

## Greenhouse\*A\*Syst

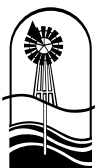
FAS 108 • May 2007  
(Major revision — destroy old)

# Greenhouse\*A\*Syst for Michigan Producers



**G**reenhouse production in Michigan generates more than \$384 million in products (wholesale value) annually. Floriculture requires advanced technology and precise use of pesticides, fertilizers, light, temperature and water to produce bedding and potted plants within a limited area. Like other agricultural enterprises, floriculture involves a number of processes that can potentially affect Michigan's surface and groundwater. Although many improvements have been made to reduce pollution risks, more can be done.

Greenhouse\*A\*Syst was developed to assist greenhouse growers to identify pollution risks and to make any needed improvements to protect water resources. Greenhouse\*A\*Syst will also help growers become aware of applicable federal, state and local environmental regulations.



Michigan  
Groundwater  
Stewardship  
Program



MICHIGAN STATE  
UNIVERSITY  
EXTENSION  
FLORICULTURE TEAM

## Greenhouse System Improvement Action Plan

Risk question	List high-risk practice(s) from Greenhouse*A*Syst and medium-risk practices that do not meet MAEAP requirements	Required for MAEAP verification?	Alternative low-risk practice (include potential sources of technical and financial assistance)	Action plan	
				Planned completion date	Indicate date when completed
3.08	(example) Pesticide spill clean-up kit not available in pesticide storage area	Yes	Acquire pesticide spill clean-up kit from groundwater technician for pesticide storage area	Sept. 2007	(✓) Completed Aug. 31, 2007

(continued after work sheets)

I understand that this farmstead and cropping system assessment (Greenhouse\*A\*Syst) and corresponding Greenhouse System Improvement Action Plan were developed on the basis that I have disclosed, to the best of my knowledge, all information pertaining to my cropping operations.

Farmstead address: \_\_\_\_\_ Date \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ MI, Zip code \_\_\_\_\_

Watershed name: \_\_\_\_\_

Aerial map with greenhouse operation boundaries is attached.

Producer's signature \_\_\_\_\_ Date \_\_\_\_\_  
**Greenhouse\*A\*Syst conducted by:**  
 Name \_\_\_\_\_  
 Title \_\_\_\_\_ Date \_\_\_\_\_

## Introduction

Greenhouse\*A\*Syst will help growers develop and implement management plans and site improvements that prevent contamination of groundwater and surface water resources and maintain economic crop production. Plans will be in conformance with Michigan Right-to-Farm guidelines and with applicable state, federal and local environmental regulations.

Nutrients used in greenhouse production come from chemical fertilizers and naturally occurring sources. All nutrients, whether synthetic or naturally occurring, can become mixed with surface water or groundwater by natural processes such as runoff and leaching. Nitrate contamination of groundwater and phosphorus contamination of surface water can be problems in Michigan. Greenhouse\*A\*Syst will assess your current nutrient management practices and identify alternative management practices that, when implemented, will reduce nutrient losses on the environment.

Virtually all crops produced in Michigan greenhouses may be threatened by serious pest problems — disease-producing organisms, insects and weeds. Producers are encouraged to adopt pest management practices that achieve the desired crop quality and yield while minimizing any adverse effects on non-target organisms, humans, and soil and water resources. Greenhouse\*A\*Syst will assess your current pest management practices and identify alternative management practices that, when implemented, will reduce negative impacts on the environment.

Greenhouse\*A\*Syst is designed to coordinate the pollution prevention efforts of the Michigan Groundwater Stewardship Program (MGSP) and the Michigan Agriculture Environmental Assurance Program (MAEAP). Greenhouse\*A\*Syst focuses on both MAEAP farmstead and cropping systems. This single environmental risk assessment includes site, structural and management practices of the Farm\*A\*Syst and Crop\*A\*Syst used on traditional crop and livestock farms.

The Michigan Groundwater Stewardship Program (MGSP) is a cooperative effort between the Michigan Department of Agriculture, Michigan State University Extension, Michigan Conservation Districts, the USDA Natural Resources Conservation Service and Michigan AmeriCorps. The program is funded through fees assessed on sales of pesticides and nitrogen fertilizers. MGSP-sponsored education, technical assistance and cost-share programs help individuals reduce the risk of groundwater contamination associated with pesticide and nitrogen fertilizer use.

The Michigan Agriculture Environmental Assurance Program (MAEAP) is a comprehensive, proactive and voluntary agricultural pollution prevention program. It takes a systems approach to assist producers in evaluating their farms for environmental risks. The three systems are livestock, farmstead and cropping. The on-farm risk evaluation uses specific tools for each system-- the comprehensive nutrient management plan (CNMP) for the livestock system, Farm\*A\*Syst for the farmstead system and Crop\*A\*Syst for the cropping system. Environmentally assured systems are eligible for various incentives and recognitions.

The Michigan Right-to-Farm Act, P.A. 93, was enacted in 1981 to provide farmers with protection from nuisance lawsuits. This state statute authorized the Michigan Commission of Agriculture to develop and adopt generally accepted agricultural and management practices (GAAMPs) for farms and farm operations in Michigan. These voluntary practices are based on available technology and scientific research to promote sound environmental stewardship and help maintain a farmer's right to farm. The current Right-to-Farm GAAMPs are posted on the Michigan Department of Agriculture Web site: [www.michigan.gov/mda](http://www.michigan.gov/mda).

Producers who complete the Greenhouse\*A\*Syst assessment will be able to determine what structural, management practices or record-keeping changes (if any) will be needed for their businesses to be environmentally assured through MAEAP. Once a producer develops and implements a plan to address the risks indicated by the assessment, he/she can contact the Michigan Department of Agriculture (MDA) to request greenhouse system verification. An MDA inspector will schedule a site visit to complete the verification process.

P.A. 451, Part 82, ensures the confidentiality of the producer information provided to the MDA for system verification. Any information connected with the development, implementation or verification of a conservation plan or conservation practice is confidential.

Owners of MAEAP-verified greenhouse systems are eligible for various incentives and can enjoy good-faith-effort environmental liability protection if an agricultural pollution emergency ever occurs at their facilities.

For a list of currently available incentives and information on how to get started, contact your local Conservation District, MSU Extension or NRCS representative.

Greenhouse operations with nursery stock production will also need to complete Nursery\*A\*Syst. Section 16 of this document (Outdoor Container Management Practices) is for greenhouse producers who have outdoor production of floricultural crops.

## What is the Greenhouse Assessment System?

Greenhouse\*A\*Syst is a series of risk questions that will help assess how effectively a producer's greenhouse management practices protect groundwater and surface water resources. The risk questions are grouped in the following sections:

1 Greenhouse Site / Soil Evaluation
2 Water Well Condition
3 Pesticide Storage and Handling
4 Pesticide Handler and Worker Safety
5 Fertilizer Storage and Handling
6 Petroleum Product Storage and Management
7 Waste Management
8 Septic System Management
9 Nutrient Management Practices
10 Water Management Practices
11 Soil and Water Conservation Practices
12 Pest Management Practices
13 Outdoor Production Container Management Practices
14 Other Environmental Risks at the Greenhouse Operation

Each risk question assesses the impact of management practices on groundwater and surface water resources. The risk question answers indicate whether management practices have a low, medium or high risk of water contamination. Producers are generally recommended to adopt the low-risk management practice.

Responses to risk questions that address management practices that are regulated by state or federal law indicate **illegal practices with black bold print**.

Responses to risk questions that address management practices covered by the Michigan Right-to-Farm Act indicate the *risk level required for protection from nuisance lawsuits with highlighted italic print*.

Finally,

a bold box indicates the management level(s) required for MAEAP verification.

MAEAP management requirements are aligned with state and federal environmental regulations, the Michigan Right-to-Farm Act and environmentally based horticultural management practices that are supported by research. The records and/or evidence that indicate the approved management practices

have been implemented on the farm are listed in the far right column. This evidence will provide the basis for awarding environmental assurance through MAEAP.

Your horticultural advisors (both public and private) can assist you to make the appropriate management changes to become environmentally assured through MAEAP.

## How does Greenhouse\*A\*Syst work?

- 1) Select all relevant sections for your greenhouse operation.
- 2) Answer each risk question by selecting the answer that best describes management practices used in your operation. Indicate your risk level in the column to the right. Skip any questions that do not apply to your greenhouse system.

**Note: For MAEAP verification, complete the risk questions with a Greenhouse\*A\*Syst trained individual. You can locate your local groundwater technician through your county Conservation District or MSU Extension office.**

- 3) After completing each section of risk questions, list the practices that present a high risk of contaminating groundwater and surface water resources in the Greenhouse System Improvement Action Plan (printed inside the front cover of the bulletin). Also include any medium-risk practices that do not meet MAEAP verification requirements.
- 4) In the Greenhouse System Improvement Action Plan, list:
  - Management practices or site improvements that you plan to implement that will reduce the identified risk.
  - Sources of technical and financial assistance.
  - Target dates for accomplishing the changes.
  - Target date for MAEAP verification of your greenhouse system.

## A few final words

The key to Greenhouse\*A\*Syst is that once you have identified the risks to groundwater and surface water resources, you implement your plan to reduce the risks. Some of the stewardship practices that will reduce risks may cost very little and take very little time to implement. Other practices may involve additional cost and may not be implemented for a few years. It is important, however, to have a plan to follow. Once you have developed a plan and have implemented changes to address the risks, you are ready for MAEAP verification of your greenhouse system.

## Greenhouse Site/Soil Evaluation

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>1.01)</b> What is the texture of the dominant soil (0 to 5 feet deep) at the greenhouse site?	Very fine-textured soils: clay, clay loam, silty clay loam, sandy clay, sandy clay loam and silty clay.	Medium-textured soils: loam, silt loam, sandy loam and silt.	Coarse-textured soils: sand, fine sand, very fine sand, loamy very fine sand.		
<b>1.02)</b> What is the depth of the topsoil and subsoil (A & B horizons)?	Greater than 40 inches.	30 to 40 inches.	Less than 30 inches.		
<b>1.03)</b> What is the depth to the seasonal high water table?	Greater than 6 feet.	3 to 6 feet.	Less than 3 feet.		
<b>1.04)</b> What is the soil organic matter content?	Greater than 4 percent.	1 to 4 percent.	Less than 1 percent.		
<b>1.05)</b> What is the makeup of the geological materials more than 5 feet underground?	Low-permeability materials: silt, clay, shale, claystone.		Highly permeable materials: sand, gravel, fractured rock, karst limestone.		
<b>1.06)</b> 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.		No significant erosion present at the greenhouse site.

**A boxed risk level** indicates the level required for environmental assurance verification (MAEAP verification).

**Bold print** indicates a violation of state or federal regulation.

**Bold italic print** indicates conformance with Right-to-Farm guidelines.

# Water Well Condition

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>2.01)</b> How old is the well that serves the greenhouse?	Less than 10 years old.	10 to 25 years old.	More than 25 years old, or age is unknown.		
<b>2.02)</b> What kind of well do you have?	Drilled and grouted.	Drilled and not grouted <sup>1</sup> or driven point or water jetted.	Large diameter (12 to 48 inches) dug well, or construction is unknown.		
<b>2.03)</b> Is the greenhouse well classified as a private or public water supply?	Private: potable water for drinking or domestic or greenhouse purposes for family members only.	Public: water for drinking or household/greenhouse purposes to persons other than the owner and family (greenhouse with employees or that is open to the public).			
<b>2.04)</b> What is the slope from the well to potential contamination sources?	Well is upgrade from all contamination sources.	Well is at grade from most contamination sources.	Well is downgrade or in a depression relative to contamination sources.		
<b>2.05)</b> What is the condition of the well casing and cap?	No holes or cracks. Cap tightly secured. Screened vent. Wellhead protected from equipment collisions.	No holes or cracks. Cap without gasket or screened vent.	Holes or cracks visible. Cap loose or missing. Water can be heard running into well. Exposed well casing bent.		
<b>2.06)</b> From the well installation record, is there a protective soil layer (confining material) in the soil formation?	Continuous clay or shale layer more than 10 feet thick. Or, Continuous clay mixture more than 20 feet thick.	Clay or shale layer less than 10 feet thick. Or, Clay mixture less than 20 feet thick.	No protective layer (unconfined aquifer).		
<b>2.07)</b> What is the depth of the well casing?	More than 100 feet. Or, Minimum of 60 feet with 10 feet of clay or 20 feet of clay mixture (confining material).	At least 25 feet, but no confining material.	Less than 25 feet, or no casing. <sup>1</sup>		

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## Water Well Condition (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>2.08</b> What is the casing height above grade?	12 inches or more.	From grade level to less than 12 inches. <sup>1</sup>	Below grade or in a pit or in a basement. <sup>1</sup>		
<b>2.09</b> What is the well pump capacity?	25 gallons per minute or less.	Greater than 25 gallons per minute.			
<b>2.10</b> When was the last time the well was inspected by a professional well driller or pump installer?	Within the past 10 years.	Between 10 and 20 years ago.	More than 20 years ago, or don't know when the well was last inspected.		
<b>2.11</b> How do you prevent backflow of fertilizer or pesticide mixtures into your water supply?	Anti-backflow device installed and 6-inch air gap maintained above level of liquid in sprayer tank.	No anti-backflow device, but air gap maintained.	Neither an anti-backflow device nor air gap maintained. <sup>6</sup>		Anti-backflow device or air gap present or demonstrated.
<b>2.12</b> 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. <sup>1</sup>		Unused well(s) properly sealed.
<b>2.13</b> 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.		Water tests for nitrates and coliform bacteria within the past 3 years.
<b>2.14</b> 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. <b>Public water well(s) test above health advisory limits.<sup>3</sup></b>		Water tests within health advisory limits for public well.
<b>2.15</b> Is your greenhouse site or portions of your greenhouse site included in a community wellhead protection area?	No.	Yes or don't know, and soil characteristics and greenhouse operations pose minimal risks to groundwater.	Yes, and soil characteristics and/or greenhouse operations pose significant risks to groundwater.		

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## Water Well Condition (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<p><b>2.16</b> If you have a frost-free yard hydrant connected to a water system, is the hydrant-DEQ-approved?</p>	<p>DEQ-approved yard hydrant protects water supply from contaminated water back-siphoned into the hydrant's drain valve.</p> <p>Or, Yard hydrant is not DEQ-approved<sup>1</sup>, but an anti-backflow valve is installed between the hydrant and the water source.</p>		<p>Yard hydrant is not DEQ-approved<sup>1</sup> and there is no anti-backflow valve.</p>		
<p><b>2.17</b> If your drinking water well serves 25 or more people for 60 consecutive days (type IIb public water supply), has it been tested for arsenic?</p>	<p>Drinking water tested on a quarterly basis. Average arsenic level is less than 10 ppb.</p>		<p>Drinking water is not tested.<sup>3</sup></p>		
<p><b>2.18</b> 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?</p>	<p>Pump capacity is less than 70 gallons per minute (100,000 gallons/day).</p> <p>Or, Register and report annual water use to Michigan Department of Agriculture.</p>		<p>Pump capacity is greater than 70 gallons per minute (100,000 gallons/day) and water use is not reported to the state of Michigan.<sup>13</sup></p>		<p>Records indicate compliance with water use reporting.</p>

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# Pesticide Storage and Handling

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>3.01)</b> 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. <sup>1</sup>  For public wells: (greenhouse with employees or that is open to the public): Less than 800 feet from the farm well. <sup>3</sup>		Appropriate pesticide storage isolation distance for site characteristics.
<b>3.02)</b> How far is your appropriate pesticide storage located from surface water (drains, streams, ponds, catch basins on site, etc.)?	More than 200 feet.	Less than 200 feet with appropriate security measures to prevent water contamination.	Less than 200 feet.		Appropriate pesticide storage isolation distance from surface water.
<b>3.03)</b> How are pesticides delivered to the greenhouse?	Just-in-time delivery provided by dealer or greenhouse employee to mix/load site.	Responsible, trained farm employee or family member or dealer transports pesticides to storage.	Untrained greenhouse employee or family member transports pesticides.		
<b>3.04)</b> Where are pesticides stored?	Storage building is locked and separate from all other buildings.	Storage is within the greenhouse or greenhouse but isolated and locked.	Storage is in high-traffic area and unlocked.		

\* See groundwater technician for additional information on criteria for reduced isolation distances.

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## Pesticide Storage and Handling (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>3.05)</b> 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.		Adequate secondary containment for pesticide storage.
<b>3.06)</b> 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. <sup>17</sup>		Adequate pesticide storage security.
<b>3.07)</b> What signage is posted on your storage facility?	A highly visible, weather-proof 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.		Pesticide storage signage present.
<b>3.08)</b> 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 usable.	Spill kit is immediately available, but no fire extinguisher.	A spill kit is not available. <sup>6</sup> A fire extinguisher is not available.		Spill kit with fire extinguisher present at pesticide storage.
<b>3.09)</b> What total quantities of pesticides are stored on the greenhouse site?	No pesticides stored at any time, or only seasonal use storage.	One gallon to 10 pounds or more of each pesticide in long-term storage.	More than 55 gallons or more than 550 pounds of each pesticide in long-term storage.*		
<b>3.10)</b> What quantities of liquid pesticides do you store?	No liquids – all dry formulations.	Some liquid formulations stored.	More than 55 gallons of liquid formulations stored.*		

\*Producers who store certain bulk pesticides in containers that exceed 10 gallons or 100 pounds may be subject to additional regulation.<sup>4</sup>

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## Pesticide Storage and Handling (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>3.11</b> Do you store pesticides with high leaching potential?	No pesticides stored, or only pesticides with low leaching potential.	Pesticides with low and medium leaching potential stored.	Pesticides with high leaching potential stored.		
<b>3.12</b> 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. <sup>18</sup>		Records indicate EHS names have been shared with authorities or that EHS are not used at the greenhouse.
<b>3.13</b> 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. <sup>17</sup>		Stored pesticides in satisfactory condition with labels attached.
<b>3.14</b> How do you manage pesticide inventory control and disposal of unwanted products?	Pesticides accurately inventoried. Old product used first. Unusable product disposed of through Clean Sweep program.	Some inventory process maintained. Unsure of status of unusable product in storage.	No pesticide inventory maintained. Unusable product maintained in storage for indefinite time.		
<b>3.15</b> 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.		Up-to-date emergency plan.

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## Pesticide Storage and Handling (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>3.16)</b> 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. <sup>1</sup> For public wells (greenhouse with employees or that is open to the public): Less than 800 feet from the greenhouse well. <sup>3</sup>		Appropriate mixing and loading area isolation distance for site characteristics.
<b>3.17)</b> How far is your mixing and loading area from surface water or catch basins?	More than 200 feet.	Between 50 and 200 feet.	Less than 50 feet.		Appropriate mixing and loading area isolation distance from surface water.
<b>3.18)</b> 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.		Satisfactory explanation of mixing and loading procedures.
<b>3.19)</b> How do you prevent backflow or back-siphoning of pesticide mixtures into your water supply?	Appropriate anti-backflow device installed and 6-inch air gap maintained above level of liquid in sprayer tank.	No anti-backflow device, but air gap maintained.	Neither an appropriate anti-backflow device nor air gap maintained. <sup>1,6</sup>		Anti-backflow device or air gap present or demonstrated.
<b>3.20)</b> How do you prevent tank overflows when filling the sprayer?	Sprayer monitored when being filled.		Sprayer seldom or never monitored when being filled.		Satisfactory explanation of sprayer tank filling procedures.

\* See groundwater technician for additional information on criteria for reduced isolation distances.

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## Pesticide Storage and Handling (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>3.21)</b> How do you measure pesticides, additives and water quantities when loading your sprayer system?	Measuring devices labeled and kept in pesticide storage area. Devices rinsed and rinse water put into spray tank. Tank capacities labeled.		A variety of unlabeled measuring devices used. Devices may be used for other purposes. Tank capacities not identified.		Set of dedicated measuring devices for pesticides. Spray tank capacities labeled.
<b>3.22)</b> How do you transfer pesticide products from their containers to your sprayer tank?	Closed system for all liquid and dry product transfers.	All liquid and dry products hand-poured. Mixing/storage tank opening easy to reach.	All liquid and dry products hand-poured. Mixing/storage tank opening hard to reach.		
<b>3.23)</b> What do you do with excess spray mixture?	Spray mixture applied to labeled site at or below labeled rate of application.		Spray mixture dumped in greenhouse or in nearby area or pond. <sup>4,6</sup>		Satisfactory explanation of procedures for excess spray mixtures.
<b>3.24)</b> How do you rinse your sprayer system?	Sprayer system rinsed on pad. Rinse water applied to labeled site at or below labeled rate of application.		Sprayer rinsed out at greenhouse. Rinse water dumped in greenhouse or in nearby area or pond. <sup>4,6</sup>		Satisfactory explanation of procedures for rinsing sprayer system.
<b>3.25)</b> How do you clean the exterior of the sprayer?	Sprayer washed on pad. Wash water collected and applied to labeled crop.		Sprayer washed at greenhouse site. Rinse water dumped in greenhouse or in nearby area or pond. <sup>4,6</sup>		
<b>3.26)</b> How do you rinse and dispose of empty pesticide containers?	Containers triple-rinsed or power rinsed, punctured, and returned to dealer or recycled. Bags returned to dealer or taken to licensed landfill.		Disposal of partially filled containers. Burning of containers on the greenhouse site. <sup>8</sup>		Rinsed jugs stockpiled for recycling or landfilling. No unrinsed jugs at greenhouse.

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# Pesticide Handler and Worker Safety

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>4.01)</b> 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. <sup>19</sup>		Evidence of pesticide applicator certification or WPS training.
<b>4.02)</b> How do you inform handlers/workers of risks associated with pesticide applications?	Central notification of pesticide applications is provided. Display includes EPA-approved safety poster, emergency medical information and pesticide application information.	Central notification provided, although not all posting requirements are met. <sup>19</sup>	No central notification provided. <sup>19</sup>		
<b>4.03)</b> What supplies do you provide handlers/workers for pesticide decontamination?	Clean water, soap, disposable towels and clean coveralls (handlers) are available for all handlers/workers within one-quarter mile of worksite.	A decontamination site is provided, although not all WPS requirements are met. <sup>19</sup>	A decontamination site is not available. <sup>19</sup>		
<b>4.04)</b> How are workers notified of pesticide applications?	Oral and/or posted warnings about pesticide application provided.		No notice about pesticide application provided. <sup>19</sup>		
<b>4.05)</b> Who provides and maintains personal protective equipment (PPE) and trains handlers in its use?	All label-required PPE provided and maintained by employer. Training on use of PPE provided.	WPS requirements for PPE partially met. <sup>19</sup>	PPE not provided. <sup>19</sup>		
<p style="text-align: center;"><span style="border: 1px solid black; padding: 2px;">A boxed risk level</span> indicates the level required for environmental assurance verification (MAEAP verification). <b>Bold print</b> indicates a violation of state or federal regulation.</p> <p style="text-align: center;">Bold italic print indicates conformance with Right-to-Farm guidelines.</p>					

# Fertilizer Storage and Handling

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<p><b>5.01</b> How far is your fertilizer storage located from a water well?</p>	<p>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.*</p>		<p>For private wells: Less than 150 feet.<sup>1</sup>                      For public wells: (greenhouse with employees or that is open to the public): Less than 800 feet from the farm well.<sup>3</sup></p>		<p>Appropriate fertilizer storage isolation distance for site characteristics.</p>
<p><b>5.02</b> How far is your fertilizer storage located from surface water (drains, streams, ponds, catch basins on farmstead, etc.)?</p>	<p>200 feet or greater.</p>	<p>Less than 200 feet with appropriate security measures to prevent pesticide contamination of surface water.</p>	<p>Less than 200 feet.</p>		<p>Appropriate fertilizer storage isolation distance from surface water.</p>
<p><b>5.03</b> Is your fertilizer storage facility (both liquid and dry) identified with a sign?</p>	<p>Storage facility labeled "Fertilizer", or the fertilizer containers labeled with fertilizer analysis.</p>	<p>No sign.</p>			
<p><b>5.04</b> What level of security is provided for your fertilizer storage?</p>	<p>Fertilizer storage areas are secure when not in use. Fertilizer is not stored in the direct presence of fuel products or pesticides.</p>		<p>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.</p>		<p>Adequate fertilizer storage security.</p>

\* See groundwater technician for additional information on criteria for reduced isolation distances.

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Bold italic print indicates conformance with Right-to-Farm guidelines.

## Fertilizer Storage and Handling (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>5.05</b> How often is the fertilizer storage area inspected for safety concerns?	At least annually.		No regular inspections of the storage facility.		Evidence fertilizer storage is inspected at least annually.
<b>5.06</b> 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.		Up-to-date emergency plan.
<b>5.07</b> What kind of structure is used for dry fertilizer storage?	A structure or device capable of preventing contact with irrigation, precipitation and/or surface water.		Storage allows fertilizer contact with precipitation and/or surface water.		Satisfactory dry fertilizer storage facilities.
<b>5.08</b> What is the condition of storage tanks, hoses, valves, injectors and fittings used for liquid fertilizer?	Tanks, hoses, fittings and valves are in good condition, well maintained and compatible with the fertilizer being stored.	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.		Satisfactory condition of liquid fertilizer storage system.
<b>5.09</b> How do you prevent backflow or back-siphoning of fertilizer mixtures into your water supply?	Anti-backflow device installed and tested at least annually.	No anti-backflow device, but air gap maintained .	Neither an anti-backflow device nor an air gap maintained. <sup>1,4</sup>		Anti-backflow device present. Records of at least annual testing.

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## Fertilizer Storage and Handling (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<p><b>5.10</b> What do you do with excess fertilizer solutions at the end of the greenhouse season?</p>	<p>Fertilizer solutions applied to crop at or below agronomic rate. Or, Excess fertilizer concentrates returned to dealer.</p>	<p>Excess fertilizer stored until next year.</p>	<p>Excess fertilizer solutions applied to crop without agronomic considerations. Fertilizer solution dumped on the greenhouse site or in nearby field or pond.<sup>4,6</sup></p>		
<p><b>5.11</b> How far is your mixing and loading area from the water well?</p>	<p>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.*</p>		<p>For private wells: Less than 150 feet.<sup>1</sup> For public wells (greenhouse with employees or that is open to the public): Less than 800 feet from the greenhouse well.<sup>3</sup></p>		<p>Appropriate mixing and loading area isolation distance for site characteristics.</p>
<p><b>5.12</b> How far is your mixing and loading area from surface water?</p>	<p>More than 200 feet.</p>	<p>Between 50 and 200 feet.</p>	<p>Less than 50 feet.</p>		<p>Appropriate mixing and loading area isolation distance from surface water.</p>

\* See groundwater technician for additional information on criteria for reduced isolation distances.

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# Petroleum Product Storage and Management

This section is designed to help meet environmental concerns related to petroleum storage; it is not intended to represent all of the legal requirements for storage and handling of petroleum products on the farm.

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
All petroleum storage facilities					
<b>6.01)</b> 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. <sup>15</sup>		Fuel tanks used appropriately.
<b>6.02)</b> 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. Below-ground piping on all underground tanks or aboveground tanks of greater than 1,100 gallon capacity, not corrosion protected. <sup>15</sup>		Fuel storage equipment appropriate for use.
<b>6.03)</b> 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 above-ground 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. <sup>15</sup>		No fuel leaks present.
<p><b>A boxed risk level</b> indicates the level required for environmental assurance verification (MAEAP verification). <b>Bold print</b> indicates a violation of state or federal regulation. <b>Bold italic print</b> indicates conformance with Right-to-Farm guidelines.</p>					

# Petroleum Product Storage and Management (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
All petroleum storage facilities					
<b>6.04)</b> What design features does your fueling station have to prevent spills from entering the groundwater, surface water or subsurface soils?	Impermeable surface for fuel transfer such as concrete without cracks.		Permeable surface such as asphalt surface for gasoline. <sup>15</sup>		Impermeable surface present for fuel transfer.
<b>6.05)</b> Is your fill opening separate from your vent opening?	Yes.		No. <sup>15</sup>		
<b>6.06)</b> 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 (greenhouse with employees or that is open to the public): more than 800 feet from the greenhouse well.</p> <p>Or, Approved isolation distance deviation for the well.</p> <p>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 (greenhouse with employees or that is open to the public): less than 800 feet from the farm well.</p>		Appropriate fuel storage isolation distance from water well.

\* See groundwater technician for additional information on criteria for reduced isolation distances.

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# Petroleum Product Storage and Management (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
All petroleum storage facilities					
<b>6.07</b> Does your tank have secondary containment?	Double-walled tank with continuous space between the two walls, tank in concrete vault or tank in diked area.	No secondary containment for tanks equal to or less than 1,100 gallons capacity.	No secondary containment when combined aboveground storage capacity is 1,320 gallons (55 gallon containers or larger) <sup>20</sup> or aboveground tank is greater than 1,100 gallons. <sup>15</sup>		
<b>6.08</b> If you have a combined aboveground petroleum storage capacity of greater than 1,320 gallons (counting 55-gallon containers and greater) and could reasonably discharge into navigable waters of the United States, do you have a spill prevention control and counter-measure (SPCC) plan?	Plan developed and copy present at farm facility.		No plan. <sup>20</sup>		

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## Petroleum Product Storage and Management (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
Farm motor vehicle fuel storage tanks with capacity equal to or less than 1,100 gallons					
<b>6.09)</b> Do you have a lockable closure on each tank's fill opening?	Fill pipe equipped with lockable closure.		No lockable closure on fill pipe. <sup>15</sup>		
<b>6.10)</b> 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. <sup>15</sup>		Appropriate fuel storage isolation distance from surface water.
<b>6.11)</b> How far is your (non-fire protected) tank from buildings and property lines?	- More than 40 feet from a building, structure or a property line. - More than 25 feet from a public way.		- 40 feet or less from a building, structure or a property line. - 25 feet or less from a public way. <sup>15</sup>		
<b>6.12)</b> How many tanks (equal to or less than 1,100 gallons) do you have at each site at one facility?	Three or fewer.		More than three. <sup>15</sup>		
<b>6.13)</b> How far apart are your fueling sites at your facility?	100 feet or greater.		Less than 100 feet. <sup>15</sup>		
<div style="border: 1px solid black; padding: 5px;"> <p><b>A boxed risk level</b> indicates the level required for environmental assurance verification (MAEAP verification). <b>Bold print</b> indicates a violation of state or federal regulation.</p> <p><b>Bold italic print</b> indicates conformance with Right-to-Farm guidelines.</p> </div>					

# Petroleum Product Storage and Management (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
Aboveground Tanks					
<b>6.14</b> Is your tank labeled according to its contents with letters 3 inches or more in height?	Yes, labeled according to contents (Gasoline or Diesel) and with the following: "FLAMMABLE" [or "COMBUSTIBLE"] and "KEEP FIRE AND FLAME AWAY". If tank is not a fire-protected type, it is also labeled: "KEEP 40 FEET FROM BUILDINGS".		Tank not labeled with contents. Tanks storing gasoline not labeled: <b>FLAMMABLE — KEEP FIRE &amp; FLAME AWAY.</b> Tanks storing diesel not labeled: <b>COMBUSTIBLE — KEEP FIRE &amp; FLAME AWAY.</b> <sup>15</sup>		
<b>6.15</b> 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. <sup>15</sup>		Appropriate tank elevation.
<b>6.16</b> 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. Yes, manifold(s) on tanks installed after 2003. <sup>15</sup>		No siphons or internal pressure discharge devices present. No manifolds present on tanks installed after 2003.
<b>6.17</b> Is your tank dispenser (top-opening tank) or discharge connection (gravity discharge tank) made inoperable when not in use?	Yes, locked or otherwise made inoperable.		No. <sup>15</sup>		
<p><b>A boxed risk level</b> indicates the level required for environmental assurance verification (MAEAP verification). <b>Bold print</b> indicates a violation of state or federal regulation.</p> <p><b>Bold italic print</b> indicates conformance with Right-to-Farm guidelines.</p>					

# Petroleum Product Storage and Management (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
Aboveground Tanks					
<b>6.18)</b> Does your top-opening tank pump discharge or gravity discharge tank have a self-closing nozzle?	Yes.		No. <sup>15</sup>		
<b>6.19)</b> If you have a single-walled tank in a dike with rain protection, is your roof or canopy and supports constructed of non-combustible material and designed so vapors don't collect?	Yes.		No, combustible materials used or design is such that vapors collect under the roof or canopy. <sup>15</sup>		
<b>6.20)</b> If you have tank covered, are roof and canopy supports located on edge of dike or outside diked area?	Yes.		No. <sup>15</sup>		
<b>6.21)</b> If you have tank covered, is the lowest elevation of the roof or canopy 6 feet or higher above the top of the tank?	Yes.		No. <sup>15</sup>		
<b>6.22)</b> If you have tank covered, does the normal tank vent extend through the roof or canopy?	Yes.		No. <sup>15</sup>		

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# Petroleum Product Storage and Management (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
Underground storage tanks					
<b>6.23</b> Has your fuel tank been tested for leaks within the past three years?	Yes. No leaks detected.		No.		Appropriate report indicates no leaks present.
<b>6.24</b> Do you have corrosion protection on all parts of your tank(s) or piping that are in contact with the soil?	Yes, properly engineered, installed, maintained and inspected (every three years) corrosion protection provided for tank, piping or portions in contact with the soil.		No, tank or piping in contact with soil without corrosion protection or unmaintained protection. Not inspected at least once every three years. <sup>15</sup>		
<b>6.25</b> Do you have any unused fuel storage tanks on your farm?	If tank present, it has been emptied, cleaned of liquid and sludge, rendered vapor free and safeguarded from trespassing.		Tank present and not empty, clean and/or vapor free. Tank fill opening not secured to prevent trespassers from putting chemicals in tank. <sup>15</sup>		
Farm motor vehicle fuel storage tanks with capacity greater than 1,100 gallons					
<b>6.26</b> Is your tank registered and do you display proof of valid registration?	Yes.		No. <sup>15</sup>		Proof of valid tank registration.
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## Petroleum Product Storage and Management (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
Farm motor vehicle fuel storage tanks with capacity greater than 1,100 gallons					
<b>6.27</b> 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. <sup>15</sup>		Catch basin installed on fuel tank.
<b>6.28</b> Do you have an emergency control disconnect for electrically operated fueling systems?	Emergency control disconnect located 20 to 100 feet away from dispensing area.		No emergency control disconnect present. <sup>15</sup>		Appropriate disconnect control present.
<b>6.29</b> 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. <sup>15</sup>		Spill kit present.
<b>6.30</b> Has your fuel tank been tested for leaks within the past three years?	Yes. No leaks detected.		No.		Appropriate report indicates no leaks present.
Aboveground storage tanks with capacity greater than 1,100 gallons					
<b>6.31</b> Does your tank have secondary containment?	Yes, double walled tank or tank within diked area.		No. <sup>15</sup>		Appropriate secondary containment.

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# Petroleum Product Storage and Management (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification															
Aboveground storage tanks with capacity greater than 1,100 gallons																				
<p><b>6.32</b> How far is your tank from buildings, property lines and public ways?</p> <p>In-vault tank up to 15,000 gallons:</p> <p>Protected aboveground tank 6,000 gallons or less:</p> <p>6,000 to 16,000 gallons or less:</p> <p>Other secondary containment tank up to 12,000 gallons:</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; text-align: center;">From bldg.</td> <td style="width: 33%; text-align: center;">From lot line</td> <td style="width: 33%; text-align: center;">From public way</td> </tr> <tr> <td style="text-align: center;">15 feet</td> <td style="text-align: center;">15 feet</td> <td style="text-align: center;">10 feet</td> </tr> <tr> <td style="text-align: center;">5 feet</td> <td style="text-align: center;">15 feet</td> <td style="text-align: center;">5 feet</td> </tr> <tr> <td style="text-align: center;">15 feet</td> <td style="text-align: center;">25 feet</td> <td style="text-align: center;">10 feet</td> </tr> <tr> <td style="text-align: center;">40 feet</td> <td style="text-align: center;">50 feet</td> <td style="text-align: center;">25 feet</td> </tr> </table>	From bldg.	From lot line	From public way	15 feet	15 feet	10 feet	5 feet	15 feet	5 feet	15 feet	25 feet	10 feet	40 feet	50 feet	25 feet		Less than distance indicated for type of tank. <sup>15</sup>		
From bldg.	From lot line	From public way																		
15 feet	15 feet	10 feet																		
5 feet	15 feet	5 feet																		
15 feet	25 feet	10 feet																		
40 feet	50 feet	25 feet																		
<p><b>6.33</b> Do you have a fence to prevent unauthorized entry?</p>	Tank or property fenced or tank within vault with entry protected from unauthorized entry or vandalism.		Unprotected from unauthorized entry. <sup>15</sup>																	
<p><b>6.34</b> Do you have crash protection for your tank and piping?</p>	Yes, guard posts or appropriate barrier installed for crash protection.		No. <sup>15</sup>		Crash protection present for fuel tank.															
<p><b>6.35</b> Is your tank labeled according to its contents with letters 3 inches or more in height?</p>	Yes, labeled according to contents (Gasoline or Diesel) and with the following "FLAMMABLE [or COMBUSTIBLE] LIQUIDS" and "KEEP FIRE AWAY".		Tank not labeled. <sup>15</sup>																	
<p><span style="border: 1px solid black; padding: 2px;">A boxed risk level</span> indicates the level required for environmental assurance verification (MAEAP verification). <b>Bold print</b> indicates a violation of state or federal regulation. <b>Bold italic print</b> indicates conformance with Right-to-Farm guidelines.</p>																				

## Petroleum Product Storage and Management (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
Underground tank with capacity greater than 1,100 gallons					
<b>6.36</b> Do you have any unused fuel storage tanks on your farm?	If aboveground tank present, it has been emptied, cleaned of liquid and sludge, rendered vapor free and safe-guarded from trespassing.		Aboveground tank present and not empty, clean and/or vapor free. Tank fill opening not secured to prevent trespassers from putting chemicals in tank. <sup>15</sup>		
<b>6.37</b> Did you have a professional (trained and certified by the tank manufacturer) install your tank?	Professional installation.		No. <sup>15</sup>		
<b>6.38</b> Do you have insurance or can you demonstrate financial responsibility should you have a fuel release?	Yes, meet the \$500,000 financial responsibility level for tanks less than 10,000 gallons.		Unable to demonstrate financial responsibility for third party injury and property damage due to accidental release. <sup>15</sup>		
<b>6.39</b> Do you have any unused underground fuel storage tanks on your farm?	No, tanks have been removed from ground and the site. Excavation site checked for evidence of contamination (site assessment). Any contamination present was properly handled.	Underground tank removed or filled with inert solid material (where removal risked building damage). <b>Excavation not checked for contamination.</b> <sup>15</sup>	In-ground tank has been left unused for 12 months, or removed tank still on site. <sup>15</sup>		
<div style="border: 1px solid black; padding: 5px;"> <p><b>A boxed risk level</b> indicates the level required for environmental assurance verification (MAEAP verification). <b>Bold print</b> indicates a violation of state or federal regulation. <b>Bold italic print</b> indicates conformance with Right-to-Farm guidelines.</p> </div>					

# Waste Management

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>7.01</b> How do you manage household waste and waste generated at the greenhouse?	All waste recycled or disposed of in a licensed solid waste facility or incinerator.		Household waste burned on site (if allowed by local government). Greenhouse waste burned on site. <sup>8</sup>		
<b>7.02</b> Do you have a trash dump?	No dump or dump property cleaned up and closed.	Dump exists but is not being used.	Dump still in use.		
<b>7.03</b> If you have a household trash burn barrel or incinerator, what do you do with the ashes?	Ashes collected and disposed of at a licensed landfill.	Ashes stored or disposed of on the greenhouse site more than 300 feet from a well or surface water.	Ashes stored or disposed of on the greenhouse site within 300 feet of a well or surface water.		
<b>7.04</b> How do you dispose of hazardous product containers (treated seed packages, fertilizer bags, chemical containers, etc.)?	Recycled or reused appropriately. Or: Disposed of at a licensed landfill, or hazardous waste collection service used, or returned to the dealer.		Empty and partially filled containers burned or disposed of on the greenhouse site. <sup>8</sup>		
<b>7.05</b> How do you dispose of waste oil?	Recycled.	Burned in approved waste oil heater or furnace.	Dumped on the greenhouse site. <sup>7</sup>		Evidence of proper oil recycling or disposal.
<b>7.06</b> How do you dispose of used antifreeze?	Recycled.	Disposed of in municipal sewer (with municipality's approval).	Dumped on the greenhouse site. <sup>7</sup>		Evidence of proper antifreeze recycling or disposal.
<b>7.07</b> How do you dispose of scrap tires?	Recycled.		Disposed of on the greenhouse site. <sup>11</sup>		
<b>7.08</b> How do you dispose of lead-acid batteries?	Recycled.		Disposed of or stored on the greenhouse site. <sup>7</sup>		Evidence of proper battery recycling.

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## Waste Management (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>7.09</b> 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. <sup>7</sup>		Evidence of proper recycling or disposal.
<b>7.10</b> How far from water wells are hazardous products stored?	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 and protective site features.*		For private wells: Less than 150 feet. <sup>1</sup>  For public wells (greenhouse with employees or that is open to the public): Less than 800 feet from the farm well. <sup>3</sup>		
<b>7.11</b> 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.		Acceptable oil storage demonstrated.
<b>7.12</b> 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 <sup>4</sup> , are vulnerable to spills or drain hazardous materials to inappropriate systems. <sup>4</sup>		Quantities of hazardous materials stored in secondary containment or floor drains plugged to prevent spills or major losses from entering the drain.

\* See groundwater technician for additional information on criteria for reduced isolation distances.

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## Waste Management (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>7.13</b> Do you have mercury-containing devices on the farm? (Examples include thermostats, thermometers, irrigation switches, septic lift station switches and other switches.)	No.	Some mercury-containing devices.	Yes, many mercury-containing devices.		
<b>7.14</b> 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 <sup>8</sup> or disposed on-site.		Evidence of system for recycling or proper disposal of waste containers.
<b>7.15</b> How often is greenhouse poly changed?	Using poly or covering that will last for three or more years.	Price is the primary factor; purchase product that lasts only one to two years.			
<b>7.16</b> 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. <sup>8</sup>		Evidence of system for recycling or proper disposal of used greenhouse poly.
<b>7.17</b> Do you use bio-degradable containers?	Incorporating bio-degradable containers in program.	Have not considered or studied the use of bio-degradable containers.			
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## Waste Management (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>7.18</b> 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. <sup>4</sup>		Environmentally safe disposal of media demonstrated.
<b>7.19</b> Do you recycle other materials?	All paper, cardboard, plastic containers, aluminum and steel recycled.	Most recyclables are recycled.	Only deposit cans/bottles are redeemed		

## Septic System Management

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>8.01</b> Is the bathroom on the greenhouse site connected to a septic system to treat the waste?	Bathroom on the greenhouse site connected to septic tank and drainage field. Or, No bathroom on the greenhouse site.		No septic system. Direct discharge of wastes to environment. <sup>4</sup>		If there is a bathroom on the greenhouse site, it must be connected to a functioning septic system.

**Note: When there is a septic system for the bathroom on the greenhouse site, complete the remainder of this section for both the greenhouse septic system and the house septic system. If not, complete it for the house septic system.**

<b>8.02</b> Is your septic system adequately sized to treat wastewater generated in your house?	Tank and drainfield designed to handle more wastewater than required, based on number of bedrooms in house and soil characteristics.	Capacity just meets wastewater requirements.	Design capacity is much less than potential flow of wastewater. Or, No septic system; direct discharge of wastes to environment. <sup>4</sup>		
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## Septic System Management (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>8.03)</b> What is the age of your septic system?	Less than 5 years old.	Six to 20 years old.	More than 20 years old.		
<b>8.04)</b> What distance separates the septic tank and drainage field from water wells?	Greater than 50 feet from private wells (75 feet from public wells, including green-house with employees or that is open to the public).		Less than 50 feet from a private well <sup>1</sup> (less than 75 feet from public wells, including green-house with employees or that is open to the public). <sup>3</sup>		
<b>8.05)</b> When was the last time the septic tank was pumped out?	Within the past 5 years.	Between 5 and 10 years.	More than 10 years ago.		
<b>8.06)</b> Who pumps out the septic tank?	Licensed contractor.		Unlicensed contractor. <sup>9</sup>		
<b>8.07)</b> How is the drainfield protected from traffic, deep-rooted plants and structures?	Vehicles and other heavy objects or activities kept away from drainfield area. No deep-rooted plants, pavement or structures over the drainfield.		Vehicles, livestock, heavy objects or other disturbances permitted in area. Trees planted in or directly next to the drainfield.		
<b>8.08)</b> Are there any signs of trouble with the septic system?	Household drains flow normally. No sewage odors inside or outside. Soil over drainfield firm and dry. Well water tests negative for coliform bacteria.	Household drains run slowly or soil over drainfield is sometimes wet.	Sewage odors noticed in the house or near the drain-field. Drains plugged or backed up. Soil wet or spongy in drainfield area. Well water tests positive for coliform bacteria.		

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## Septic System Management (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>8.09)</b> What records do you maintain on your septic system?	Good map and records of system repairs and maintenance are kept.	Some records maintained.	No map and maintenance records kept.		
<b>8.10)</b> How frequently is the septic system used for grease and solid waste disposal from the kitchen?	Solid kitchen wastes and grease are not disposed of in the septic system.	Moderate use of the septic system for solids and grease disposal from the kitchen.	Frequent use of the septic system for solids and grease disposal from the kitchen.		
<b>8.11)</b> What kinds of greenhouse cleaners, solvents and other chemicals are poured down the drain?	Moderate use of cleaning products that end up in wastewater. Hazardous chemicals never poured down the drain or toilet.	Moderate use of cleaning products. Small amounts of hazardous chemicals poured down drain or toilet.	Heavy use of cleaning products. <b>Septic system used to dispose of hazardous chemicals (solvents, degreasers, acids, oils, paints, disinfectants, pesticides).</b> <sup>4</sup>		
<b>8.12)</b> How do you conserve water in your household?	Water-conserving fixtures and practices used. Drips and leaks fixed immediately.	Some water-conserving steps taken (low-flow shower heads, fully loaded washing machine or dishwasher).	No water-conserving practices. High-volume standard bathroom fixtures used. Leaks not repaired.		
<b>8.13)</b> How is water softener recharge handled?	Underground drainage separated at least 50 feet from well and septic systems (75 feet from the farm well for greenhouse with employees or open to the public).	Open ditch, farm field drain.	Septic system.		
<b>8.14)</b> How are discharges from footer drains, basement sumps and roof drainage handled?	Grassed area, open ditch, field drain.		Septic system.		

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# Nutrient Management Practices

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>9.01)</b> How are pH and electrical conductivity (EC) meters used to manage fertilizer use?	Meters-pH and EC- are present at all times for monitoring container substrate before and after planting and during growing. Instruments are calibrated regularly.	Either a pH or an EC meter is available to do troubleshooting when necessary.	Neither a pH nor an EC meter is available.		
<b>9.02)</b> How often is irrigation water monitored for alkalinity?	Water tested before every crop cycle to determine alkalinity.	Water tested once every 1 to 5 years to determine alkalinity.	Water never tested or tested for alkalinity only if there is a crop nutrition problem.		
<b>9.03)</b> How often is pre-mixed medium monitored for pH and EC?	Each shipment of premixed medium is tested for its pH and EC.	Several samples of pre-mixed medium are tested during the season for pH and EC.	Premixed medium is not tested for pH or EC.		
<b>9.04)</b> How often is on-site-mixed medium monitored for pH and EC?	Growing medium is tested at least weekly for pH and EC.	Growing medium is tested periodically for pH and EC.	Growing medium is not tested for pH or EC or, is tested only when there is a problem.		
<b>9.05)</b> How often is irrigation water monitored for pH and EC?	Irrigation water is tested for pH and EC weekly.	Irrigation water is tested for pH and EC periodically.	Irrigation water is not tested. Or, Tested for pH and EC only when there is a growing problem.		
<b>9.06)</b> How are the fertilizer stock tanks near injectors protected from leaking into groundwater?	Stock tank on concrete floor with a curb and a catch basin installed.	Stock tank on a concrete floor, no curb, or in plastic secondary containment.	Stock tank on a permeable surface.		

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## Nutrient Management Practices (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>9.07</b> How are above-ground ebb and flow storage tanks protected from leaking into ground-water?	Tanks in an isolated area, on a concrete floor with a curb and a catch basin installed.	Tanks in a traffic area on a concrete floor, no curb.	Tanks on a permeable surface, not barricaded.		
<b>9.08</b> How are under-ground ebb and flow storage tanks protected from leaking into ground-water?	Concrete structure, treated with impermeable material on the inside and outside, with catch basin below.	Concrete structure, treated with impermeable material on one side, no catch basin.	Concrete structure, no treatment of surface.		
<b>9.09</b> How often is nutrient testing done by a commercial laboratory or land-grant university?	Medium and tissue testing done several times a growing season through commercial laboratory or land-grant university.	Medium and tissue testing done through commercial laboratories or land-grant universities once a growing season.	Greenhouse company has rarely used the services of a commercial laboratory or land-grant university.		
<b>9.10</b> How is slow-release fertilizer used in your operation?	Slow-release fertilizer is used only in those crops that require high nutrient levels or are in hard-to-get-to places.	Slow-release fertilizer is used on crops requiring a lot of watering (leaching).	Slow-release fertilizer is used on all crops because of convenience.		
<b>9.11</b> How are fertilizer application rates determined?	<b>Consistent with Michigan State University (MSU) or equivalent recommendations.</b>	Occasionally exceed MSU or equivalent recommendations or crop removal rates.	Often or always exceed MSU or equivalent recommendations or crop removal rates.		Applications consistent with MSU recommendations. When MSU recommendations are not available, other land-grant university or equivalent recommendations developed for the region may be used.
<b>9.12</b> How are nitrogen fertilizer applications determined?	Nitrogen fertilizers are applied according to container substrate tests and crop requirements.	Nitrogen fertilizers are applied according to visual observation or past practices.			

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## Nutrient Management Practices (continued)

<b>Risk question</b>	<b>Low Risk – 3 (recommended)</b>	<b>Medium Risk – 2 (potential hazard)</b>	<b>High Risk – 1 (significant hazard)</b>	<b>Your Risk</b>	<b>Records or evidence for MAEAP verification</b>
<b>9.13</b> How are phosphorus fertilizer applications determined?	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.	Crop is grown with phosphorus rates higher than recommended.	High-phosphorus fertilizers are used routinely		Applications consistent with MSU recommendations. When MSU recommendations are not available, other land-grant university or industry recommendations developed for the region may be used.
<b>9.14</b> How is P management changed when phosphoric acid is used to acidify irrigation water?	Phosphoric acid credited, phosphorus fertilizer reduced.		No changes in phosphorus fertilizer applications.		
<b>9.15</b> What fertilizer records do you keep?	Maintain records of fertilizer purchases.		No fertilizer records maintained.		Fertilizer records on file (fertilizer types and quantities), or plan to maintain records in the future.

## Water Management Practices

<b>Risk question</b>	<b>Low Risk – 3 (recommended)</b>	<b>Medium Risk – 2 (potential hazard)</b>	<b>High Risk – 1 (significant hazard)</b>	<b>Your Risk</b>	<b>Records or evidence for MAEAP verification</b>
<b>10.01</b> What is your water source?	Municipal supply.	On-site well.	Stream, river or pond.		

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## Water Management Practices (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>Record keeping</b>					
<b>10.02</b> What irrigation management records are maintained?	Maintain annual records of irrigation water used or irrigation scheduling.		No irrigation records maintained.		Irrigation records on file, or plan to maintain records in the future.
<b>10.03</b> 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 significant leaching occurs. <sup>4</sup>		Evidence of a system that prevents direct discharge or leaching.

## Soil and Water Conservation Practices

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>11.01</b> What percent of the parking lot area is covered with impervious surfaces?	Less than 5 percent.	5 to 20 percent.	More than 20 percent, and no provision to manage runoff.		

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## Soil and Water Conservation Practices (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>11.02</b> How is greenhouse roof runoff water handled?	A retention pond, settling basin or man-made wetland to capture greenhouse runoff water and hold it.	Plans being made to build either a retention pond, settling basin or man-made wetland to capture greenhouse roof runoff water and hold it.	No roof runoff system in place.		
<b>11.03</b> How is the greenhouse site contoured to reduce runoff?	Site is contoured or graded to slow runoff and increase water infiltration.		No site improvements to slow runoff and increase water infiltration.		
<b>11.04</b> Are vegetative buffer strips used to reduce runoff?	Plant material such as grass, shrubs or trees used to slow water movement to streams, lakes and wetlands.		The use of a buffer strip has not been considered as a means of slowing water movement off the site.		
<b>11.05</b> How are drainage ditches and drain tiles managed?	Annually maintained in accordance with local government regulations.	Drainage ditches or drain tiles checked and maintained every two to five years.	Drainage ditches or drain tiles have not been maintained.		
<b>11.06</b> How is erosion minimized on roads, parking lots and traffic areas?	Built and maintained to minimize erosion.	A small amount of erosion does occur on the roads and parking lots.	Erosion from the parking lots/roads can be a problem and pose a risk to surface water.		
<b>11.07</b> How often is the greenhouse site evaluated for runoff problems?	Site is evaluated after each renovation or addition.	Site is evaluated every three to five years, after a number of renovations or additions.	Runoff occurs on a regular basis. No plan to address problem.		
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# Pest Management Practices

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>12.01</b> How do you control weeds outside the greenhouse?	Herbicide selection and rates are based on weed species present; scouting and thresholds are used. Where appropriate, cultural and mechanical practices are used to suppress weeds and minimize weed seed survival (cultivation, cover crops, weed barrier, mowing, etc.).	Preemergent and post-emergent herbicides used outside of buildings are selected on the basis of past performance, weed history, cost or ease of application.	Herbicides used outside of buildings are selected primarily on the basis of price or ease of application. Little consideration is given to weed species present or runoff/leaching potential or other methods of control.		
<b>12.02</b> How do you control weeds inside the greenhouse?	Hand removal, weed barrier or other cultural practices.	Herbicide used with attention to a specific greenhouse use label.	Herbicide used without attention to a specific greenhouse use label.		
<b>12.03</b> Do you use integrated pest management (IPM)?	Regularly evaluate pest populations by scouting to determine need for control/suppression.	Initiate control practices when owner or workers detect pest populations.	Apply pesticides on a regular basis as a preventive.		
<b>12.04</b> Do you use sticky card traps?	Use sticky cards at regular intervals to detect insect pests.	Sticky cards are used on some crops and read every two weeks.	Sticky cards are not used.		
<b>12.05</b> Do you use biological control agents?	Use biological agents to reduce or eliminate the use of pesticides.	Use biological agents in conjunction with pesticides for efficient pest control.	Not considering the use of biological agents.		
<b>12.06</b> Do you use other pest control options other than pesticides?	Investigate and use new cultural, mechanical and environmental controls.	Listen to others regarding new cultural, mechanical and environmental controls.	Not considering cultural, mechanical or environmental controls.		
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## Pest Management Practices (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>12.07</b> Do you consider human toxicity or health risks when choosing pest control materials?	Use only insect growth regulators (IGRs) or other new low-risk compounds instead of more toxic pesticides.	Incorporate IGRs or low-risk compounds into the program when able.	Satisfied with current higher toxicity pesticides. Does not consider human health risk in pesticide selection.		
<b>12.08</b> Do you use low restricted-entry intervals (REIs) pesticides (≤ 12 hours)?	Low-REI pesticides make up 100 percent of the program	Low-REI pesticides make up about 50 percent of the program.	Disregard REIs when selecting and applying pesticides.		
<b>12.09</b> Do you check pH and alkalinity of water used with pesticides?	Check pH and alkalinity of water source every six months, realizing that both factors can affect pesticide effectiveness.	Alkalinity and pH of water source used for pesticides checked every one to three years.	Alkalinity and pH of water source not checked or checked only if the pesticide is not working.		
<b>12.10</b> Do you spot treat pest problems?	Pesticides are applied only to infested plants.	Pesticides are applied to infested plants and surrounding plants.	The entire greenhouse range is treated on a regular basis.		
<b>Pesticide Application</b>					
<b>12.11</b> How do you protect surface and groundwater in and near greenhouses from pesticide contamination?	Pesticide labels with ground-water and surface water advisory statements are followed.		Labeled directions are not followed. <sup>6</sup> Spray applied adjacent to or over top of surface water, tile drain inlet or water well.		Pesticide labels are followed.
<b>12.12</b> Are the purchasers and applicators of restricted use pesticides (RUP) certified applicators?	<b>The purchaser and applicator of RUP comply with the certification requirements.</b>		Non-certified and unsupervised applicators use RUP. <sup>6</sup>		RUP certification confirmed.
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## Pest Management Practices (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>12.13</b> What management practices are used to prevent the development of pest resistance to certain pesticides?	Pesticides with different modes of action are rotated within a season or from one season to the next or used in tank mix where permitted. Pesticides at highest risk of resistance are not used when alternatives are available.	Some but not all pesticide modes of action are rotated or tank mixed. Pesticides at highest risk of resistance are used sparingly.	Pest resistance is not considered when selecting pesticides.		
<b>12.14</b> Is a spill kit immediately available to pesticide applicators in the greenhouse?	<b>A spill kit containing a shovel, absorbent material, PPE and a container is immediately available.</b>		No spill kit is available <sup>6</sup> or no plan is in place to contain spills.		Adequate spill kit present.
<b>12.15</b> How is pesticide rinsate disposal handled?	Excess mixtures or rinsate is used on crop or labeled site at or below labeled rates.		No plan is in place to deal with excess mixture or rinsate.		Evidence that rinsate properly managed.
<b>12.16</b> How do you ensure the proper and safe operation of pesticide application equipment?	Equipment is correctly calibrated at least annually and leaks minimized to apply intended rate and distribution pattern.		Pesticide application equipment not properly calibrated <sup>6</sup> .		Date equipment calibrated annually.

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## Pest Management Practices (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<p><b>12.17</b> What pesticide application records are kept?</p>	<p>Accurate records maintained of all greenhouse crop applications of pesticides for at least three years.</p>	<p>Partial pesticide records kept. Plan to maintain complete pesticide application records.</p>	<p>No records are kept. Chemicals used are known by memory or invoices only.</p>		<p>Pesticide records for the past three years are on file (or plans to maintain records):</p> <ul style="list-style-type: none"> <li>- Application date.</li> <li>- Application time.</li> <li>- Pesticide brand/product name.</li> <li>- Pesticide formulation.</li> <li>- EPA registration number.</li> <li>- Active ingredient(s).</li> <li>- Restricted-entry interval (REI).</li> <li>- Rate per acre or unit.</li> <li>- Crop that received the application.</li> <li>- Total amount of pesticide applied.</li> <li>- Treated area size.</li> <li>- Applicator's name.</li> <li>- Applicator's certification number.</li> <li>- Application location.</li> <li>- Application method.</li> <li>- Target pest.</li> <li>- Carrier volume.</li> </ul>
<p><b>12.18</b> Whom would you contact if you had an agriculture pollution emergency?</p>	<p>Call 911, sheriff, fire or emergency services department, the MDA Agriculture Pollution Emergency Hotline (1-800-405-0101) or the MDEQ Pollution Emergency Alerting System (1-800-292-4706).</p>		<p>Would not contact state or local authorities<sup>4,18</sup>.</p>		<p>Emergency plan on file or local emergency telephone numbers are available.</p>

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## Pest Management Practices (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>12.19</b> 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.		Evidence of system for making MSDS available to employees.
<b>12.20</b> Do applicators read and follow the pesticide label instructions?	Applicator has read complete label and follows instructions.		Applicator has not read the label.		No evidence of pesticide application contrary to pesticide label instructions.
<b>12.21</b> Is pesticide application equipment ever stored with leftover product?	Application equipment is always stored empty.	Occasionally leftover product is stored in application equipment.	Storage of leftover product in application equipment is a standard operating procedure.		
<b>12.22</b> Is loaded pesticide application equipment ever left unattended?	Sprayer containing pesticide(s) is never left unattended.	Pesticide handlers on occasion are called away from spraying activities.	Leaving sprayers with pesticide unattended is a common occurrence.		
<b>12.23</b> How often is pesticide application equipment calibrated?	Application equipment is calibrated twice a year according to manufacturer's recommendations.	<b>Application equipment is calibrated every year</b> according to manufacturer's recommendations.	Application equipment is calibrated only if there is plant damage or the pesticide doesn't seem to be effective.		Evidence of system of calibrating pesticide application equipment at least once per year.
<b>12.24</b> How often is pesticide application equipment tested?	Application equipment is tested annually to determine if it is working properly.	Application equipment is tested only if there is time.	Application equipment is tested only if it has been broken and repaired.		
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# Outdoor Production Container Management

(If you do not have outdoor containers, please skip.)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>13.01</b> 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.		No evidence of significant runoff or erosion.
<b>13.02</b> Are runoff storage areas sized adequately?	Runoff collection areas can store an average rain event.	Runoff collection areas can not store an average rain event but do not regularly flood into surface water.	Runoff collection areas overflow regularly and runoff enters surface water.		
<b>13.03</b> How is the pH of irrigation water managed?	Sulfuric acid is used to lower the pH of irrigation water.	Nitric acid or phosphonic acid is used to lower the pH of irrigation water. Nutrient credits are taken for the acidified irrigation water.	Nitric acid or phosphonic acid is used to lower the pH of irrigation water. Nutrient credits are not taken for the acidified irrigation water.		
<b>13.04</b> What type of irrigation is used?	Trickle irrigation with in-pot emitters.	Overhead irrigation with scheduled irrigation (split applications).	Overhead irrigation.		
<b>13.05</b> What fertilizers do you use to minimize nutrient loss?	Controlled-release fertilizers used or multiple applications of liquid fertilizer with minimal leaching potential.		Minimal use of controlled-release fertilizers. Use liquid fertilizer with high leaching potential.		
<b>13.06</b> Do you fertigate container stock with overhead sprinklers?	Overhead irrigation with fertigation is avoided on containers.		Overhead irrigation with fertigation is regularly used on containers.		
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## Other Environmental Risks at the Greenhouse Operation

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Your Risk	Records or evidence for MAEAP verification
<b>14.01</b> 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.		No evidence of other activities, products, processes, equipment, services, byproducts and/or wastes at this greenhouse operation that pose contamination risks to groundwater or surface water.

## Greenhouse System Improvement Action Plan

Develop your greenhouse system improvement action plan beginning on the inside cover of this bulletin. Once you have implemented your plan, you can request MAEAP verification of your greenhouse system.

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**Table 1. Greenhouse well description and isolation distances.**

Farm well information		Isolation distance (in feet) from:			
Description	Private or public	Fuel storage	Pesticide storage	Fertilizer storage	Mix/load area
1					
2					
3					
4					

**Table 2. Federal, state and local environmental requirements for operation of this greenhouse business.**

This table contains the typical requirements for a farm business. There may be additional environmental requirements due to the type of operation and location. Contact the local or state permitting agencies for further information: MDEQ Environmental Assistance Hotline — 1-800-662-9278; MDA information — 1-800-292-3939.

Environmental regulatory requirements	Description	Frequency	Administering agency	Your expiration date
Private pesticide applicator certification	Any persons using or supervising the use of restricted-use pesticides (RUP) in the production of an agricultural commodity on their own or their employer's land must be a certified pesticide applicator.	3 years	MDA/Pesticide and Plant Pest Management Division (PPPM)	
Pesticide safety training for pesticide workers	The federal Worker Protection Standard for agricultural pesticides requires employers of pesticide handlers and workers to train employees on pesticide safety. Agricultural employers must be able to verify compliance.	Each employee must be trained every 5 years	MDA/PPPM	
Farm motor vehicle fuel storage tanks greater than 1,100 gallon capacity (above- and below-ground tanks)	Fuel storage tanks have to be certified (aboveground) or registered (underground); a site plan has to have been submitted to the DEQ before the installation is placed into service. Smaller tanks have other requirements to be met.	Annual	MDEQ/Waste and Hazardous Materials Division	
Air use permit	Permit to install and operate equipment or processes which may emit air contaminants (incinerators for burning animal carcasses or manure, and bioreactors and associated equipment are examples).	Before construction	MDEQ/Air	N.A.
Groundwater discharge permit	Any discharge of waste or waste effluent into or onto the ground (e.g., egg wash water and milk cooling water [over 10,000 gallons/day] that is discharged), and any livestock facility over 5,000 animal units.	5 years	MDEQ/Water Bureau	
Well permit	A person who installs a well, pump or pumping equipment shall comply with applicable laws, regulation, ordinances and codes.	Before construction	Local health department	N.A.

**Table 2. (continued)**

<b>Environmental regulatory requirements</b>	<b>Description</b>	<b>Frequency</b>	<b>Administering agency</b>	<b>Your expiration date</b>
Septic permit (house and farm operation)	The first step in the process of determining if a piece of land that does not have municipal wastewater services available can be considered for an on-site septic system.	Before construction	Local health department	N.A.
Land and water interface construction permits	Construction activities (dredging, filling, draining, construction, structure placement) in, across, under water.	Before construction	MDEQ/ Land and Water Management Division	N.A.
Soil erosion and sedimentation control permit	Earth change activities within 500 feet of a lake or a stream, or that will disturb an area greater than 1 acre in size.	Before construction	County soil erosion permitting agency	
Water use reporting	Agricultural water users with the capacity to withdraw surface or groundwater that exceeds 100,000 gallons per day (70 gallons per minute) are required to report actual water withdrawals annually.	annual	MDA	N.A.
<b>Other environmental guidelines</b>	<b>Description</b>		<b>Administering agency</b>	
Manure management and utilization	The Michigan Right-to-Farm Act (Act 93 of 1981) requires the establishment of generally accepted agricultural and management practices (GAAMPs). Agricultural producers who voluntarily follow these practices are provided protection from public or private nuisance litigation. The GAAMPs are reviewed annually. The latest GAAMPs can be accessed at: <a href="http://www.michigan.gov/mda">www.michigan.gov/mda</a> .		MDA	
Pesticide utilization and pest control				
Nutrient utilization				
Site selection and odor control for new and expanding livestock production facilities				
Irrigation water use				
MAEAP verification: livestock, farmstead, cropping and greenhouse systems	MAEAP systems verification is valid for three years. MAEAP verification in good standing is dependent on following the practice specific to each system, being in conformance with the applicable GAAMPs, an annual plan review and update (livestock system) and updates as necessary as conditions change on the farm.		MDA	

**Table 3. Legal citations for environmental risks in Greenhouse\*A\*Syst**

Foot note	Michigan Law	Description
1	Public Health Code, Public Act 368 of 1978	Part 127: Water Supply and Sewer Systems
2		Part 138: Medical Waste Regulatory Act
3	Safe Drinking Water Act, Public Act 399 of 1976	
4	Natural Resources and Environmental Protection Act 451 of 1994	Part 31: Water Resources Protection
5		Part 55: Air Pollution Control
6		Part 83: Pesticide Control
7		Part 111: Hazardous Waste Management
8		Part 115: Solid Waste Management
9		Part 117: Septic Waste Servicers
10		Part 121: Liquid Industrial Waste
11		Part 169: Scrap Tires
12		Part 201: Environmental Response
13		Part 327: Great Lakes Preservation
14	Bodies of Dead Animals Act, Public Act 239 of 1982 as amended	
15	Fire Prevention Code Public Act 207 of 1941	
16	Grade A Milk Law, Public Act 266 of 2001	Storage and Handling of Flammable and Combustible Liquids
<b>Federal Law</b>		
17	Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)	
18	Title III of the Superfund Amendments and Reauthorization Act of 1986, also know as the Emergency Planning and Community Right-to-Know Act	
19	Worker Protection Standard for Agricultural Pesticides	
20	Clean Water Act	



