

The "Greenhouse Checklist" has been developed as general guidance to assist greenhouse growers and Provincial Officers when inspections are conducted.

Please be aware that this checklist may be revised without notice.

These revisions may result in the inspecting Provincial Officer requiring information from the operator not contemplated by the current document.

The checklist does not limit nor is it intended to limit the information that may be requested by a Provincial Officer, however, all informational requests by the Provincial Officer are restricted to those permitted by his or her authority under the Environmental Protection Act, the Ontario Water Resources Act, the Nutrient Management Act and the Pesticides Act.

Greenhouse Checklist

Client Information

Client Number: _____
Legal Name: _____
Operating Name: _____
Aliases: _____
Mailing Address: _____

Contact Name: _____ Email: _____
Position: _____ Telephone: _____

1. Basic Information

RSV # or Cameo Ref #: _____
Inspection Date: _____ Inspection Contact Name: _____
Inspector Name: _____ Site Address: _____
Facility Type:
 Production Retail Both

Comments:

2. Operation

What types of crops does the greenhouse produce?

- | | |
|--|--|
| <input type="checkbox"/> Cut Flowers | <input type="checkbox"/> Tomatoes |
| <input type="checkbox"/> Cucumbers | <input type="checkbox"/> Seedlings |
| <input type="checkbox"/> Peppers | <input type="checkbox"/> Rooted cuttings |
| <input type="checkbox"/> Flowering Potted Plants | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Bedding Plants | _____ |

How many months of the year does the greenhouse have crops growing? _____ months

Where production at the greenhouse is not continuous (e.g. 12 months/year), describe production cycle (e.g. times of year when greenhouse is not active and periods when crops are changed out):

If they grow seedlings, do they ship to other operations? Yes No

Which of the following associations is the operation affiliated with? Check all that apply.

- | | |
|---|--|
| <input type="checkbox"/> Flowers Canada | <input type="checkbox"/> OFVG |
| <input type="checkbox"/> OGVG | <input type="checkbox"/> Landscape Ontario |

If they are members of one or more of these associations, are they aware of the environmental resources and staff available to them from these associations?

- Yes No N/A

Are there other agricultural operations associated/affiliated with the greenhouse operation?

- Yes No

If yes, what are they? (e.g. field crop operation, vineyards, ornamental nurseries, orchards, livestock)

Comments:

3A. Physical Features of Greenhouse

Year greenhouse established: _____

Have there been any additions since then? Yes No

If yes, please specify:

Greenhouse Size:

Indoor Production Area (under glass/plastic): _____ ft² m² ha acres

Outdoor Production Area (uncovered): _____ ft² m² ha acres

Covering: Glass Plastic (includes polyethylene or acrylic) Both

Expansions planned in the next 12 months: Yes No

If yes, please specify:

Are they growing in the soil? Yes No

If not growing in the soil, what type of floor is in the indoor greenhouse production area?

- | | |
|--|--|
| <input type="checkbox"/> Concrete | <input type="checkbox"/> Earthen covered with permeable cover (e.g. fabric) |
| <input type="checkbox"/> Earthen (packed) | <input type="checkbox"/> Other, please describe (e.g. organic or traditional production in the soil) |
| <input type="checkbox"/> Earthen covered with impermeable cover (e.g. plastic) | |

3B. If the greenhouse floor is earthen:

Is the ground beneath the greenhouse tiled? Yes No

If it is tiled, is the water from the tiles recirculated? Yes No N/A

If tile water is not recirculated, where does it discharge to? Please describe:

If the greenhouse has outdoor container production areas:

Is the outdoor production area on an impermeable surface? Yes No

If on an impermeable surface, is the excess fertilizer solution and incidental precipitation captured and recirculated? Yes No N/A

If it is not recirculated, where does it go? Please describe:

Is the outdoor container production area on a surface that is water permeable? Yes No

If so, is the excess fertilizer solution captured and recirculated? Yes No N/A

If not captured and recirculated, where does the spent fertilizer solution from the outdoor container production go? Please describe:

Comments:

4. Production Practices

What irrigation system is used in the greenhouse? Choose all that apply.

- Flood (concrete) floors
- Flood benching
- Trough benching
- Pressurized LV drip emitter (precise fertigation of individual plant)
- Pressurized LV in-line drip tape system (used primarily in soil-grown cut flowers)
- Ebb and flow system
- Drip irrigation tape watering
- Movable booms (propagation and production)
- Stationary overhead lines with spray nozzles
- Stationary overhead lines with LV mist nozzles
- Hand watering
- Other (please describe in comments section below)

What production system is used? Choose all that apply.

- Bag or slab culture/Nutrient Film Technique
- Potted or Container
- In-ground
- Other (please describe in comments section below)

If plants are grown in the soil, what is the soil texture? Choose all that apply.

- Clay
- Clay loam
- Loam to silt loam
- Sand to loam
- N/A

If plants are grown in soilless substrate, which do they use? Choose all that apply.

- Peat-Perlite
- Sphagnum
- Inert (e.g. rockwool, foam)
- Organic-based: pretreated (e.g. washed coco-coir)
- Organic-based: untreated (e.g. coco-coir)
- Other (please describe in comments section below)
- N/A

Comments:

5A. Water Usage

Water Sources and Estimated Total Annual Taking:

Municipal	_____	m ³ /year
Groundwater (well water)	_____	m ³ /year
Surface water	_____	m ³ /year
LADII (Lake Erie area drip irrigation system Leamington/Kingsville)	_____	m ³ /year
Niagara-on-the-Lake municipal irrigation system	_____	m ³ /year
Precipitation capture	_____	m ³ /year
Other (please describe in comment section below)	_____	m ³ /year

Water usages: (Choose all that apply)

- Irrigation
- Cooling water
- Drinking water
- Vegetable washing
- Food processing
- Other (please describe below)

Does the facility monitor the volume of water they use for production? Yes No

How is the water volume monitored? Metered Other (please describe below)

Geo-Reference of Water Taking Points NAD 83 (for on-site water taking only)

Source Name	Taking Purpose	Method of Collection	Accuracy Estimate	Easting	Northing	UTM Zone

***Note: please enter additional source information on the back of this page**

Comments:

5B.

Generally, anything other than municipal, taking greater than 50,000L/day requires a permit, however, generally a rainwater capture pond does not require a permit.

Is the facility subject to the requirement for a PTTW? Yes No

Does the facility have a permit if required? Yes No N/A

If a PTTW has been issued, are they operating in compliance with conditions? Yes No N/A

If non-compliance with PTTW conditions, identify reasons. Choose all that apply.

- Copy of PTTW not available on site
- Quantity taken exceeds permitted amount
- Source of taking not consistent with permit
- Records not maintained as required
- Permit expired
- Other (please describe in comments section below)
- No non-compliance found

If the facility is subject to the requirement for a PTTW, are they reporting their water taking annually as required by O. Reg 387/04? Yes No N/A

Is the water supply treated at the greenhouse before use?

Yes No

If yes, how is the water supply treated? Choose all that apply.

- | | |
|---|---|
| <input type="checkbox"/> Screen or cloth filter | <input type="checkbox"/> Peroxide |
| <input type="checkbox"/> Sand filter | <input type="checkbox"/> Acidification (nitric or phosphoric) |
| <input type="checkbox"/> UV | <input type="checkbox"/> Reverse osmosis |
| <input type="checkbox"/> Ozone | <input type="checkbox"/> Other (please describe below) |

If yes, describe contaminants of concern:

Comments:

6. Water Wells

How many dug wells are on the property?

How many drilled wells (minimum 15m depth and casing of at least 6m deep)?

How many other wells?

Are there backflow preventers on wells connected to processes?

Yes No N/A

If there is a well tag on the well, what is/are the well tag number(s)?

Did observations indicate that there were maintenance issues or improper abandonment of wells?

If yes, identify issues in comments section below.

Yes No

Comments:

7. Waste Water (General)

Describe all discharge points from greenhouse property.

This includes direct discharges and discharges via ponds and tile drains.

Is the property serviced by municipal sanitary sewage services? Yes No

Is the property serviced by municipal storm sewer services? Yes No

Are any discharge points unknown or underground/covered? Yes No

In the latter case, discharge pipes from ponds are essentially covered drains which run for some distance off property, making sampling difficult.

Did observations during the inspection indicate that wastewater discharges from the facility were causing an adverse impact? Yes No

Wastewater Discharge Point Geo-Reference

Point ID/Description	Method of Collection	Accuracy Estimate	Easting	Northing	UTM Zone

***Note: please enter additional wastewater discharge point information on the back of this page**

Comments:

8A. Stormwater Management

Is there a stormwater collection system? Yes No

If yes, describe the source(s) (e.g. gutters from roof, catchbasins in parking lot/yard, loading docks) and the stormwater collection system):

Are there any process waste water streams that discharge to the stormwater collection system?

Yes No

If process waters are included in stormwater collection system, please describe the process waters:

Does the facility utilize stormwater for irrigation purposes?

Yes No

If yes, is there a separate collection system for clean stormwater?

Yes No N/A

If separate clean water system, describe sources for clean stormwater and the clean water collection system (e.g. cistern, pond, etc.):

Is there a stormwater retention pond?

Yes No

If yes, was it designed by a Professional Engineer?

Yes No N/A

If yes, was it approved by the local Conservation Authority or Municipality?

Yes No N/A

Is the stormwater pond subject to the requirement for an ECA?

Yes No

If yes, does the pond have an ECA?

Yes No N/A

If ECA in place, are they operating in accordance with the conditions?

Yes No N/A

If not, please indicate discrepancies:

8B. Does the facility have a PMO authorizing the discharge? Yes No
 If yes, is the facility operating in accordance with the conditions of the PMO? Yes No N/A
 If not, please describe deficiencies in the comment section below.

Where does the pond discharge to? Choose all that apply.

- Ditch
- Creek
- Ravine
- Underground drain
- Infiltration
- Municipal storm sewer
- Other (please describe below)

What is the name of the receiving water body/system? _____

Is the receiving water regulated under the Drainage Act? Yes No

Comments:

9A. Fertilizer Solution Management

How much fertilizer does the greenhouse CURRENTLY use?

Flower Operations: _____ kg/year
 Vegetable Operations: _____ kg/m²/year

Has the facility implemented improvements to its operations to reduce fertilizer use within the last five years? Yes No

What was the fertilizer use per year PRIOR to making these improvements?

Flower Operations reduction of: _____ kg/year
 Vegetable Operations reduction of: _____ kg/m²/year

Improvements: (Choose all that apply)

- Implemented recycling system
- Increased tank size
- Better quality fertilizer purchased
- Frequent monitoring and adjustment of fertilizer program
- Adoption of new irrigation method (e.g. LV pressure compensated drippers, sub-irrigation technology)
- Improved water use efficiency
- Precision fertigation
- Others (please describe below)

Does the greenhouse sample for limiters other than electrical conductivity (EC) (e.g. Cl, SO₄, CO₃, NA)?

- Yes No

If yes, what is the frequency of sampling?

- | | |
|--|--|
| <input type="checkbox"/> Weekly | <input type="checkbox"/> Once a year |
| <input type="checkbox"/> Every 2 weeks | <input type="checkbox"/> Never |
| <input type="checkbox"/> Once a month | <input type="checkbox"/> Other (please describe below) |

Comments:

9B. Identify whether closed and/or open irrigation/fertilization systems are used at the facility.

Closed System (recirculation)

Area (ha, ac, ft², or m²): _____

- Raised trough system
- On-the-ground system
- In-the-ground system
- Concrete sub-irrigation floor
- Flood bench
- Trough systems
- Other (describe in comments below)

Open System (no recirculation)

Area (ha, ac, ft², or m²): _____

- Raised trough system
- On-the-ground system
- In-the-ground system
- Concrete sub-irrigation floor
- Flood bench
- Trough systems
- Other (describe in comments below)

What percentage of the acreage is on closed system? _____ %
(e.g. hectares on recycling/total hectares x 100)

What percentage of the fertilizer solution that you use over the year is not recycled? _____ %
(is disposed of)

What is the estimated volume of reject fertilizer solution disposed of per year? _____
(m³/year or unknown)

Identify on-site treatment of fertilizer solution to improve recycling capability. Choose all that apply.

- | | | |
|---|--|--|
| <input type="checkbox"/> Steel filter | <input type="checkbox"/> Hydrogen Peroxide | <input type="checkbox"/> Sand filter |
| <input type="checkbox"/> Paper/cloth filter | <input type="checkbox"/> Pasturization | <input type="checkbox"/> Other (please describe) |
| <input type="checkbox"/> UV | <input type="checkbox"/> Woodchip biofilter | |
| <input type="checkbox"/> Ozone | <input type="checkbox"/> Constructed wetland | |

How is the reject fertilizer solution (from both inside and outside operations) managed on site?

- Reject fertilizer solution is kept separate from stormwater and other process wastewater
- Reject fertilizer solution is combined with other process waters and kept separate from stormwater
- Reject fertilizer solution is combined with other process waters and stormwater
- Other (please describe in comment section below)

If the greenhouse has a closed circulation system, how is reject fertilizer solution disposed/utilized?

- Direct discharge to surface water
- Discharge to a stormwater pond that directly or indirectly discharges to surface water
- Discharge to a stormwater pond that infiltrates
- Discharge to a municipal sewage treatment plant
- Discharge to a septic system (<10,000 L/day capacity)
- Discharge to a septic system (>10,000 L/day capacity)
- Land application
- Utilized on another crop at the greenhouse (e.g. outdoor containers, describe below)
- Other (please describe in comment section below)
- N/A

If the greenhouse has an open system, how is the waste fertilizer solution disposed of?

- Direct discharge to surface water
- Discharge to a stormwater pond that directly or indirectly discharges to surface water
- Discharge to a stormwater pond that infiltrates
- Discharge to a Municipal Sewage Treatment Plant
- Discharge to a septic system (<10,000 L/day capacity)
- Discharge to a septic system (>10,000 L/day capacity)
- Land application
- Utilized on another crop at the greenhouse (e.g. outdoor containers, describe below)
- Other (please describe in comment section below)
- N/A

Are there on-site storage facilities for reject fertilizer solution?

Yes No

How much in-line storage do you have for your fertilizer solution?

_____ m3

Comments:

10. For the purpose of this section, storage facilities include containment from which there is no direct or indirect discharge that are made of cement, steel, metal, or other materials.

If the greenhouse is land applying reject fertilizer solution, do they have enough storage capacity to store reject fertilizer solution generated by normal operations through the winter months?

(Dec 1 – Mar 31)

Yes No Unknown N/A

Please enter size and type of storage facilities:

Types: lined earthen, unlined earthen, cement, steel, plastic, other

Storage Type	Size	Unit of Measure

If the greenhouse is land applying reject fertilizer solution, how many days of storage do they have on site for reject fertilizer solution during their peak production of reject fertilizer solution (generally the summer months)? (number of days, unknown, or N/A) _____

Are storage tanks equipped with a high level alarm?

Yes No

Is there discharge from the facility of reject fertilizer solution to surface or ground water that is subject to the requirement for an ECA?

Yes No

If yes, is there an ECA in place to address the discharge disposal of the reject fertilizer solution?

Yes No N/A

If yes, are they operating in compliance with the conditions of the approval?

Yes No N/A

If no, please describe discrepancies in the comments section below.

Is there a Preventative Measures Order in place authorizing the disposal?

Yes No

If yes, is the facility operating in compliance with the conditions of the PMO?

Yes No N/A

If no, please describe deficiencies in the comments section below.

If the facility is land applying their spent fertilizer solution, are they registered under the NMA with OMAFRA?

Yes No N/A

If they are registered with OMAFRA, please indicate registration number: _____

Comments:

11A. Domestic Wastewater

How does the facility dispose of domestic wastewater? (water from toilets, sinks, showers)

- Municipal sewer
 Other (please describe in comment section below)
 Subsurface disposal

Is there a septic system on site for bathrooms/kitchen?

Yes No

Is the septic system capacity <10,000 L/day (building code approval required)?

Yes No N/A

Is the septic system capacity >10,000 L/day (OWRA approval required)?

Yes No N/A

If the septic system is >10,000 L/day, does the facility have appropriate

OWRA approval?

Yes No N/A

If OWRA approved, are they operating in accordance with approval?

Yes No N/A

If not operating in accordance with approval, please identify discrepancies in comments section below.

Comments:

11B. Other Process Wastewaters

Please check off wastewater management method(s) for each of the following Wastewater Types.

Wastewater Type	Management Method							
	Stormwater Pond (Direct Discharge)	Stormwater Pond (No Direct Discharge)	Direct to surface water	STP	Septic System	Discharge onto ground	Land Application	Other (describe below)
Blowdown	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Condensate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floor Drains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetable Washwater	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pot/Tray Washing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (describe)								

11C. Is there a discharge of other process wastewater from the facility that is subject to the requirement for an ECA?

Yes No

If yes, is there an ECA in place to address disposal of the other wastewater?

Yes No N/A

If an ECA is in place, are they operating in compliance with the conditions of the approval?

Yes No N/A

If not, please describe discrepancies in comments section below.

Does the facility have a PMO authorizing the discharge? Yes No N/A
 Is the facility operating in accordance with the conditions of the PMO? Yes No N/A
 If not, please describe discrepancies in comments section below.

Comments:

12. Spill Prevention and Contingency

Complete this section if Spill Prevention and Contingency is reviewed during the inspection.

Does the facility have a contingency plan in the event of spills? Yes No
 Is the SAC number posted with other emergency numbers? Yes No
 Is there a spill clean-up kit available on site? Yes No

Comments:

13A. Pesticides

General Questions:

Did observations indicate:

Pesticides are stored in a manner that would not impair health and safety Yes No N/A
 The storage facility is in good repair and clean Yes No N/A
 Sign G was posted in the storage entrances Yes No N/A
 Fire Department, Hospital and Poison Control contact numbers are posted Yes No N/A
 Pesticides are stored in a secure area Yes No N/A

13B. Training:

Who applies pesticides at the facility? Owner Worker Third Party

If greenhouse staff apply pesticides, identify staff training below:

How many greenhouse staff attended the Grower Pesticide Safety Course (GPSC)? _____

Enter GPSC Certificate Numbers: _____

How many greenhouse staff have been trained as Trained Assistants? _____

Enter Trained Assistants Certificate Numbers: _____

How many greenhouse staff have a Greenhouse Interior/Plant Licence? _____

Enter Licence Numbers: _____

How many greenhouse staff are trained as Technicians? _____

Enter Technician Certificate Numbers: _____

14. Fogging:

Does the greenhouse use fogging procedures to apply pesticides? Yes No

If fogging procedures are used:

Is the operator aware of the appropriate staffing levels? Yes No

Are appropriate requirements for staffing levels and licence/certification in place? Yes No

Is the operator aware of proper signage and access restriction requirements during fogging procedure? Yes No

Pesticide Class:	Persons Required:
2	2 GPSC Holders or licenced exterminators
3	2 GPSC Holders or licenced exterminators or 1 GPSC/Exterminator and 1 trained assistant/technician
4	1 SPSC/Exterminator or 1 trained assistant/technician

Note:
Only GPSC holders can supervise trained assistants and only Licenced Exterminators can supervise technicians

Personal Protection Equipment:

Is the operator aware of the requirement to have personal protection equipment for the application of pesticides? Yes No

Is personal protection equipment available near the storage? Yes No