated and any enclosure and frame is rated at 3 hours. In this case, no additional monitoring is required other than the warehouse "room" itself.

In case b), that is an "attached structure," the only two exceptions are as follows:

1. If the adjoining wall(s) is 4 hour fire resistance rated and any closure and frame is rated at 3 hours, then no additional monitoring is required other than the warehouse itself.
2. If the adjoining walls are 2 hour fire resistance rated with no openings in the adjoining wall(s), no additional monitoring is required other than the warehouse itself.

Agrichemical Warehousing Standard Association
WAREHOUSING STANDARDS BULLETIN

MAY 1998 **NUMBER 23**

POLICY STATEMENT

RE-AUDIT CYCLE FOR MULTIPLE WAREHOUSES ON THE SAME SITE

In Warehousing Standards Bulletin 19, issued in July 1995, the following policy was outlined:

> *Multiple warehouses on a single site may have one overall certification number, or may be separately certified, at the option of the owner. If separate certification numbers are requested, the auditor must identify each storage area seeking Phase III certification and each must individually meet all siting, structural, insurance and other relevant protocol items (i.e. these must be separately audited) with training and documentation being audited for the entire site.*

Re-Audit Cycle - For facilities that choose to have their facilities separately certified and maintain two certification numbers, the audit cycle is based on the audit date. For example:

> *If warehouse "A" was originally certified in May 1996, this warehouse must be re-certified in 1998. If warehouse "B" was built in 1997 on the same site as warehouse "A", the new warehouse would be audited initially in 1997 prior to being used for chemical storage. If the warehouse operator requests warehouse "B" have a new certification number, warehouse "B" would be due for re-audit in 1999. In this example the site has to co-ordinate re-audits in a different year.*

For facilities that have 2 warehouses on the same site and choose to maintain 1 certification number, the entire site maintains the 1st warehouse audit cycle. For example:

> *Warehouse "A" was originally certified in May 1996, this warehouse must be re-certified in 1998. If warehouse "B" was built in 1997 on the same site as warehouse "A", the new warehouse would be audited initially in 1997 prior to being used for chemical storage. If the warehouse operator chooses to maintain one certification number, the entire site must maintain the original warehouse's audit cycle, meaning that the entire site is due for re-audit in 1998.*

Agrichemical Warehousing Standard Association
WAREHOUSING STANDARDS BULLETIN

FALL 1997 **NUMBER 24**
REVISED JANUARY 2006

POLICY STATEMENT – LAPSES IN CERTIFICATION

A lapsed in certification is defined as a withdrawal of certification resulting:

- Voluntary decertification
- Failure to successful re-audit before the expiry date or
- Withdrawal of certification by AWSA

All facilities require a full re-audit every two years to maintain certification status. Details on the re-audit process and frequency can be found on page 5.

What happens if I do not get my warehouse re-audited before the due date?

- If you do not get your warehouse re-audited before the due date, AWSA will notify all agrichemical manufacturers/distributors of your certification lapse. Your certification status will be withdrawn until your facility has successfully completed an audit. You will **not** be eligible to receive shipments of agrichemicals.

- In addition, an administration fee of $500.00 will be required to re-activate your certification status. Delaying certification to the following year will not grant another year until the next re-audit. For example, warehouse locations due for re-certification in 2002, will have to be re-certified again in 2004. If the facility lapses and has their re-audited completed in 2003, this facility will still be due for a re-audit in the year 2004. It will not jump a cycle.

All warehouses are required to coordinate their re-audits within the required time frame. The onus on coordinating and booking the audit lies with the facility.

What happens to agrichemical products in storage after a warehouse lapses?

When a warehouse's certification lapses all product must immediately be shipped to a certified storage facility.

Please note that failure to maintain certification may affect your insurance coverage.

Agrichemical Warehousing Standard Association
WAREHOUSING STANDARDS BULLETIN

DECEMBER 1997 **NUMBER 25**
REVISED JANUARY 2006

PROTOCOL B21
FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE AREA VENTILATION

Explosive vapours for products that produce vapours heavier than air may be controlled by at least one air inlet and one exhaust outlet system within 300 mm of the floor. This measure is based upon the 2005 National Fire Code 4.1.7.3.

Alternatively, the ventilation system may incorporate the general dilution principle. (See Warehouse Standards Bulletin 3, 13A and 13B in Appendix F.)

An additional alternative to the 300 mm requirement can be based upon the warehouse operator having the following two documents:

(a) Documentation on file, signed by a Professional Engineer indicating that the ventilation system meets the venting requirements outlined in B21 on the basis of "an equivalent level of safety,"

- and -

Documentation on file from the local authority having jurisdiction over the National Fire Code, indicating that the ventilation system has been reviewed and it meets the National Fire Code requirements.

Agrichemical Warehousing Standard Association
WAREHOUSING STANDARDS BULLETIN

JULY 1998 **NUMBER 26**
UPDATED JANUARY 2002

STORAGE OF TDG CLASS 2.1 FLAMMABLE GAS

The storage of TDG Class 2.1 Flammable Gas within a certified warehouse is not recommended by AWSA unless the eight requirements listed below are met. Some products with this classification are

1. Propane (except tanks mounted on forklifts).
2. foam marker,
3. Etheylene gas.

Audit protocol C19, which is valued at 20 points, states, "There are no spare flammable compressed liquified storage cylinders inside the warehouse..."

If certified warehouse operators store these products within a certified warehouse, the following audit protocols are relevant:

B21–mandatory
B22–mandatory
C4–20 pts.
C5–20 pts.
C6–20 pts.
C17–20 pts.
C19–20 pts.
E5– mandatory.

Indoor storage of TDG Class 2.1 Flammable Gases shall be stored as follows:

1. in a room or building dedicated only to Class 2.1 flammable gas;
2. if in a room within a building, the room is to be constructed as gas-tight and have a fire separation having a fire-resistance rating of at least 2 hours;
3. the room to be located on an exterior wall of the building;
4. the room can be entered from the exterior and any doors into the interior of the building shall be
   i) equipped with self-closing devices, and
   ii) constructed so as to prevent migration of gases from the room into other parts of the building;
5. the structure is designed to prevent critical structural and mechanical damage from an internal explosion;
6. is provided with natural or mechanical ventilation;
7. does not contain fuel-fired appliances or high temperature heating elements;
8. is used for no other purpose than the storage of TDG Class 2 gases.

The small quantity exemption for TDG Class 2.1 Flammable Gas is 25 kg.

Agrichemical Warehousing Standard Association
WAREHOUSING STANDARDS BULLETIN

SEPTEMBER 1998 **NUMBER 27**

POLICY STATEMENT
WAREHOUSE CHANGE IN OWNERSHIP
SEPTEMBER 1998

If a warehouse facility changes ownership:

- Warehouse operator to notify AWSA of ownership change upon closing of purchase agreement. Warehouse operator to forward confirmation of insurance coverage as outlined in Protocol 1-1. (See also Warehousing Standards Bulletin #16)

- Upon receipt of ownership change notification, AWSA will forward an "Application to Audit" form to be signed and returned within 30 days of transfer to new ownership.

- The facility be re-audited within 90 days of transfer to new ownership, regardless of the date of the last audit. The new audit date would set the audit frequency thereafter.

Agrichemical Warehousing Standard Association
WAREHOUSING STANDARDS BULLETIN

JANUARY 2002 **NUMBER 29**

SHIPMENTS OF AGRICHEMICALS TO CUSTOM APPLICATORS/AERIAL APPLICATORS HAVING NO CERTIFIED WAREHOUSING FACILITIES

The Agrichemical Warehousing Standards Association (AWSA) recognizes that weather delays and early morning applications may necessitate overnight pesticide storage outside an AWSA certified warehouse. The AWSA will allow early morning applications provided that a work order can be produced to verify that all products are to be applied the following day.

In such instances, agrichemicals must be stored in areas secured from public access and protected from weather with provisions for spill containment and cleanup.

It is important that certified warehouses shipping to custom/aerial applicators without certified facilities ensure that quantities representing only one day's supply are shipped. If greater quantities are found stored at these locations which result in overnight storage, the certified warehouse where the agrichemical originated will be charged with a violation of the AWSA Standards, potentially leading to the loss of certification.

UPDATED JANUARY 2006 **NUMBER 30**

PROVINICAL REQUIREMENTS FOR RETAIL VENDOR CERTIFICATION (PROTOCOL D9)

PROVINCE	CERTIFICATE NAME	COMMENTS
British Columbia	Pesticide Dispenser – General; Domestic Pesticides	Issued by the "BC Ministry of Environment"; the company also needs a "Pesticide Vendor Licence" if it is selling to pesticide users (retail or commercial use); Certificates and licences are not required by wholesalers or distributors who do not sell to pesticide users.
Alberta	Commercial Pesticide Dispenser Certificate Lawn and Garden Dispenser Certificate	Issued by Lakeland College. Certificates must be renewed every five years. Issued by Olds College. Applicator Certificates are recognized in lieu of pesticide dispenser certificates.
Saskatchewan	Pesticide Dispenser Certificate	Issued by SIAST. Certificates must be renewed every five years. Pesticide Applicator certification is recognized in lieu of Pesticide Dispenser Certification. The Pest Control Products (Sask.) Act and regulations require that any retail outlet that sells commercial or restricted pesticides must hold a valid pesticide vendor licence. An applicant for a Pesticide Vendor Licence must employ at least one certified dispenser at each outlet. A certified dispenser must pass an approved training course. Pesticide dispensers are required to be recertified every five years.
Manitoba	Manitoba Pesticide Dealer	Issued by Manitoba Agriculture, Food and Rural Initiatives annually

Ontario	Pesticide Vendor Safety Course Certificate	Commercial/restricted and some domestic products that there is to be at least one certified vendor outlet representative per location. The representative takes the vendor pesticide safety course offered through Ridgetown College, University of Guelph (who also issues the certificate). However this does not apply to businesses that only sell domestic products. There is no certification for just domestic product sale. The vendor location (business) is required to hold a vendor license issue by the province of Ontario
Quebec	Certificate for the Wholesale of Pesticides Certificate for the Retail Sale of Pesticides	Issued by Ministère de l'Environnement for five year period.
New Brunswick	Pesticide Storage and Handling Certificate	Issued by New Brunswick Environment – No expiry date
Nova Scotia	Pesticide Vendor Certificate	The vendor (person) requires a provincial vendors certification (valid for 5 years as noted in the chart) and the vendor (business) requires a business operators certificate (renewed annually).
PEI	Pesticide Dealers License Non-domestic Pesticide Vendor Business License	Issued annually by the PEI Dept. of Environment, Energy and Forestry (issue of this license will require that ALL SALES STAFF hold a valid Non-domestic Pesticide Vendor Certificate.)
Newfoundland & Labrador	Consult Provincial Authority	

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warnock@siast.sk.ca

For licenses:
Saskatchewan Agriculture, Food and Rural Revitalization
(306) 787-466

INFORMATION REGARDING PROVINCIAL PESTICIDE CERTIFICATION PROGRAMS IS AVAILABLE THROUGH THE INTERNET AT:

British Columbia
http:/www.elp.gov.bc.ca/epd/epdpa/ipmp/regulatory.html

Alberta
http:/www.lakelandc.ab.ca/programs1/coned/environ/

Saskatchewan
http:/www.gov.sk.ca/

Manitoba
http:/www.gov.mb.ca/agriculture/programs/aaa32s01.html

Ontario
http:/www.ontariopesticide.com

Quebec
http:/www.menv.gouv.qc.ca/index-en.htm

New Brunswick
http:/www.gnb.ca/elg-eg1/0355/0005/0005-e.etml

Nova Scotia
http:/www.gov.ns.ca/enla/pubs/legislat.htm

PEI
http:/www.gov.pe.ca/af/phars-info/index.php3

Newfoundland and Labrador
http:/www.gov.nf.ca/env/ActsReg/default.asp

Agrichemical Warehousing Standard Association
WAREHOUSING STANDARDS BULLETIN

JANUARY 2002 **NUMBER 31**

REFERENCE: WAREHOUSE AUDIT PROTOCOLS AND USER GUIDE, PROTOCOL G9 (A)

The intent of this Protocol is to ensure that the smoke or heat detectors are operational at all times.

Smoke detectors must be inspected and tested in accordance with the manufacturer's recommendations. They must be tested for operability and the required sensitivity. A cleaning schedule for smoke detectors, based on the environmental conditions prevailing and the testing for operability and sensitivity, must be established and maintained.

Heat detectors come in two types as follows:

a) Rate of rise heat detectors that have two components within the device
    1) rate of rise temperature element
    2) fixed temperature element

b) Nonrestorable heat detector (fixed temperature element)

Heat detectors must be tested to determine operability and under **no** circumstances shall an open flame be used for tests.

The rate of rise heat detector can be tested for operability by forced hot air as may be obtained from using a hair dryer or radiant heat. Various test fixtures using infrared or incandescent lamps can be used.

The nonrestorable heat detector must be tested to ensure that the continuity of the initiating circuit to the heat detector from the control panel location be secure by :

a) causing a short at the device to verify a fire alarm at the panel and at the monitoring station and
b) remove one wire at a terminal within the circuit from the main panel to the heat detector to verify a trouble response at the panel and at the monitoring station

In addition, the zones covering the fire detection systems in protocol G9(a) and the doors and motion detection systems in protocol A6(b) at each warehouse must be what the trade refers to as "supervised zones". This can be done by introducing a resistor at the end of each circuit at the devices. This will ensure that in the case a wire is broken in the circuit between the devices and the control panel, the 24 hr. monitoring station will be able to pick up this condition. This can also be done by ensuring that the monitoring systems, including the materials, installation and monitoring station are ULC listed.

The following is a re-cap of two protocols that could be confusing.

Protocol B27 – The intent of this protocol is to ensure that the lines from the main panel to the monitoring station are in fact monitored 24 hours a day.

Protocol G9 – The intent of this protocol is to ensure that the equipment and devices up stream from the panel are maintained and tested every 12 months and that the devices will actually work when called upon at any time.

REISSUED JANUARY 2006 **NUMBER 32**

CORRECT STORAGE PATTERNS FOR DANGEROUS GOODS C2 to C7

2006 Audit Protocol C2

Reference NFC

Storage heights of flammable and combustible liquids meet NFC standards.
The intent of this protocol is to store all liquids with a flash point below 93.3°C at heights consistent with the NFC classes of product.
The NFC classes of products and their storage heights are as follows:

		Storage Heights (m)		
		Unsprinkled Building	**Sprinklered Building**	**In rack Sprinklered Building**
Class IA	– flash point below 22.8°C and boiling point below 37.8°C	1.5	1.5	7.5
Class IB	– flash point below 22.8°C and boiling point at or above 37.8°C	1.5	2.0	7.5
Class IC	– flash point at or above 22.8°C and below 37.8°C	1.5	2.0	7.5
Class II	– flash point at or above 37.8°C and below 60.0°C	3.0	3.0	7.5
Class IIIA	– flash point at or above 60.0°C and below 93.3°C	4.5	6.0	12.0

Class IA, IB and IC are flammable liquids under the NFC and
Class II and IIIA are combustible liquids under the NFC
For an unsprinklered warehouse, this translates into the following National Fire Code classes:

Class IA, IB and IC - one pallet high (approx. 5 ft.)
Class II - two pallets high (approx. 10 ft.)
Class IIIA - three pallets high (approx. 15 ft.)

The NFPA (National Fire Prevention Association), which develops codes for users in the United States and from which the NFC is modeled, does not allow storage of Class II product on top of IA, IB or IC products or the storage of Class IIIA on top of IA, IB, IC, or II Class of products if they exceed the maximum height for the most restrictive classification. It is therefore the NFC. and Protocol C2 intent to follow the NFPA code in this regard.

2006 Audit Protocol C3
Reference NFC

Protocol C3 reads:
Flammable and combustible liquids are stored in
(a) individual storage areas (ISAs) and
(b) in accordance with the maximum quantity limitations in the National Fire Code.

The key in this protocol is to understand the definition of an "individual storage area" (ISA). An ISA. is an area occupied by piles, bin boxes, racks or shelves, including subsidiary aisles providing access to the stored products, which is separated from adjacent storage by aisles not less than 2.4 m(8 ft.) in width.

Therefore, all NFC.classes of flammable and combustible liquids (all liquid TDG classes of products and all liquid non regulated products with a flash point below 93.3°C) can be stored in an ISA designated as an F/C liquid ISA.

In addition, in an ISA designated as flammable and combustibles liquid, any class of agrichemicals can be stored (including non-flammable and non-combustible liquids such as grandulars or powders) provided the height (protocol C2) and quantity restrictions (protocol C3 (b)) for the product with the **lowest flash point** is met. Also, buildings that meet the spatial separation requirements or have the 4 hour fire rating requirements have **unlimited** volumes per fire compartment.

As an example, in unprotected storage, you can store 9000 litres of a Class IC liquid and 1000 litres of say glyphosate not regulated under TDG and with no flash point under 93.3 C) in the same ISA and in the same fire compartment. These 10,000 litres would all be considered as IC product for the purposes of quantity limitation. Also, in the same example, if there were a second ISA with 1000 litres of a NFC Class IIIA product in the same fire compartment, then protocol C3 (b) would not be in compliance because the maximum quantity limitation for the fire compartment is exceeded. However, if the storage arrangement of the 1000 litres of glyphosate and the 1000 litres of the Class IIIA were reversed, then the C3(b) protocol would be in compliance, assuming no other F/C liquids were in storage.

How much product can be stored in an ISA? The NFC Table 4.2.7.5.A lists the maximum quantity per ISA in litres as follows.

NFC class	Unsprinklered	Sprinklered
NFC Class IA,IB and IC	10,000 litres	20,000 litres
NFC Class II	15,000 litres	40,000 litres
NFC Class IIIA	50,000 litres	60,000 litres

Most warehouses have a product mix that includes various quantities of all NFC classes of flammable and combustible liquids except Class IA as well as non regulated products and other TDG classes of products. How then do we store products when we have 2 or more classes of flammable and combustible liquids?

Where containers for 2 or more NFC classes of products are stored together in an ISA, the maximum quantity permitted in the ISA. shall equal that permitted for the liquid with the lowest flash point.

If, in an unsprinklered warehouse, we want to store 3000 litres NFC Class IC and 8000 litres of NFC Class II in one (1) ISA, how can this be done?

The maximum quantity that can be stored in this warehouse in one (1) ISA. is 10,000 litres of Class IB and IC. Therefore the storage of 11,000 litres in one ISA is not permitted because when the products are in one (1) ISA., you have to consider that **all** the products are a NFC Class IC, that with the lowest flash point.

There is still 1000 litres to be stored, so we must develop a 2nd ISA. to store the 1000 litres of NFC Class II. In this ISA., we could store an additional 14,000 litres of NFC. Class II products to reach the maximum quantity per ISA.of 15,000 litres or we could store 14,000 litres of glyphosate in this ISA .

These two (2) ISAs now must be separated from each other and from other adjacent storage by clear aisles not less than 2.4 m (8 ft.) in width or by a 2 hour fire resistance rated separation wall which will create a new fire compartment. .

Where buildings are designed for the storage of flammable and combustible liquids and the storage facility has in-rack sprinklers there is no limit on the total quantity of storage per fire compartment.

In larger warehouse facilities where other non agricultural dangerous goods are stored within the same fire compartment as agrichemicals, these products must also be in compliance as it impinges on the integrity of the certified area.

2006 Audit Protocol C4
Reference NFC

TDG regulated products are stored in compliance with the NFC separation chart for storage of Dangerous Goods Table reprinted as Appendix “A” in the 2006 Audit Protocol Manual.

This protocol includes flammable and combustible liquids (all liquid products with a flash point below 93.3°C) because all TDG class products, not just the flammable and combustible liquids, must comply with the separation chart.

Where the storage of products coincides with an "X", you are **not** permitted to store in the same fire compartment. If however, the volumes of one of the products stored falls under the small quantity exemption found in the NFC reprinted as Appendix "D" in the 2006 Audit Protocol Manual, then it is considered not to be in storage.

Where the storage of products coincides with an "A", in the separation chart, they must be separated by a minimum 1 meter horizontal distance. This does not say a 1 meter clear aisle or space - just a minimum 1 meter horizontal distance. Therefore, to maximize warehouse space, this 1 meter horizontal distance could be utilized by the storage of compatible products - those where the storage of products coincide with a "P".

Where the storage of products coincides with a "DS", this refers to the information provided in the MSDS for the specific dangerous good.

In larger warehouse facilities where other non agricultural dangerous goods are stored within the same fire compartment as agrichemicals, these products must also be in compliance as it impinges on the integrity of the certified area.

2006 Audit Protocol C5
Reference NFC

Storage heights of TDG regulated products excluding flammable and combustible liquids meet NFC standards.

This protocol deals only with dangerous goods that are not classified as NFC flammable and combustible liquids (which includes all products with a flash point below 93.3°C).

The method of storage of these dangerous goods shall be determined to ensure stability of the stored products and not to exceed the maximum heights of storage as follows:

Classification	No Sprinkler	Protected Sprinkler	In-rack Sprinkler
Packing Group I	1.8 m	2.4 m	unlimited
Packing Group II	2.4 m	4.0 m	unlimited
Packing Group III	4.5 m	6.0 m	unlimited

Storage heights for a protected storage area are permitted to be exceeded provided the dangerous goods are stored on racks or shelves.

Stack heights of products must not be breached by piling a product with a lessor risk requirement on top of one with a more stringent risk requirement unless the pile height meets the requirement for the most stringent product in a non sprinklered building...

Example: You cannot stack a pallet of TDG Class 6.1, PG II on top of a pallet of TDG Class 6.1, PG I. unless the pile is 1.8 meters or less.

In larger warehouse facilities where other non agricultural dangerous goods are stored within the same fire compartment as agrichemicals, these products must also be in compliance as it impinges on the integrity of the certified area.

2006 Audit Protocol C6
Reference NFC

TDG regulated products (excluding flammable and combustible liquids) are stored in a separate ISA The sum of the individual storage areas (ISAs) in a building may not exceed 100 m^2 in unprotected storage.

Note: Non regulated products with a flash point at or above 93.3°C can be stored in this dangerous goods ISA.

When determining this area, the space taken up by non regulated products and TDG Class 9.2 with no other classification and the space taken up by the flammable and combustible liquids are not included in the calculating. The area of subsidiary aisle within the ISA must be included.

You can, in addition, store any quantity of TDG Class 9.2 and non regulated products in the balance of any space available in the warehouse.

It is not permitted to exceed the 100 m^2 area unless a fire suppression system (sprinkler system) is installed.

2006 Audit Protocol C7
Reference NFC

A plan view of the storage area must be posted in the warehouse to show:

a) the aisles
b) the storage (ISAs)—both for flammable/combustible liquids and other dangerous goods
c) the TDG class of product being stored in each storage area (ISA)
d) the plan view must meet the standards outlined in C2, C3, C4, C5 and C6