Agrichemical Warehousing Standards Association

Protected Agriculture Stewardship Standards

June 15, 2023

COMPLIANCE ASSISTANCE MANUAL

Protected Ag
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COMPLIANCE ASSISTANCE

This manual has been published by the Agrichemical Warehousing Standards Association to provide additional assistance, guidance, and examples to greenhouse operators on what is required to compliance with the Protected Agriculture Stewardship Standards. This is a companion document to the June 15, 2023 Edition of the Protected Agriculture Stewardship Standards.

This section contains examples to be used to assist in developing policies and/or operating procedures. If these examples are used, operators must ensure operational personnel have been trained on YOUR policies and procedures. On a yearly basis operators' should review the contents and update where/when changes have occurred, especially the emergency response plan.

References to external public sources for compliance assistance with specific protocols are provided as guidance purposes only. Operators assume responsibility for compliance will all applicable regulations.

Examples provided in this section are for guidance purposes. These materials are not in any way intended to supersede or detract from any requirements contained in municipal, provincial or federal by-laws, regulations or legislation.

Note: These standards are applicable to the issuance of a compliance certification for the Protected Agriculture Stewardship Standards. The Standards and the audit thereof, is not an assessment of regulatory compliance. Operators are responsible for compliance with all regulatory requirements.

Technical Questions

Technical questions or questions about interpretation of the Standards may be addressed to the AWSA Program Manager at manager@awsa.ca (1-877-236-2972) or by contacting one of the program auditors. Please visit awsa.ca for regular technical updates.

A: PESTICIDE HANDLING, STORAGE & TRAINING

Protocol A1: Pesticide Flow Chart	**Compliance**
a) The operation will have a current (dated) flow chart diagram showing the movement/use of all pesticides from storage to application to waste management. b) The Operation will have a current site sketch showing all structures. The location(s) of pesticide storage areas and all mixing/loading areas shall be noted.	COE Requirement

a) A flow chart diagram is to be developed which shows the movement/use of all pesticides from storage to application to waste management. The flow chart is to include:
    - Pesticide storage area
    - All mixing/loading areas
    - Connection to foliar application units (if applicable)
    - Connection areas to chemigation system
    - Discharge/containment areas for wastewater (if applicable).

The auditor will use this during discussion with the operator to assess compliance with sections of the protocols.

b) A sketch of the operation is to be developed showing:
    a. All structures on the site (A1)
    b. Location(s) of pesticide storage area(s) (A1, E1)
    c. Location(s) of loading/mixing area(s) for closed loop chemigation system (A1, E1)
    d. Location(s) of loading/mixing area(s) for foliar application. (A1, E1)
    e. Location (s) of emergency response equipment and supplies (E1)
    f. Emergency control centres (E1)
    g. Emergency exit routes (E1)
c) **Aerial images** (e.g. Google maps, drone images) of the property capturing key exterior features such as ditches, ponds, wells, catch basins, manholes, outlets, etc. (C1)
d) **As-built and utility drawings** for the greenhouse and stormwater pond(s). (C1)
e) **Drawings of all chemigation systems** tested as part of C1 with fixtures and drains labelled. (C1)

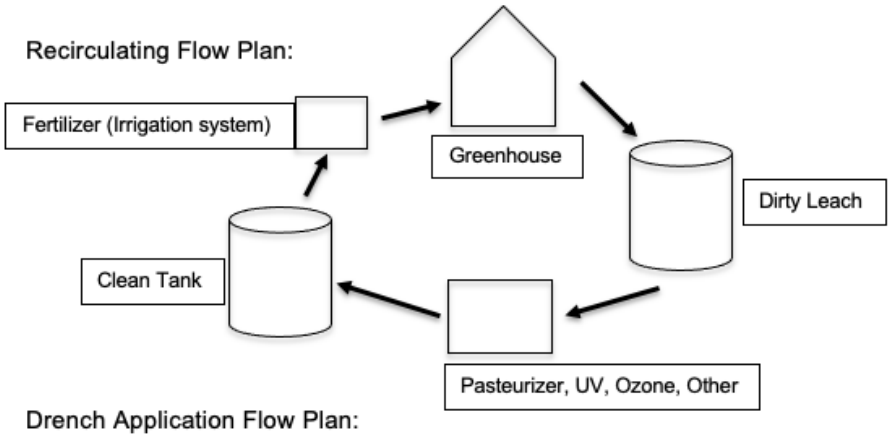
Sample Pesticide Flow Chart:

For the movement of pesticides through a greenhouse facility.

1- Pesticides are unloaded from the designated loading dock/door. They are documented in the facilities receiving logs as well as any documents relative to pesticide receiving.
2- Pesticides are placed either by hand or by forklift into the locked storage room.
3- Pesticides are removed from the storage room and relocated to the mixing area. (The irrigation room).
4- Safety Data Sheet (SDS) Personal Protective Equipment (PPE) requirements are worn as the appropriate amount of pesticide is weighed out and then dumped into the mixing tank or barrel, depending on the method of application being used. Measurements are completed according to the label for that specific pesticide.
5- The mix is delivered from the tank to the crop either by drippers or sprayers. This depends on the label's instructions. Appropriate PPE is worn while maneuvering sprayers.
6.1- Foliar: Pesticide is mixed in a designated spray tank that is directly connected to sprayers. Once appropriate droplet size and pressure is calibrated on sprayers, plants are evenly coated with pesticide mix where it is absorbed by the leaves.
6.2- Most of the spray is absorbed by the plants. Excess is either captured by troughs or falls onto non-permeable plastic floor coverings where it is evaporated.
7.1- Drench: Depending on the facility and farmer preference, pesticides are mixed in a barrel that has been connected to their irrigation system where it will pump mix out to the crop through the system. Pesticide mix is pumped directly into the plants' substrate where the majority is taken up by the plants.
7.2- Any excess pesticide mix leaks into troughs and is carried directly to a dirty leach/holding tank. Leachate is produced from a fully saturated substrate.
8- Leachate is then carried and run through the facilities cleaning tank. This will include either a pasteurizer, ozone, UV machine, or other.
9- The water is then moved into a clean tank where it is blended with fresh water and eventually pumped back into the feed.
10- These tanks are usually located inside the greenhouse, in or near the irrigation room. They are sometimes buried or installed above ground as silos with liner inside.
11- Remaining pesticides are resealed and returned to the storage room while empty containers are disposed of properly, according to the manufacturers' specifications on the label.
12- Clean water is pumped through sprayers onto the crop for an adequate amount of time to rinse out any remaining pesticide mix. This is often completed in the final row sprayers will be spraying in, however, cleaning methods may vary from facility to facility.
13- Each facility will have updated logs on employees' pesticide training for safe use of pesticides, as well as a log for pesticide use.

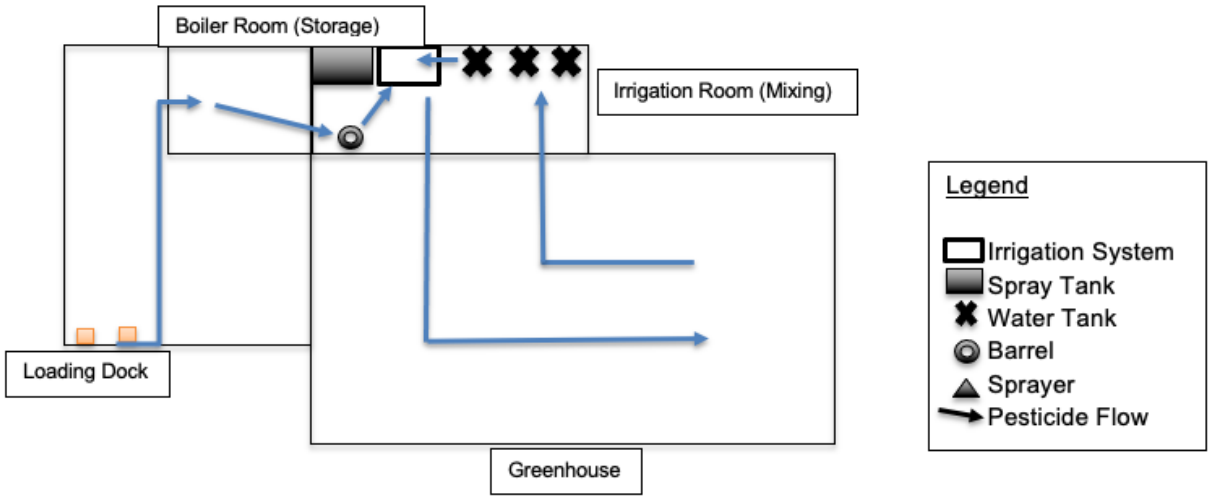
See chart on following page:

Recirculating Flow Plan:



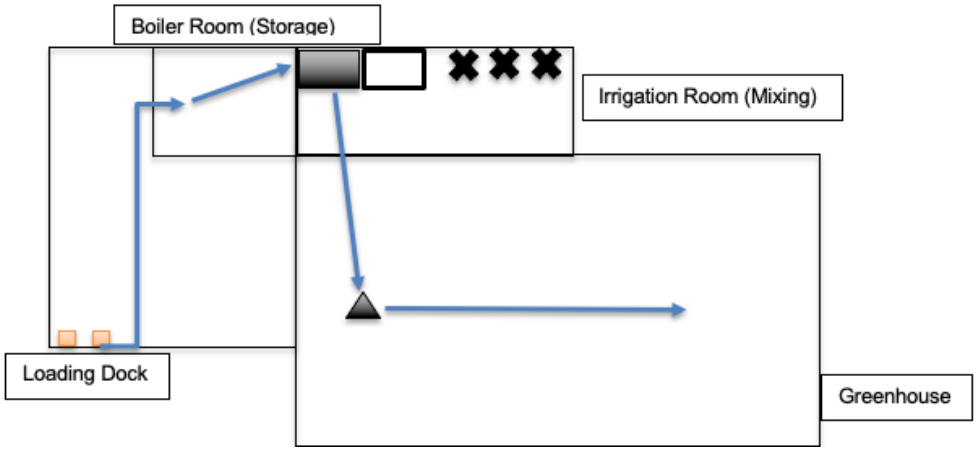
Drench Application Flow Plan:

Loading dock -> storage -> into barrel connected to irrigation machine -> out to crop -> back through recirc.

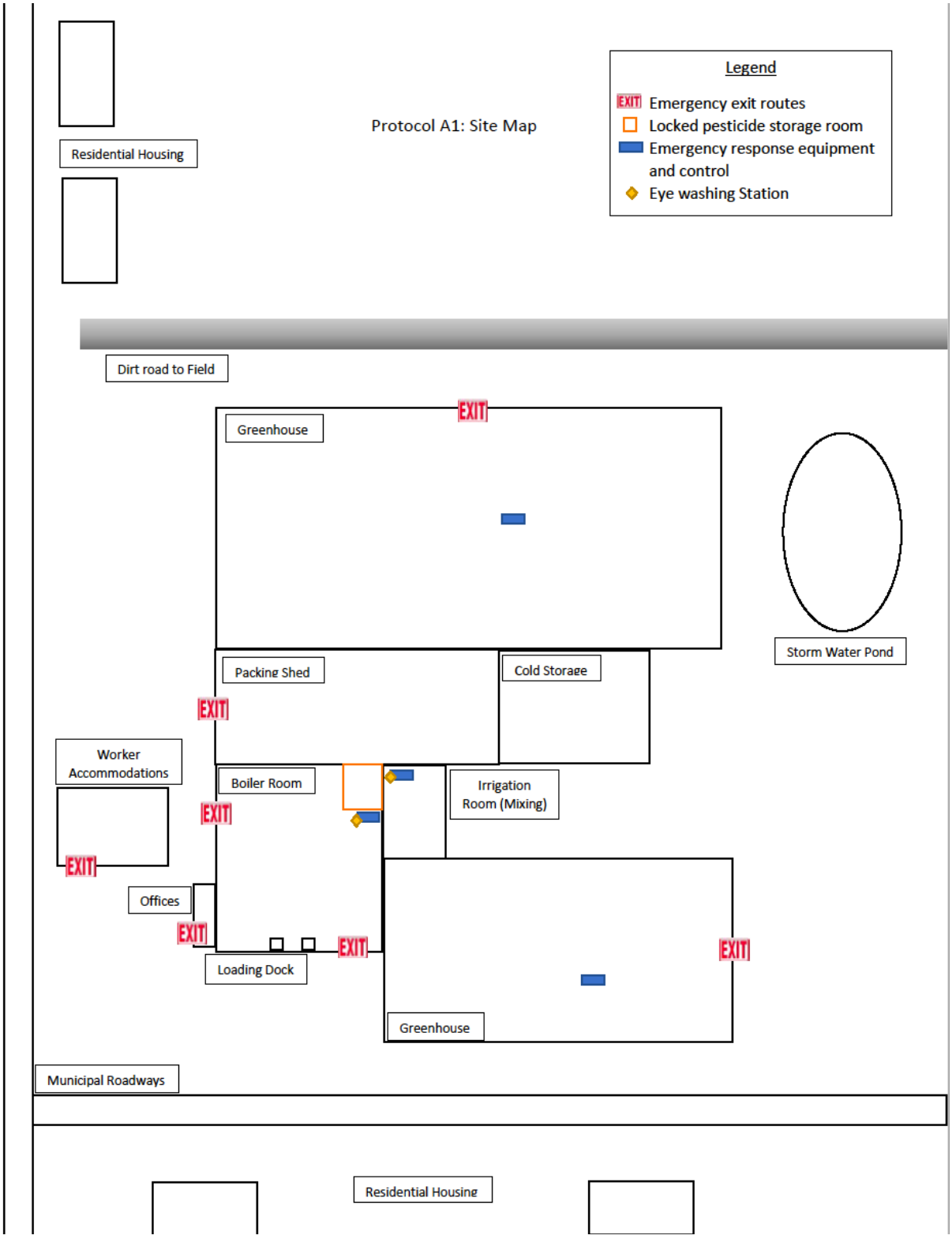


Foliar Application Flow Plan:

Loading doc -> storage -> into spray tank in irrigation room -> sprayers -> out to crop



Sample Site Sketch:



Protocol A2: Signage	Compliance
In the pesticide storage area: a) No smoking, drinking and eating sign is posted within or upon access to the pesticide storage area; b) Pesticide warning signs, clearly identifying that pesticides are stored within the premises and that only authorized personnel are entitled to enter, are fixed to all entrances to the storage area; In both the storage and mixing/loading areas: c) Signs are clearly posted and visible from both the storage and mixing/loading areas indicating emergency supply cabinet, first aid kit and eyewash station.	COE Requirement

a) Signs are required in or upon access to the pesticide storage area(s) (i.e. on entrance doors). Signs are to be of a permanent nature and clearly visible. Signs can be pictograms. Example:

b) Pesticide warning signs, clearly identifying that pesticides are stored within the premises and that only authorized personnel are entitled to enter, are fixed to all entrances to the storage area. If rollup doors are the primary access points, warning signage is required. If the pesticide storage area is within a multi-occupancy building, warning signs should be affixed to or near the storage room access entrances. If a cabinet is used for pesticide storage, the sign should be affixed to the cabinet door. Note some jurisdictions may require warning signs on exterior doors/walls. Example:

c) The presence of signs in both the pesticide storage area and the pesticide mixing/loading indicating the location of the emergency supply cabinet, first aid kit and eyewash station. Signs must be visible from both areas. In the case of mobile applicators, the signs can also be affixed to the applicator. Example:

Protocol A3: Emergency Equipment	**Compliance**
a) The operation has an inventory list and location of designated emergency equipment and supplies that are stored in a specific location for use in an emergency. Emergency equipment at the operation includes: b) The presence of applicable emergency equipment - First aid kit - Eyewash station c) The presence of spill containment equipment including: - Sealable salvage container - Absorbent materials - Aluminum shovel - Broom d) In addition to the personal protection equipment specified in Protocol B3, the following designated emergency equipment is required: – Gloves – Goggles – Coveralls/Apron – Respirators and chemical cartridges (if applicable as per SDS/label)	COE Requirement

Protocol A3 references emergency equipment. This equipment is separate from daily use PPE.

a) The auditor will observe that a list of emergency equipment is available at the operation. This list itemizes all materials that should be available for emergencies. This list should be located near the designated emergency equipment storage area or readily accessible.

b) Emergency equipment at the operation includes a first aid kit and an eyewash station. Provincial regulations specify the minimum requirements for first aid kits. All operations must have, at minimum one eyewash station. Consult provincial occupational health and safety regulations for specific requirements. The auditor will examine the emergency equipment to ensure they are usable, clean and adequately equipped. Eye wash stations must be capable of running for 15 minutes.

c) Emergency equipment at the operation includes:

- Sealable salvage container
- Absorbent materials
- Aluminum shovel
- Broom.

The auditor will determine from sample SDS's what types of spill cleanup equipment and absorbents are required. The auditor will confirm these are available and are in good condition. Absorbent materials should be stored off the floor to avoid contact with liquids. Sealable salvage containers must be sufficient in size to hold a jug of product and have a snap/screw on lid.

d) The auditor will determine from sample SDS's what types of clean up personal protection equipment is required. The auditor will confirm these are available and are in good condition. Emergency use personal protection equipment must be stored off the floor to prevent contamination.

Protocol A4: Employee Training	**Compliance**
Training for applicable employees has been provided on: a) Use, maintenance and storage of pesticide-related PPE; b) The use of an eye wash station; c) Execution of the operation's Emergency Response Plan; and d) Safe pesticide storage, handling and operating procedures as applicable to their job function(s) as outlined in protocol B4.	COE Requirement

a) The auditor shall examine the training records for applicable employees who work in the pesticide storage and/or application area to verify training on the proper use, maintenance and storage of emergency PPE equipment. Training is to be provided upon hiring/change in job and is to be updated as PPE equipment changes or is added as per SDS's.

b) The auditor shall examine the training records for applicable employees who work in the pesticide storage and/or application area to verify training on the proper use of an eye station. Training is to be provided upon hiring/change in job.

c) The auditor shall examine the training records to ensure annual training has been provided to all staff on the emergency response procedures. Some staff may have a limited role in an emergency. For example, they are to leave the area and go to the site muster point. Other staff may have specific roles involved in execution of the emergency response plan. All staff must be trained on their role. Training is to be annual. Records should be kept recording attendance and

dates. Training can be in the form of a safety meeting or emergency drill. The auditor will be looking for a dated record of attendance and a copy of the meeting agenda or drill plan.

d) The auditor shall examine the training records to ensure that applicable employees who work in the pesticide storage and/mixing/loading area have received training on operating procedure and safe pesticide handling.

Training records should indicate employee name, date(s) of training and be readily available for review by the auditor.

Summary of Training Frequency

TRAINING	FREQUENCY
Use, maintenance and storage of pesticide-related PPE	Upon hiring/change in job and is to be updated as PPE equipment changes or is added as per SDS's.
The use of an eye wash station;	Upon hiring/change in job and is to be updated as PPE equipment changes.
Execution of the operation's Emergency Response Plan	Annual
Safe pesticide storage, handling and operating procedures	Upon hiring/change in job and is to be updated as PPE equipment changes or is added as per SDS's.
Provincial Certification (see Protocol B2)	Consult provincial requirement

Protocol A5: Pesticide Storage	Compliance
All PCP registered products labelled for greenhouse use are stored in a dedicated storage area unless they are being actively used.	COE Requirement

The auditor will observe the operation to verify that all PCP registered products labelled for greenhouse use that are not actively being used are stored in the pesticide storage area. This includes full or partially full containers/totes. Product not in should be returned to the designated storage area.

Note: Totes of biological controls and mineral oils do not need to be stored in the dedicated storage space provided that:

- they are within a locked building and;
- a containment system is in place.

Protocol A6: Pesticide Containers	Compliance
a) There are no leaking pesticide packages/containers. b) All empty pesticide containers have been triple rinsed and are stored in polyethylene bags or under cover. c) All pesticide storage containers on premises are labelled.	COE Requirement

a) The auditor will observe the pesticide packages/containers in the pesticide storage area and the pesticide mixing/loading area to ensure there are no leaking packages/containers.
b) All empty pesticide containers are triple rinsed and stored in polyethylene bags or under cover to prevent leakage from precipitation.
c) All pesticides storage containers on premises have a supplier label, or a workplace label, or a label regulated by the Pest Control Act which make the reader aware of the potential hazards and risks when handling or using. Each regulated (WHMIS, TDG, PCP) chemical product requires the applicable supplier label.

Protocol A7: Safety Data Sheets	Compliance
The operation has a copy of all current safety data sheets (SDS) for pesticides on-premises.	COE Requirement

The auditor will verify the presence of the operation's safety data sheets (hard copy or electronic) for all pesticides on-premises. If in electronic format they must be readily accessible during operating hours to all employees handling pesticides.

Protocol A8: Pesticide Storage Area	**Compliance:**
The operation: a) Has a dedicated controlled access space for the storage of pesticides. b) The pesticide storage area has a containment system in place to contain volumes of spilled liquids. c) The pesticide storage area does not have any active floor drains (unless directed to a dedicated catchment tank). d) The pesticide storage area has mechanical ventilation designed to provide a minimum of two air exchanges per hour when the area is occupied – OR – If the pesticide storage area is not of sufficient size to allow for a person to enter the area (i.e. cabinet, container, freezer, etc.) ventilation is not required unless provincially regulated.	COE Requirement

a) A designated storage area can be achieved by a variety of methods:
   - A standalone room dedicated for pesticide storage.
   - A designated area within a larger room.
   - A non-combustible cabinet or container.

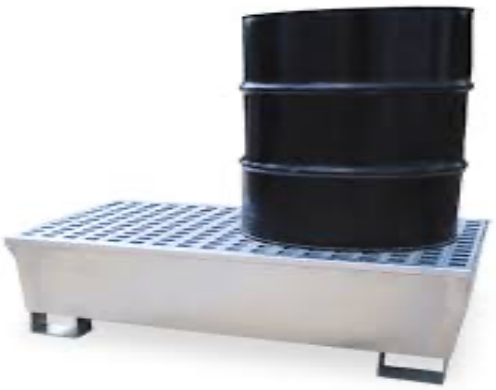
   Dedicated storage spaces must be controlled for access. The purpose to prevent individual who have not been trained on pesticide handling, from accessing product. Examples of controlled access include:
   - Locks on storage room doors or locks on the doors in which the storage room is located.
   - Locks on storage cabinets or locks on the doors in which the storage cabinet is located.

b) All storage areas require a containment system. All containment systems must be designed to contain 110% of the largest container in storage. Containment can be achieved by a variety of methods:

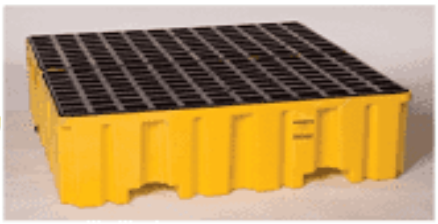
- Concrete floors are an acceptable means of containment provided the following:
  - Concrete containment areas are to include retention curbing around the perimeter.
  - If the curbing is made of concrete that is not a single pour, caulking which is impervious to chemical spill absorption must be applied to ensure that spills cannot seep out through a crack.

Floors of the containment area must have had all cracks filled and have a smooth finish. The materials used to fill the cracks must be impervious to chemical spill.

    - absorption. Documentation is required to evidence the material is resistant to chemicals.
    - If curbing (minimum of 10 cm in height) is made of a polymer material, the material must be affixed to a hard surface (i.e. wall/door sill) for stability and must be impervious to spills. Documentation is required to evidence the material is resistant to chemicals. Annual inspection for evidence of degradation is required and corrective action must be taken.
- Metal containment trays are an acceptable means of containment. If metal containment trays are used as a means of containment the following must be achieved:
    - The containment areas are to include retention curbing (minimum of 10cm in height) around the perimeter.
    - Angle iron must be made of sufficient gauge in order to prevent damage during routine operations or is firmly affixed to a wall.



- Baffled spill pallets are acceptable as a means of containment. If baffled spill containment pallets are used as a means of containment the following must be achieved:
    - The baffled pallets must be constructed of a chemical resistant material.
    - The baffled pallets must be crack free.
    - Annual inspection for evidence of degradation is required and corrective action must be taken.



- If using non-combustible cabinet/container, the cabinet/container must have containment capability. This can include designed containment as part of the structure, baffled pallets or metal trays.

c) Observe that the pesticide storage area does not have any active floor drains (unless directed to a dedicated catchment tank).

d) If mechanical ventilation is used, it must be designed to provide a minimum of two air changes per hour when the area is occupied is required. The auditor will examine the mechanical ventilation system and documentation for the storage area to confirm a minimum of two air changes per hour is achievable. The auditor will determine the system rating from the exhaust fan assembly documents signed by the installer or engineer's stamped drawings indicating exhaust rates of at least two air changes per hour. Technical information for the fan must be on file to indicate cubic feet per minute (CFM).

Sample calculation: length x width x height/30 = minimum CFM requirement.

Example: The area is 20 feet in length, 10 feet wide and 8 feet high.
Calculation is: 20 x 10 x 8/30 = 53.33 CFM fan.

This means that the operation will need a fan with a minimum of 53.33 CFM's to achieve a minimum of 2 air changes per hour.

If there is an adjacent occupancy within the same building as the pesticide storage area the ventilation system does not draw air or allow air to transition from the pesticide storage area into the adjacent occupancy.

If using a non-combustible cabinet/container, the ventilation requirement does not apply unless provincially regulated.

Protocol A9: Pesticide Mixing/Loading Areas for Closed Loop Chemigation Systems (i.e. drench applications)	**Compliance**
The operation: a) Has a defined space for the mixing/loading of pesticides into the closed loop chemigation system. b) The mixing/loading area has a containment system in place to contain volumes of spilled liquids. c) The mixing/loading area does not have any active floor drains (unless directed to a dedicated catchment tank). d) The mixing/loading area has mechanical ventilation designed to provide a minimum of two air exchanges per hour when the area is occupied. – or – the absence of mechanical ventilation, a safe operating procedure is in place requiring vents/windows be open during pesticide transfer activities.	COE Requirement

a) A defined space(s) for the mixing/loading of pesticides into the closed loop chemigation systems are present.

b) All defined mixing/loading areas have containment systems. All containment systems must be designed to contain 110% of the largest container in use. Containment can be achieved by a variety of methods:

- Concrete floors are an acceptable means of containment provided the following:
    - Concrete containment areas are to include retention curbing around the perimeter.
    - If the curbing is made of concrete that is not a single pour, caulking which is impervious to chemical spill absorption must be applied to ensure that spills cannot seep out through a crack.

        - Floors of the containment area must have had all cracks filled and have a smooth finish. The materials used to fill the cracks must be impervious to chemical spill absorption.
        - If curbing (minimum of 10 cm in height) is made of a polymer material, the material must be affixed to a hard surface (i.e. wall/door sill) for stability and must be impervious to spills. Documentation is required to evidence the material is resistant to chemicals. Annual inspection for evidence of degradation is required and corrective action must be taken.
- Metal containment trays are an acceptable means of containment. If metal containment trays are used as a means of containment the following must be achieved:
    - The containment areas are to include retention curbing (minimum of 10 cm in height) around the perimeter of the area pesticides are handled.
    - Angle iron must be made of sufficient gauge in order to prevent damage during routine operations or is firmly affixed to a wall.

c) Observe that the pesticide mixing/loading area does not have any active floor drains (unless directed to a dedicated catchment tank).

d) Examine the pesticide mixing/loading area to confirm the presence of mechanical ventilation designed to provide a minimum of two air changes per hour when the area is occupied. The auditor will examine the mechanical ventilation system and documentation for the storage area and mixing/loading area to confirm a minimum of two air changes per hour is achievable. The auditor will determine the system rating from the exhaust fan assembly documents signed by the installer or engineer's stamped drawings indicating exhaust rates of at least two air changes per hour. Technical information for the fan must be on file to indicate cubic feet per minute (CFM).

   If there is an adjacent occupancy within the same building as the mixing/loading area the ventilation system does not draw air or allow air to transition from the pesticide storage area into the adjacent occupancy.

– Or –

In the absence of mechanical ventilation, a safe operating procedure is in place requiring vents/windows be open during pesticide transfer activities. The auditor will review the SOP and confirm the location vents/windows and confirm they are operable.

Protocol A10: Pesticide Mixing/Loading Areas for Foliar Application	Compliance
a) The operation has a portable spill kit in close proximity to the foliar mixing/loading areas. b) If the eyewash station is not within 15 metres from the application area, a portable eyewash bottle is present.	COE Requirement

The auditor will verify the presence of a portable chemical spill kit. The auditor will verify the presence of an eye station within 15 metres of the mixing/loading area or a portable eyewash bottle.

Section B: Pesticide Application

Protocol B1: Pesticide application Documentation	Compliance
The operation has documented all pesticide applications (incl. time of application, pest identified, application rate and other applicable information based on the products used).	COE Requirement

The auditor will verify the presence of the operation's pesticide application documentation. Following is a sample of a pesticide application record.

Pesticide Application Record

Date and Time:	Crop:
Applicator Name:	Location/Field:

Crop Information	Pesticide Information:	Equipment Information:
Growth Stage	Product Name:	Sprayer Application Rate (L/ha):
	PCP Reg#:	Spray Nozzle Classification:
Growing Conditions:	Batch/lot #:	Nozzle Type:
	Group #:	Nozzle Spacing:
	Adjuvant:	Pressure:
	Pesticide Rate:	Speed:
	Reapplication Date:	Other:
	Earliest Harvest Date:	
	Restricted Entry Interval Date:	
Pest Information:	**Weather information:**	**Other Observations:**
Pests Present:	Wind Speed:	Buffer Zone:
Stages of Growth:	Wind Direction:	Location of Sensitive Areas:
Thresholds:	Temperature:	
Scouting Details:	Relative Humidity:	
	Soil Moisture and Precipitation:	

Results/Comments:	Diagram:

Protocol B2: Provincial Certification	Compliance
The individual responsible for the operation (or designate) has obtained applicable provincial pesticide application certification.	COE Requirement

The auditor will verify the presence of current certification.

Province	Description	Required
British Columbia Agriculture Pesticide Applicator Certificate	A Pesticide Applicator Certificate is required for: • Purchasing or using restricted class pesticides • Using a pesticide with a label that states the product may only be used by a certificate holder • Using pesticides for authorization holders (a licence, confirmation or permit) Not required: Selling or using a pesticide listed on Schedule 2 of the Integrated Pest Management Regulation (IPMR) Two categories • **Agriculture – Field Crop and Orchard:** For managing pests in field and orchard crops. **Agriculture – Greenhouse:** For managing pests in nurseries and greenhouses. Links: Pesticide certification and training INTEGRATED PEST MANAGEMENT REGULATION	Y
British Columbia Landscape Pesticide Applicator Certificate	Landscapers who grow their own ornamentals only need to be certified in the **Landscape** category.	
British Columbia Assistant Pesticide Applicator	Assistant Applicator training is required for: Assisting a certified applicator in the application, transportation, storage and security of pesticides	

Alberta Farmer Pesticide Certificate	Farmers who wish to use Restricted class pesticides (Mark 'R' in the registered product listing) are required to have a Farmer Pesticide Certificate. Links: *Environmental Code of Practice for Pesticides.* *Pesticide (Ministerial) Regulation* Pesticide Sales, Handling, Use and Application Regulatic Registered Pesticide Product Listing - 2019	**Required** Vegetables: N Ornamentals: Y*
Alberta Authorized assistants	(i) received training from a certified applicator recognized as a trainer by the Director; (ii) passed an examination and been issued a certificate valid for 5 years, both recognized by the Director; and (iii) received supplementary training by a certified applicator that holds a valid certificate for the applications that will be 3 conducted and in accordance with a training checklist (Appendix A). • Able to perform pesticide applications under the supervision of a certified applicator without requiring daily on-site supervision by a certified applicator. Pesticides that can be applied by authorized assistants without direct on-site supervision by an applicator include those listed in section 5(11) of the Environmental Code of Practice for Pesticides. • Authorized assistants performing pesticide applications do not require daily on-site supervision by a certified applicator. However, the certified applicators are responsible for the authorized assistants' pesticide activities. The applicator must be readily available to physically assist the assist the assistant and remain in radio, cell or telephone contact at all times. • Individuals wanting to become an Authorized Assistant must complete the core examination and complete the Authorized Assistant Training Checklist with their supervising certified applicator.	

Alberta
 	
Non-certified assistants
	• An assistant that has been trained according to a training checklist only
	• The supervision and training of non-certified assistants is the responsibility of certified pesticide applicators. They may supervise up to 6 assistants at any time. These may be any combination of non-certified and authorized assistants.
	• Non-certified assistants are not allowed to apply pesticides with labels stating "For Use by Certified or Authorized Applicators."
	• Non-certified assistants do not require formal training or an examination, but they must be trained by a supervising applicator.
	• There are 2 types of supervision required:
	  ○ Direct supervision This applies to all pesticide applications specified in Section 5(11) of the Environmental Code of Practice for Pesticides. The certified applicator must be physically present at the site throughout the entire application. (does not include seed treatment products)
	  ○ Daily supervision This applies to all other applications. The certified applicator must be physically present at least once a day at the application site to conduct a site visit to check the applications conducted by each assistant. If the assistant needs to change the pesticide, application rate, equipment and calibration, then the applicator must conduct another site visit.
	• The applicator must conduct a number of checks when conducting a site visit. The required checks are specified in section 5(8) of the Environmental Code of Practice for Pesticides.	

Saskatchewan Pesticide Applicator Licence	An individual may do all or any of the following without holding a pesticide applicator licence: • use or apply pesticides on land (i) that the individual or a member of his or her immediate family owns or rents; or (ii) that is owned or rented by a corporation in which the individual or a member of his or her immediate family owns a majority of shares; owns or rents; • use or apply pesticides as part of his or her duties as an employee of a farm operation or	**Required** Y

	a research or pesticide development organization; • without charge, provide a service involving the use or application of pesticides on neighbouring land or premises in the ordinary exchange of labour and services among farmers; • use or apply pesticides under the direct supervision (within auditory hailing distance) of a licensed pesticide applicator acting within the terms of that licence; or A Pesticide Applicator Licence is required by farmers that conduct commercial pesticide application for hire or reward off-farm.	
Manitoba Pesticide Applicator Licence	Farmers are exempt from licensing unless off-farm pesticide application exceeds 500 hectares or if off-farm pesticide application is carried out for more than three individuals each year. A commercial applicator is a person that applies pesticides for a fee, charge or other valuable consideration, and includes persons that are paid a wage to apply pesticides. (must be licenced)	**Required** N
Ontario Certified farmers	Ontario farmers who buy and use Class B or C pesticides on farms must be certified. Ontario farmers who mix, load or apply Class B or C pesticides under supervision of a Certified Farmer must be trained. The classification of pesticides in Ontario changed on January 1, 2021. Starting on January 1, 2021, farmers need to be certified to buy and use Class B or C pesticides, and trained if working under supervision of a Certified Farmer. This includes Class 4 pesticides that could previously be used without a person needing to be certified or trained. To become a Certified Farmer, you must: • participate in a Grower Pesticide Safety Course and pass with a mark of 75% or more, AND • be 16 years of age or older, AND be a farmer as defined under Regulation 63/09 of the Ontario Pesticides Act. Links: Ontario Pesticide Education Program - Certification	**Required** Y

Ontario Farmer Assistant	To become a Farmer Assistant, you must participate in: • a Grower Pesticide Safety Course. OR • a Pesticide Safety for Farmer Assistants training session presented by an On-Farm Instructor.	
Quebec Application of pesticides by a farmer producer	Farmers are exempt from requiring a permit if they are carrying out work not as a business, for agriculture. Farmers and forest managers must have a certificate if they carry out work that requires the use of certain pesticides. **E3 Farmer's Certificate for Application in Buildings for Horticultural Purposes** (with or without a farm producer card) Application of Class 1 to Class 3 pesticides: • On plants grown in a building • On plants in decorative pools in a building • On plants or animals on a strip no more than one meter wide on the outside edge of a greenhouse. Fumigation allowed, except using methyl bromide, carbon dioxide, ethylene oxide, phosphine or sulfuryl fluoride (E5) Links: Overview of Permit and Certificate Regulations Table of classes and subclasses of permits and certificates	**Required** Y
New Brunswick Pesticide Applicator Certificate	Any individual wishing to handle nondomestic pesticides or apply pesticides for fee or reward or as an application which requires a Pesticide Permit (for example, to water, by air or for research) must first obtain a Pesticide Applicator Certificate. A Class B pesticide applicator's certificate, authorizing an individual to use or apply a pesticide by non-aerial means in or on agricultural crops, Christmas tree plantations, tree nurseries or seed orchards.	**Required** Y

	Links: Atlantic Canada Applicator Core Training Manual Vol 1 (pdf) Atlantic Canada Applicator Supplemental Training Manual Chapter 8 (pdf) Atlantic Canada Landscape Training Manual Vol 7 (pdf)	
Nova Scotia Pesticide Applicator Certificate	Anyone who sells or applies a commercial or restricted class pesticides must be certified by Nova Scotia Environment. Pesticide vendors and applicators must pass a provincial certification exam to become certified. Links: National Standard for Pesticide Education Training and Certification Atlantic Canada Agriculture Training Manual Vol 3 (pdf) Atlantic Canada Landscape Training Manual Vol 2 (pdf) Nova Scotia Greenhouse Training Supplement	**Required** Y
Prince Edward Island Pesticide Applicator Certificate	An individual or company that wants to apply a commercial class pesticide must obtain a pesticide applicator certificate. All pesticide applicator certificates are issued by the Environment, Water and Climate Change. Pesticide applicator certificates are available for the following classes: Class A - Agricultural Class E - Landscape Class G - Greenhouse Class I – Other An agricultural class pesticide applicator certificate (Class A) can be renewed by completing a written exam or by participating in the Pesticide Applicator Continuing Education Credit (CEC) Program. Links: Training Materials	**Required** Y

Newfoundland Pesticide Licensing	To handle Commercial or Restricted class pesticides in Newfoundland and Labrador, you will need a Pesticide Applicator Licence. This licence requires successful completion of the Pesticide Applicator Exam. Applicator Licence Categories • Agricultural for the use of pesticides by ground application for production of agricultural products including fruits and vegetables, Christmas tree plantations, sod farming and to control livestock and poultry pests • Greenhouse for the use of pesticides in greenhouses and mushroom houses including forest tree seedlings, and areas immediately surrounding greenhouses • Landscape for the use of pesticides by ground application for the maintenance of ornamental trees, shrubs, flowers and turf on outdoor residential, commercial and public land, including golf courses and cemeteries Farmers are exempt from the requirement for a Pesticide Operator Licence if they hold a valid Pesticide Applicator Licence and the pesticides are to be used on their own property (privately owned, leased or rented land).	**Required** Y

*Alberta ornamental growers may opt to sign a waiver declaring that they do not use any products requiring certification.

Protocol B3: Personal Protection Equipment	Compliance
All employees handling pesticides have applicable personal protection equipment (PPE) for use while handling pesticides.	COE Requirement

The auditor will determine from sample SDS's and product labels what types of personal protection equipment is required. The auditor will confirm these are available and are in good condition. Personal protection equipment must be stored off the floor to prevent contamination.

Protocol B4: Safe Operating Procedures	Compliance
The site has developed and implemented written safe pesticide storage, handling and operating procedures (SOPs) for all positions handling pesticides.	COE Requirement

The auditor will verify the presence of written safe pesticide storage, handling and operating procedures. The auditor will review the procedures to determine if they have been implemented. Procedures must be specific to equipment used. (Reference Protocol A4).

SAMPLE Safe Operating Procedure – Pesticide handling

Using pesticides safely depends on many things. Some of the most important factors include selecting the appropriate product and using that product according to the label directions.

- Access and use of pesticides is limited to authorized personnel.
- Review the product SDS sheet before use.
- Read the product label before use.
- Review procedures for mixing/loading equipment before use.
- Make sure anyone non-essential to the application is out of the area before mixing and applying pesticides.
- Be sure to wear clothing that will protect you when using pesticides. Wear a long sleeve shirt, long pants, and CSA approved footwear in addition to any other protective clothing or equipment required by the label.
- Mix pesticides only in the designated mixing/loading areas. Ensure mechanical ventilation is activated before opening pesticide container.
- Mix only what you need to use in the short term to avoid storing or disposing of excess pesticide.
- Be prepared for a pesticide spill. Ensure spill kit equipment is in close proximity.
- Read the first aid instructions on the label before using the product. Note location of eye wash station prior to opening pesticide container.
- Remove personal items, such as clothing or tools from the area to avoid contamination.
- Keep open containers below eye level.
- After using pesticides keep ventilation system active for 1 hour.
- After using pesticides clean up any reside/containers in accordance with clean up and disposal procedures.
- After using pesticides, wash your hands before smoking or eating.
- Record pesticide use.
- Return pesticide container to designated pesticide storage area.

(Note –procedures must be specific to the operation and coincide with procedures for mixing/loading equipment for both close loop systems and foliar application)

Section C: Water Assessment and Equipment Management

Protocol C1: Water Management Assessment	Compliance
Operation has undertaken a water-management assessment by an approved third party every six years that demonstrates its closed loop chemigation system is closed - this may include a dye test or alternatives. **IF** a renovation or reconfiguration of the chemigation system occurs, a water management assessment must be undertaken and passed upon the modifications being completed.	Mandatory for PAS Certification

A sample is available at www.awsa.ca.

Protocol C2: Chemigation System Monitoring	Compliance
Operation has management plan in place to monitor its closed chemigation system's wastewater discharge to verify the system is working as intended.	Mandatory for PAS Certification

Each facility shall provide evidence of a protocol that monitors the integrity of the chemigation systems between Protocol C1: Water Assessments.

The following methods may be used to satisfy Protocol C2: Chemigation System Monitoring. Alternatives will be considered and should be submitted to Agrichemical Warehousing Standards Association (AWSA) at manager@awsa.ca for approval prior to utilizing same.

I. NUTRIENT MONITORING

Record results from monthly or quarterly* stormwater sampling results. Maintain a record of results throughout the year as evidence that a monitoring protocol has been implemented.

An example of a Nutrient Monitoring Log is provided on the following page.

*Facilities in Ontario may follow the same stormwater sampling schedule as described in their ECA and utilize those results to satisfy Protocol C2. Sampling must be completed, at a minimum, quarterly.

An example sampling protocol from the Ontario Ministry of the Environment, Conservation and Parks is provided below:

> *All samples and measurements [..] are to be taken at a time and in a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.*

Samples shall be collected at the following sampling points, at the frequency specified, by means of the specified sample type and analyzed for each parameter listed and all results recorded:

***Sampling Station**: Effluent from the stormwater management system during a discharge event, or in the stagnant storage facility in the vicinity of the outlet when no discharge is occurring and which is representative of the volume of stormwater as a whole.*

***Sampling Type**: Grab*

***Sample Frequency**: Monthly (year-round)*

***Sampling Parameters**: Total Suspended Solid, Total Ammonia Nitrogen, Nitrate Nitrogen, Total Phosphorus, Ortho Phosphorus (Phosphorus as Phosphate), Zinc, Copper, Manganese, Iron, Molybdenum, Boron, Chloride, Sulphate, Potassium, Hardness, pH.*

All samples collected [..] shall be analyzed by a laboratory accredited by ISO/IEC:17025 for the specified parameter or via an established protocol such as through Plant Products or Sun Parlour using the SGS Canada Inc., Lakefield's office.

II. ELECTRICAL CONDUCTIVITY (EC) MONITORING

Samples should be taken of both the source/background water and the discharge water (water entering the environment). If the EC readings of the discharge water are 0.2mS/cm above the background water, this could indicate a leak or cross-connection.

Source/background water sample is a sample that would be indicative of the surrounding bodies of water that are not influenced by your operation. This could be a rainwater sample or a sample of the ditch into which the stormwater pond discharges.

Preparation

1. Prepare the following materials prior to testing:
    a) Clean bottle(s) or cup(s) to obtain samples;
    b) Calibrated Hanna or YSI pH/ Conductivity meter with temperature compensation;
    c) Tools to open manholes, sump lids, etc.;
    d) Flashlight;
    e) Electrical Conductivity (EC) Log.

Recording Procedure

Complete the following monthly or more frequently depending on results:

1. Obtain a background water and stormwater discharge sample using a clean bottle or cup. The sample size need not be more than 250mL.
2. Insert the Hanna or YSI pH/ Conductivity meter into the sample. Operate per manufacturer's instructions.
3. Record results in the Electrical Conductivity (EC) Monitoring Log.

    a. Describe sampling location;
    b. Record conductivity meter reading in mS/cm.
4. Repeat steps 1 through 3, using a clean bottle, for each stormwater discharge location connected to each greenhouse being tested.
5. Maintain a record of results throughout the year as evidence that a monitoring protocol has been implemented. Sampling must be completed, at a minimum, quarterly

SAMPLE NUTRIENT MONITORING LOG

FARM NAME: _____

SAMPLE LOCATION: _____

SAMPLING DATE AND TIME

PARAMETERS	UNITS	GH EFFL STORM WATER OBJECTIVE								
Temperature Upon Receipt	°C	--								
Nitrate (as N)	as N mg/L	10.0								
Phosphorus (total)	mg/L	0.50								
Potassium (total)	mg/L	10.0								
Ammonia+ Ammonium (N)	as N mg/L	1.0								
Zinc (total)	mg/L	0.10								
Manganese (total)	mg/L	0.20								
Iron (total)	mg/L	1.50								
Copper (total)	mg/L	0.05								
Molybdenum (total)	mg/L	0.05								
Boron (total)	mg/L	0.50								
Chloride	mg/L	200								
Sulphate	mg/L	200								
pH	no unit	6.5-8.5								
Hardness	mg/L as CaCO3	---								
Total Suspended Solids	mg/L	30								

Protocol C3: Chemigation System Maintenance	Compliance
A formal process and schedule are in place to routinely inspect and maintain the closed chemigation system and its components (e.g., injectors, pump etc.) in accordance with manufacturer specifications. This includes a process for employees to identify deficiencies and a process for follow up and correction. The process should also include activities undertaken as year-end or crop-end maintenance.	Mandatory for PAS Certification

The auditor will verify the presence of

a) the operation's inspection logs,
b) that deficiencies are identified are corrected or a plan to correct them is underway.
c) that annual or crop-end maintenance and cleaning has been completed.

Examples:

Daily/weekly inspection

The following could be embedded into an electronic labour management system as a daily or weekly task.

	Problem identified?	Locations	Corrective Actions	Date Corrected
Check drippers for leaks	Yes No	Examples: Section 2A, West block, etc.		
Check irrigations lines for leaks	Yes No			
Check for unbalanced or bowed troughs	Yes No			
Check trough ends for leaks	Yes No			

Yearend maintenance

The following should be inspected and maintained at the end of each crop cycle

	Locations	Additional corrective actions needed?	Date Completed
Troughs are cleaned to remove build up of lime or sediment	Examples: Section 2A, West block, etc.		
Aging or broken troughs are replaced			
Drippers are rigorous cleaned			
Irrigation lines are rigorously cleaned			

Year start maintenance

The following should be inspected and maintained at the beginning of each crop cycle

	Locations	Additional corrective actions needed?	Date Completed
Ensure connections and seals are tight. Check for leaks before the start of production			
Replace plastic floor sheeting as needed to prevent leaks from entering the ground			

For more information talks to your local greenhouse extension support staff or your sector representative.

References:
http://www.omafra.gov.on.ca/english/engineer/facts/17-021.htm

Protocol C4: Spill Response Plan	**Compliance:**
A plan is established to respond to and report major spills originating from the operation's closed recirculation system. This could include leaks within the operation or leaks that result in contamination of stormwater water ponds and/or surface water sources.	Mandatory for PAS Certification

Audit Evidence:

The auditor will verify the presence of a spill response plan. The plan shall contain at a minimum:

a) A list of responsible persons including contact information,
b) Steps to be taken to limit the extent of the spill and/or prevent ongoing discharge to surface water sources,
c) The procedure and contact information for the appropriate regulatory body to report the spill if applicable.

BASIC SPILL RESPONSE PLAN*

Business Name: _____

Site Address: _____

Directions to Facility: _____

Response Actions in Case of a Spill:

1) If possible, shut off the source of the spill immediately.
2) Notify **spill contact person & other emergency contact(s)**: owner, manager etc.
3) Use absorbent materials, such as absorbent pads, floor sweeping compound or kitty litter to contain spills that are relatively small in nature and where the spilled chemical and its hazardous properties have been properly identified and assessed.
4) Use appropriate personal protective equipment depending on the spill material.
5) Cover/block any drains/catch basins in the spill area to prevent material from entering into the stormwater system, sanitary sewer system or septic system.
6) If possible, clean up the spill using absorbent materials. Collect these absorbent materials and treat as hazardous waste.
7) If the spill is large or otherwise uncontrollable, or poses a potential immediate hazard to human health and safety, call Emergency Response Agencies listed below.

Emergency Contacts:

Spill Contact Person: _____ Phone #: _____

Owner: _____ Phone #: _____

Owner's Address: _____

Alternate/Manager: _____ Phone #: _____

Emergency Response Agencies:

Fire/Police:	**911**
Ontario Spills Action Centre:	**1-800-268-6060**
Municipal Contact:	
Local Hospital Contact:	

Location of Personal Protective Equipment (PPE) for Handling Spills:

_____

_____

_____

_____

List of Hazardous Liquids that may Spill:

_____

_____

_____

_____

Employees should be trained to carry out the spill reponse actions set forth in this document, and that each employee be familiar with the site drawing that shows where hazardous materials/substances, spill kit(s), and all potentially susceptible and vulnerable drains/catch basins are located.

List of Trained WHMIS/Spill Response Personnel

Name:	Date of Training:
_____	_____
_____	_____
_____	_____
_____	_____

POST THIS PAGE AND A SITE DRAWING LOCATING ALL EMERGENCY EQUIPMENT AND EXITS IN A HIGHLY VISIBLE LOCATION

* This Basic Spill Response Plan may not be appropriate for all businesses. As operations and processes vary, please consult a Certified Industrial Hygienist or other qualified person to determine additional actions and/or PPE that may be required.

Section D: Site Management

Protocol D1: Emergency Equipment Maintenance	Compliance
The site has written procedures for the maintenance and restocking of the following emergency and safety equipment: a) First aid kit; b) Eyewash station; c) PPE; and a) Spill cleanup equipment and supplies.	COE Requirement

The auditor will inspect the written operating procedures for the maintenance of emergency equipment together with past inspection reports to ensure required maintenance and restocking is being completed at the prescribed frequency.

Sample Procedure for Maintenance of Emergency and Safety Equipment:

Person(s) Responsible: _____

Date of last review/update: _____

This includes the following as a minimum:

a) First Aid Kit:

The following are procedures for the care of the first aid kit and inventory control:

1) The first aid kit is located in the prescribed area and is fully accessible.
2) An inventory list of all items is included and when supplies are used, record the fact and initial. The contents of the first aid kit correspond with provincial Occupational Health and Safety Regulations.
3) Record the treatment of each first aid case in the book provided.
4) On a monthly basis, the inventory will be checked and supplies ordered, if required.
5) Any products that have exceeded expiration date have been properly disposed of and replaced.

b) The following are procedures for the care the eyewash station

Bottle type:

1) The eyewash station is located in the prescribed area and is fully accessible
2) The eyewash station is made up of two clean liquid filled bottles.
3) The eyewash station will be inspected monthly for full bottles and to ensure access is clear.
4) Employees working in the warehouse will be trained on the use of the eyewash station prior to the spring season (record the training).
5) The location of the eyewash station is included on the site layout plan.

Eyewash Basin:

1) The eyewash station is located in the prescribed area and is fully accessible
2) the eye station is clean and water flow is sufficient
3) Employees working in the warehouse will be trained on the use of the eyewash station prior to the spring season (record the training).

c) The following are procedures for Emergency PPE

1) An inventory list of all the emergency equipment is posted at the cabinet in the warehouse where the emergency equipment is kept.
2) The equipment will be inspected monthly against the inventory and to ensure all equipment is serviceable.
3) The equipment is accessible, clean and kept off the ground
4) The equipment is maintained in accordance with manufacturers recommendations
5) Employees working in the warehouse will be trained on the use of the PPE prior to the application season (record the training).

d) **The following are procedures for Spill cleanup equipment and supplies**

1) An inventory list of all the emergency equipment is posted at the cabinet in the warehouse where the emergency equipment is kept.
2) The equipment will be inspected monthly against the inventory and to ensure all equipment is serviceable.
3) The equipment is accessible, clean and kept off the ground
4) The employees working in the warehouse will be trained on the use of the emergency equipment prior to spring season (record the training).
5) The location of the emergency equipment is included on the site layout plan.

Protocol D2: Handling Procedures for Hazardous Waste	Compliance
The operation has written procedures for the proper handling, storage and disposal of contaminated products, rinsate, hazardous waste and other wastes that meet all legal requirements.	COE Requirement

The auditor will inspect the operation's written procedures for the proper handling, storage and disposal of contaminated products, rinsate and other hazardous materials.

EXAMPLE

Procedure on Handling, Storage & Disposing of Hazardous Waste

Waste pesticides can be hazardous and should be disposed of in a responsible manner. Consult the product(s) safety data sheets prior to clean up. Following instructions for PPE usage.

Use special overpack drum on site when, in the event of a spill; clean up and place this hazardous product in this drum. When this clean-up is complete, place a highly visible label on the drum, state the contents clearly, the date of the clean-up and sign the label so others will know who has done the work.

The procedure for disposing of the hazardous waste is as follows:

a) Advise the supplier of the situation and ask for assistance.
b) If they cannot advise, we call the local MOE and ask for assistance.
c) Finally, call a licensed waste disposal firm to pick up for disposal.

We maintain on file a copy of all disposals and where it has been disposed.

Protocol D3: Accident & Incident Procedures	Compliance:
The operation has established a procedure requiring all pesticide storage and/or application-related accidents/incidents to be investigated, recorded, and reported.	COE Requirement

What is an incident and why should it be investigated?

The term incident can be defined as an occurrence, condition, or situation arising in the course of work that resulted in or could have resulted in injuries, illnesses, damage to health, or fatalities.

The term "accident" is also commonly used, and can be defined as an unplanned event that interrupts the completion of an activity, and that may (or may not) include injury or property damage. Some make a distinction between accident and incident. They use the term incident to refer to an unexpected event that did not cause injury or damage that time but had the potential. "Near miss" or "dangerous occurrence" are also terms for an event that could have caused harm but did not.

Please note: The term incident is used in some situations and jurisdictions to cover both an "accident" and "incident". It is argued that the word "accident" implies that the event was related to fate or chance. When the root cause is determined, it is usually found that many events were predictable and could have been prevented if the right actions were taken - making the event not one of fate or chance (thus, the word incident is used). For simplicity, we will now use the term incident to mean all of the above events.

When incidents are investigated, the emphasis should be concentrated on finding the root cause of the incident so you can prevent the event from happening again. The purpose is to find facts that can lead to corrective actions, not to find fault. Always look for deeper causes. Do not simply record the steps of the event.

Reasons to investigate a workplace incident include:

- most importantly, to find out the cause of incidents and to prevent similar incidents in the future
- to fulfill any legal requirements
- to determine the cost of an incident
- to determine compliance with applicable regulations (e.g., occupational health and safety, criminal, etc.)
- to process workers' compensation claims

The same principles apply to an inquiry of a minor incident and to the more formal investigation of a serious event. Most importantly, these steps can be used to investigate any situation (e.g., where no incident has occurred ... yet) as a way to prevent an incident.

EXAMPLE

Accident/Incident Report Form

Date of Incident:		Time:	
Name of injured person(s):			
Location of incident:			
Details of incident:			
Actions Taken:			
Relevant Authorities notified:			
Recommendations for Improvement/ Prevention:			
Management Sign off:			

Section E: Emergency Response

Protocol E1: Emergency Response	Compliance
The operation has a written Emergency Response (ER) Plan that has been reviewed and dated within the past 12 months that includes the following information: a) An index that references page numbers. b) An organizational chart that details the following: i) The responsibilities of each employee on the organizational chart; ii) The telephone numbers of all emergency responders, employees, local medical facilities, governmental agencies, product suppliers and environmental services companies; iii) A drawing of the site plan indicating the relative locations of emergency response equipment and supplies, the pesticide storage area, the pesticide mixing/loading area, emergency control centres and emergency exit routes; iv) A written management plan spilled pesticides; v) A list of the distribution of the ER plan; vi) A list of events that activate the ER plan; and	COE Requirement

The auditor will inspect the written ER Plan to ensure it includes all elements. The ER Plan must be contained in a separate binder/booklet in an organized fashion. The Auditor will confirm that all employees on the distribution list of the ER Plan have individual, separate ER plans in a binder/booklet. The ER plan will be dated with the date of the last revision.

A sample emergency response plan is available at www.awsa.ca.

Protocol E2: Emergency Drills	Compliance
Using the operation's ER Plan, the management team has a) Conducted annually, either one table-top exercise on a simulated emergency or one physical drill on simulated emergency. b) Based on the exercise/drill updated the ER plan as necessary.	COE Requirement

The Auditor will inspect records to ensure at least one table-top exercise on a simulated emergency has been completed within the last 12 months.

The auditor will inspect records to ensure at least one physical drill on simulated emergency has been completed within the last 12 months.

Examples of a physical drill or simulated emergency could include a product spill, mock fire, medical emergency or flood. Where the owner is the sole operator, an exemption applies.

Sample:

Emergency Response Exercise Record			
Location:	**Exercise Type:** **Table top/Drill**	**Date:**	
Attendance Record			
Description of Emergency Scenario:			
Exercise Results (explain what was done and by whom):			
Plan Modification Required (list any recommended amendments to the ER plan):			
Comments/Observations:			