



Greenhouse System Verification Checklist

A boxed risk level indicates the level required for environmental assurance verification.

Bold print indicates a violation of state or federal regulation.

Italic print indicates conformance with Right-to-Farm guidelines.

(5/14/2010 update)

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
1) Greenhouse Site/Soil Evaluation				
1.06) Is the greenhouse site subject to visible soil erosion?	Site does not erode.	Slight or occasional erosion with limited risk to surface water.	Significant erosion occurs annually.	Yes No N/A
2) Water Well Condition				
2.05) What is the condition of the well casing and cap?	No holes or cracks. Cap tightly secured.		Holes or cracks visible. Cap loose or missing. Water can be heard running into well. Exposed well casing bent.	
2.11) How do you prevent backflow of fertilizer or pesticide mixtures into your water supply?	<i>Anti-backflow device installed</i> and 6-inch <i>air gap maintained above level of liquid in sprayer tank.</i>	Either an <i>anti-backflow device installed</i> or 6-inch <i>air gap maintained above level of liquid in sprayer tank.</i>	Neither an anti-backflow device nor air gap maintained.	Yes No N/A
2.12) Is there an unused well located on the greenhouse site?	No unused well or abandoned well is properly sealed.		Unused, unsealed well at greenhouse site.	Yes No N/A
2.13) How often do you test your drinking water for nitrates and bacteria?	Drinking water tested yearly.	Drinking water tested within the past 3 years.	No water testing done, or more than 3 years since last test.	Yes No N/A
2.14) What are the water test results?	No coliform bacteria or nitrate detected.	Water contamination detected. Water tests within health advisory limits for public water well(s).	Water contamination detected. Public water well(s) test above health advisory limits.	Yes No N/A
2.18) If your groundwater and surface water pumps have a combined capacity to pump more than 70 gallons per minute for agricultural purposes, have you registered and reported water use to the state of Michigan?	Pump capacity is less than 70 gallons per minute (100,000 gallons/day). Or, register and report annual water use to Michigan Department of Agriculture.		Pump capacity is greater than 70 gallons per minute (100,000 gallons/day) and water use is not reported to the state of Michigan.	Yes No N/A

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
3) Pesticide Storage and Handling				
3.01) How far is your pesticide storage located from a water well?	For private wells: 150 feet or greater. Or, for public wells (greenhouse with employees or that is open to the public): more than 800 feet from the farm well. Or, approved isolation distance deviation for the well. Or, between 75 and 800 feet with approved storage and well protective site features.		For private wells: Less than 150 feet. For public wells: (greenhouse with employees or that is open to the public): Less than 800 feet from the farm well.	Yes No N/A
3.02) How far is your pesticide storage located from surface water (drains, streams, ponds, catch basins on site, etc.)?	200 feet or greater.	Less than 200 feet with appropriate security measures.	Less than 200 feet without appropriate security measures.	Yes No N/A
3.05) What design features does your pesticide storage have to contain spills and leaks?	Impermeable floor surface does not allow spills to soak into soil. Curb installed on floor to contain leaks and spills or provide individual package containment.	Impermeable floor surface without curb.	Permeable floor surface (wood, gravel or dirt floor) or impermeable floor with cracks. Spills could contaminate soil. Drain in the floor that discharges to the environment.	Yes No N/A
3.07) What level of security is provided for your pesticide storage?	Fenced or locked area, secure from unauthorized access. Storage separate from all other activities.	Storage open to activities that could damage containers or spill chemicals.	Open access to pesticide storage could result in theft, vandalism, and injury to children, pets or wildlife.	Yes No N/A
3.08) What signage is posted on your storage facility?	A highly visible, weatherproof sign indicates that pesticides are stored there. A "No Smoking" sign is also posted.	Pesticide storage sign is posted, but "No Smoking" is not posted.	The pesticide storage has no signs.	Yes No N/A
Comments:				

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
3.09) What kind of spill kit is available at the pesticide storage?	A complete spill kit is immediately available. A fire extinguisher approved for chemical fires is easily accessible and useable.	Spill kit is immediately available, but no fire extinguisher.	A spill kit is not available. A fire extinguisher is not available.	Yes No N/A
3.13) Have you reported extremely hazardous substances (EHS) to authorities?	No EHS stored or used.	EHS stored or used on farm have been identified and reported to local and state authorities (if stored at or above threshold planning quantity).	EHS stored or used at the greenhouse have NOT been identified or reported.	Yes No N/A
3.14) What is the condition of stored pesticide containers?	Original containers clearly labeled. No holes, tears or weak seams.	Old containers with hard to read labels. Patched containers, metal containers showing signs of rusting.	Containers have holes or tears that allow chemical to leak. Some containers have no labels.	Yes No N/A
3.16) Do you have a written emergency plan to deal with spills and other farm emergencies?	Up-to-date plan developed and shared with authorities (if required), employees and family members.	More than one-year-old plan or an incomplete plan is available.	An emergency plan has not been developed.	Yes No N/A
3.17) How far is your mixing and loading area from the water well?	For private wells: 150 feet or greater. For public wells (greenhouse with employees or that is open to the public): More than 800 feet from the greenhouse well. Or, approved isolation distance deviation for the well. Or, between 75 and 800 feet with approved storage and well and protective site features.		For private wells: Less than 150 feet. For public wells (greenhouse with employees or that is open to the public): Less than 800 feet from the greenhouse well.	Yes No N/A
Comments:				

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
3.18) How far is your mixing and loading area from surface water or catch basins?	200 feet or greater.	Less than 200 feet with appropriate security measures.	Less than 200 feet without appropriate security measures.	Yes No N/A
3.19) How do you reduce the potential for surface and groundwater contamination at the mix/load area(s)?	Mixing and loading pad with curb keeps spills contained. Sumps allow collection and transfer to storage.	Mixing and loading on concrete pad without curbs.	No mixing and loading pad. Permeable soil. Spills soak into ground. Same location every time.	Yes No N/A
3.20) How do you prevent backflow or back-siphoning of pesticide mixtures into your water supply?	<i>Appropriate anti-backflow device installed and 6-inch air gap maintained above level of liquid in sprayer tank.</i>	Either an <i>anti-backflow device installed</i> or 6-inch <i>air gap maintained above level of liquid in sprayer tank.</i>	Neither an appropriate anti-backflow device nor air gap maintained.	Yes No N/A
3.21) How do you prevent tank overflows when filling the sprayer?	<i>Sprayer monitored when being filled.</i>		Sprayer seldom or never monitored when being filled.	Yes No N/A
3.22) How do you measure pesticides, additives and water quantities when loading your sprayer system?	<i>Measuring devices labeled and kept in pesticide storage area. Devices rinsed and rinse water put into spray tank. Tank capacities labeled.</i>		A variety of unlabeled measuring devices used. Devices may be used for other purposes. Tank capacities not identified.	Yes No N/A
3.24) What do you do with excess spray mixture?	<i>Spray mixture applied to labeled site at or below labeled rate of application.</i>		Spray mixture dumped in greenhouse or in nearby area or pond.	Yes No N/A
3.25) How do you rinse your sprayer system?	<i>Sprayer system rinsed on pad. Rinse water applied to labeled site at or below labeled rate of application.</i>		Sprayer rinsed out at greenhouse. Rinse water dumped in greenhouse or in nearby area or pond.	Yes No N/A

Comments:

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
3.27) How do you rinse and dispose of empty pesticide containers?	Containers triple-rinsed or power-rinsed, punctured and returned to dealer or recycled. Bags are returned to dealer or taken to licensed landfill.		Disposal of partially filled containers. Burning of containers on the greenhouse site.	Yes No N/A
4) Pesticide Handler and Worker Safety				
4.01) How are pesticide handlers/workers trained on pesticide use and handling?	All handlers/workers are certified pesticide applicators or have had Worker Protection Standard (WPS) training.		Handlers/workers are not certified pesticide applicators and have not had WPS training.	Yes No N/A
5) Fertilizer Storage and Handling				
5.01) How far is your fertilizer storage located from a water well?	For private wells: 150 feet or greater. For public wells (greenhouse with employees or that is open to the public): More than 800 feet from the greenhouse well. Or, approved isolation distance deviation for the well. Or, between 75 and 800 feet with approved storage and well and protective site features.		For private wells: less than 150 feet. For public wells: (greenhouse with employees or that is open to the public): Less than 800 feet from the farm well.	Yes No N/A
5.02) How far is your fertilizer storage located from surface water (drains, streams, ponds, catch basins on farmstead, etc.)?	200 feet or greater.	Less than 200 feet with appropriate security measures.	Less than 200 feet without appropriate security measures.	Yes No N/A
Comments:				

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
5.04) What level of security is provided for your fertilizer storage?	<i>Fertilizer storage areas are secure when not in use. Fertilizer is not stored in the direct presence of fuel products or pesticides.</i>		Fertilizer storage facilities are not locked or secured by any means. Open access to theft, vandalism and children exists. Fertilizer is stored in the direct presence of fuel products and/or pesticides.	Yes No N/A
5.05) How often is the fertilizer storage area inspected for safety concerns?	<i>At least annually.</i>		No regular inspections of the storage facility.	Yes No N/A
5.06) Do you have a written emergency plan to deal with fertilizer spills, discharges and other emergencies?	Up-to-date plan developed and shared with authorities (if required), employees and family members.	More than one-year-old plan or an incomplete plan is available.	An emergency plan has not been developed.	Yes No N/A
5.07) What kind of structure is used for dry fertilizer storage?	<i>A structure or device capable of preventing contact with irrigation, precipitation and/or surface water.</i>		Storage allows fertilizer contact with precipitation and/or surface water.	Yes No N/A
5.08) What is the condition of storage tanks, hoses, valves, injectors and fittings used for liquid fertilizer?	<i>Tanks, hoses, fittings and valves are in good condition, well maintained and compatible with the fertilizer being stored.</i>	Tanks, hoses, fittings and valves have some rust or signs of wear. Tanks were previously used for underground petroleum storage and are in fair condition.	Rusty, aged, worn, damaged or leaking storage tanks, hoses, fittings or valves.	Yes No N/A
5.09) How do you prevent backflow or back-siphoning of fertilizer mixtures into your water supply?	<i>Anti-backflow device installed and tested at least annually.</i>	Either an <i>anti-backflow device</i> , or <i>air gap maintained</i> .	Neither an anti-backflow device nor an air gap maintained.	Yes No N/A

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
5.11) How far is your mixing and loading area from the water well?	For private wells: 150 feet or greater. For public wells (greenhouse with employees or that is open to the public): more than 800 feet from the greenhouse well. Or, approved isolation distance deviation for the well. Or, between 75 and 800 feet with approved storage and well and protective site features.		For private wells: less than 150 feet. For public wells (greenhouse with employees or that is open to the public): less than 800 feet from the greenhouse well.	Yes No N/A
5.12) How far is your mixing and loading area from surface water?	200 feet or greater.	Less than 200 feet with appropriate security measures.	Less than 200 feet without appropriate security measures.	Yes No N/A
6) Petroleum Product Storage and Management				
All petroleum storage facilities				
6.01) Are fuel storage tanks designed for the way they're being used and compatible with the material stored?	Each tank designed for the way it is being used and compatible with the material stored.		Belowground tank being used for aboveground petroleum storage, aboveground tank being used for underground petroleum storage or tank does not meet specifications for usage.	Yes No N/A
6.02) Are fuel storage piping, secondary containment and related equipment designed for the way they're being used and compatible with the material stored?	Fuel storage piping and equipment designed for the way they are being used and compatible with the material stored		Fuel storage piping or equipment not designed for the way it is being used. Belowground piping on all underground tanks or aboveground tanks of greater than 1,100 gallon capacity not corrosion protected.	Yes No N/A

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
6.03) Do you monitor for and repair any leaks?	Owner and operator ensure that releases do not occur.		Tank and piping not monitored and repaired on aboveground tanks equal to or less than 1,100 gallons capacity. Tank and piping not monitored and repaired on all tanks greater than 1,100 gallons capacity.	Yes No N/A
6.04) What design feature does your fueling station have to prevent spills from entering the groundwater, surface water or subsurface soils?	Impermeable and compatible surface for fuel transfer such as concrete without cracks.		Permeable surface such as asphalt surface for gasoline.	Yes No N/A
6.06) How far is your fuel storage from a water well?	<p>For private wells: 50 feet or greater for most storage tanks. 300 feet or greater for tanks greater than 1,100 gallon capacity or without secondary containment.</p> <p>For public wells (dairy farms or farms with employees): 800 feet or greater from the farm well. Or, Approved isolation distance deviation for the well. Or, Between 75 and 800 feet with approved storage and well and protective site features.</p>		<p>For private wells: Less than 50 feet for most storage tanks. Less than 300 feet for tanks greater than 1,100 gallon capacity without secondary containment.</p> <p>For public wells (dairy farms or farms with employees): Less than 800 feet from the farm well.</p>	Yes No N/A
Comments:				

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
Farm motor vehicle storage tanks with capacity equip to or less than 1,100 gallons				
6.10) How far is your tank from a storm drain, surface water or designated wetland?	Tank is more than 50 feet away or has some other engineering control present that would control or divert a spill from reaching a storm drain, surface water or designated wetland.		Tank 50 feet or less.	Yes No N/A
Aboveground Tanks				
6.15) Is the tank elevated off the ground to protect from corrosion?	Tanks supported on steel or wood supports with adequate strength and stability, or elevated at least 6 inches on solid timbers or cement blocks.		Tank not elevated at least 6 inches.	Yes No N/A
6.16) Are siphons, manifolds or internal pressure discharge devices present on tank(s)?	Siphons not present on tank(s). Multiple tanks not connected together (no manifold). No internal pressure discharge device present.	Yes, manifold(s) present on tanks installed prior to 2003.	Yes, siphons or internal pressure discharge device(s) present on tanks installed after 2003.	Yes No N/A
Underground Tanks				
6.23) Has your fuel tank been tested for leaks within the past three years?	Yes. No leaks detected.		No.	Yes No N/A
Farm motor vehicle fuel storage tanks with greater than 1,100 gallons capacity.				
6.26) Is your tank registered and do you display proof of valid registration?	Yes.		No.	Yes No N/A
6.27) Do you have spill protection on tank fill pipe?	Spill protection (catch basin) installed and maintained on tank fill pipe.		Tank fill pipe does not have spill protection.	Yes No N/A

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
6.28) Do you have an emergency control disconnect for electronically operated fuel systems?	Emergency control disconnect located 20 to 100 feet away from dispensing area.		No emergency control disconnect present.	Yes No N/A
6.29) Do you have absorbent materials, a container with lid and a non-metallic shovel to deal with a petroleum spill?	Spill kit present.		No spill kit.	Yes No N/A
6.30) Has your fuel tank been tested for leaks within the past three years?	Yes. No leaks detected.		No.	Yes No N/A
Aboveground storage tanks greater than 1,100 gallons capacity				
6.31) Does your tank have secondary containment?	Yes, double walled tank or tank within diked area.		No.	Yes No N/A
6.34) Do you have crash protection for your tank and piping?	Yes. Guard posts or appropriate barrier installed for crash protection.		No.	Yes No N/A
7) Waste Management				
7.05) How do you dispose of waste oil?	Recycled.	Burned in approved waste oil heater or furnace.	Dumped on the greenhouse site.	Yes No N/A
7.06) How do you dispose of used antifreeze?	Recycled.	Disposed of in municipal sewer (with municipality's approval).	Dumped on the greenhouse site.	Yes No N/A
7.08) How do you dispose of lead- acid batteries?	Recycled.		Disposed of or stored on the greenhouse site.	Yes No N/A
7.09) How do you dispose of paints, solvents, cleaners?	Used up, taken to household hazardous waste collection or recycled.	Liquid evaporated in open air, sludge taken to licensed landfill.	Burned or disposed of or stored on the greenhouse site.	Yes No N/A

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
7.11) Are used motor oil, new oil and hydraulic oil stored in acceptable containers and properly isolated from drinking water wells?	Oil in acceptable containers stored on impermeable floor or in secondary containment, and with reasonable isolation from any well.	Oil stored in acceptable containers, but with inadequate isolation from any well.	Oil stored in a leaking container. Evidence of oil soaking into the soil.	Yes No N/A
7.12) Are floor drains present in buildings?	No, or all drains go to an appropriate system designed for the materials drained.	Floor drains are made inoperable except when used for appropriate materials, or materials are stored in secondary containment to prevent leaks from entering drain.	Floor drains are discharged to surface water, are vulnerable to spills, or drain hazardous materials to inappropriate systems.	Yes No N/A
7.14) How do you dispose of old or unusable plant containers and trays?	Containers are recycled or reused.	Containers are disposed of in a licensed landfill or stored on site.	Waste containers are burned or disposed on site.	Yes No N/A
7.16) How do you dispose of greenhouse poly?	Recycled through a recycling company or offered to others for reuse.	Disposed of in a licensed landfill or stored on site.	Greenhouse poly burned on site.	Yes No N/A
7.18) How do you dispose of unwanted growing media?	Separated from all containers and composted or land applied.	Media stored in location protected from leaching and runoff.	Media stored in an unprotected site. Nutrients can leach into the groundwater or run off into surface water.	Yes No N/A
8) Septic System Management				
8.01) Is the bathroom on the greenhouse site connected to a septic or municipal system to treat the waste?	Bathroom on the greenhouse site connected to septic tank and drainage field or a municipal system. Or No bathroom on the greenhouse site.		No septic system. Direct discharge of wastes to environment.	Yes No N/A
9) Nutrient Management Practices				
9.11) How are fertilizer application rates determined?	Consistent with Michigan State University (MSU) or equivalent recommendations.	Occasionally exceed MSU or equivalent recommendations.	Often or always exceed MSU or equivalent recommendations.	Yes No N/A

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
9.13) How are phosphorus fertilizer applications determined?	<i>Based on soil tests or plant tissue analysis using Michigan State University recommended rates, other land-grant university standards or industry standards if land-grant university standards do not exist.</i>	Crop is grown with phosphorus rates higher than recommended.	High-phosphorus fertilizers are used routinely.	Yes No N/A
9.15) What fertilizer records do you keep?	<i>Maintain records of fertilizer purchases.</i>		No fertilizer records maintained.	Yes No N/A
10) Water Management Practices				
10.02) What irrigation management records are maintained?	<i>Maintain annual records of irrigation water used or irrigation scheduling.</i>		No irrigation records maintained.	Yes No N/A
10.03) How is irrigation water managed to prevent a discharge to the environment?	Water is recycled or does not leave the greenhouse or facility.	Runoff water is controlled to minimize leaching and prevent a direct discharge.	Irrigation water from range goes directly into a ditch or storm sewer, or pond or significant leaching occurs.	Yes No N/A
12) Pest Management Practices				
12.11) How do you protect surface and groundwater in and near greenhouses from pesticide contamination?	Pesticide labels with groundwater and surface water advisory statements are followed.		Labeled directions are not followed. Spray applied adjacent to or over top of surface water, tile drain inlet or water well.	Yes No N/A
12.12) Are the purchasers and applicators of restricted use pesticides (RUP) certified applicators?	<i>The purchaser and applicator of RUP comply with the certification requirements.</i>		Non-certified and unsupervised applicators use RUP.	Yes No N/A
12.14) Is a spill kit immediately available to pesticide applicators in the greenhouse?	<i>A spill kit containing a shovel, absorbent material, PPE and a container is immediately available.</i>		No spill kit is available or no plan is in place to contain spills.	Yes No N/A

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
12.15) How is pesticide rinsate disposal handled?	<i>Excess mixtures or rinsate is used on crop or labeled site at or below labeled rates.</i>		No plan is in place to deal with excess mixture or rinsate.	Yes No N/A
12.16) How do you ensure the proper and safe operation of pesticide application equipment?	<i>Equipment is correctly calibrated at least annually and leaks minimized to apply intended rate and distribution pattern.</i>		Pesticide application equipment not properly calibrated.	Yes No N/A
12.17) What pesticide application records are kept?	<i>Accurate records maintained of all greenhouse crop applications of pesticides for at least three years.</i>	Partial pesticide records kept. Plan to maintain complete pesticide application records.	No records are kept. Chemicals used are known by memory or invoices only.	Yes No N/A
12.18) Whom would you contact if you had an agriculture pollution emergency?	Call 911, sheriff, fire or emergency services department, <i>the MDA Agriculture Pollution Emergency Hotline (1-800-405-0101)</i> or the MDEQ Pollution Emergency Alerting System (1-800-292-4706).		Would not contact state or local authorities.	Yes No N/A
12.19) Are material safety data sheets (MSDS) available on-site?	MSDS are available and employees know their location.	Most MSDS are available; not all employees know their location.	MSDS are not available.	Yes No N/A
12.20) Do applicators read and follow the pesticide label instructions?	Applicator has read complete label and follows instructions.		Applicator has not read the label.	Yes No N/A
12.23) How often is pesticide application equipment calibrated?	Application equipment is calibrated twice a year according to manufacturer's recommendations.	<i>Application equipment is calibrated every year</i> according to manufacturer's recommendations.	Application equipment is calibrated only if there is plant damage or the pesticide doesn't seem to be effective.	Yes No N/A
13) Outdoor Production Container Management Practices (if you do not have outdoor containers, please skip.)				
13.01) What happens to runoff in production areas with containers?	Runoff is collected, filtered and reused.	Runoff does not pond and does not enter surface water.	Runoff is not collected and is allowed to enter surface water.	Yes No N/A

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
14) Other Environmental Risks at the Greenhouse Operation				
14.01) Are there other activities, products, processes equipment, services, by-products and/or wastes at this greenhouse operation that pose contamination risks to groundwater or surface water?	No.	Yes, plan to mitigate the contamination risk.	Yes, but no plan to mitigate contamination risk.	Yes No N/A
Comments:				