**PENN STATE UNIVERSITY**

**PESTICIDE MANAGEMENT PROGRAM MANUAL**

**A Guide for Health, Safety, and Environmental Considerations**

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# Introduction

Pesticides are natural or synthetic substances used by people to control and manage pests by disrupting some part of their life processes. The term pesticide means to “kill pests,” however pesticides also include attractants, repellants, and growth regulators, which may not kill pests. Examples of specific pesticides include:

* Algicide
* Avicide
* Bactericide
* Defoliant
* Desiccant
* Fungicide
* Growth regulator
* Herbicide
* Insecticide
* Miticide
* Molluscicide
* Piscicide
* Repellents
* Rodenticide
* Sexual sterilant
* Silvicide

Pesticides are used at Penn State in crop production, greenhouses, research, insect and rodent control in food storage and housing areas, livestock or other animal husbandry, mosquito control on water bodies, turf grass management, termite control, pool management, and in the production of ornamental gardens, parks and grounds.

Managing pesticides risks is accomplished by recognizing the potential for problems and developing prevention strategies. It is essential to recognize that improper pesticide use – transportation, storage, application, and disposal – carries the potential to cause harm to people, plants, and animals, and to degrade the environment. Recognition of hazards, initiation of corrective measures, and prevention of accidents can reduce the likelihood of problems.

In addition, it is unlawful for a person to use, handle, transport, store, display, or distribute a pesticide in a manner that endangers man or his environment or contaminates food, feed, feed supplements, medications, fertilizers, seed or other products that may be handled, transported, stored, displayed, or distributed with the pesticides

It is in everyone’s interest that the pesticides be used as minimally and as safely as possible. The purpose of the Penn State Pesticide Management Program is to address this through:

* Designating responsibilities,
* Providing a compilation of laws and regulations governing pesticide use,
* Providing certification/licensing requirements,
* Ensuring the proper storage, handling and use, and disposal of pesticides,
* Specifying training requirements,
* Ensuring that applications of pesticides by contracted vendors meet requirements,
* Providing safety information and emergency procedures, and
* Specifying documentation and record keeping requirements.

It will be noted that this program does not address the selection of specific pesticides. Applicators are trained as part of the certification process in choosing a pesticide. In addition, the use of Integrated Pest Management directs the applicator to develop a plan that includes physical, cultural, mechanical, and biological methods prior to or in combination with pesticide use, when possible.

A summary of the program requirements is given at the end of this document, as are forms.

**This Penn State Pesticide Management Program Manual is maintained as Environmental Health and Safety document number EHS-0024.**

# Responsibilities

At Penn State, safety officers, supervisors, personnel, and Environmental Health and Safety (EHS) have responsibilities to ensure that pesticides are properly handled, used, stored, and disposed in accordance with regulations and safe practices. Specifically:

* Budget Executives and Budget Administrators must:
  + Communicate to all faculty, employees and students that the health and safety of persons in the workplace and environment are of the highest priority at Penn State University;
  + Ensure that the Pesticide Management Program is implemented in the academic departments or administrative units for which they are responsible; and
  + Support measures such as training, use of protective devices, and resources to control and prevent hazards.
* Safety officers must assist in the implementation of this program within their unit, investigate accidents or exposures related to pesticides, initiate proper follow-up measures, and ensure corrective actions are implemented when unsafe conditions, practices or equipment are reported or observed.
* Supervisors must:
  + Understand the requirements of this program and ensure that they are fulfilled;
  + Ensure that required safety equipment, devices and personal protective equipment and apparel are provided and maintained, and are properly used by individuals working in their operations;
  + Ensure that Integrated Pest Management (IPM) is used;
  + Ensure that the least toxic pesticide is chosen to accomplish the job except where research requires specific protocols;
  + Take prompt corrective action when unsafe conditions, practices or equipment are reported or observed; and
  + Promptly conduct an investigation in conjunction with the safety officer of accidents or exposures, or improper use related to pesticides, and follow through to ensure corrective measures have been expeditiously implemented.
* Employees must:
  + Comply with program requirements and safety-related signs, posters, warnings, and written/oral directions when performing tasks;
  + Read and follow pesticide label directions and be knowledgeable of the hazards of the pesticides being used;
  + Wear or use prescribed protective equipment;
  + Report all unsafe conditions, practices, or equipment to the supervisor, principle investigator, or safety officer whenever deficiencies are observed; and
  + Inform the supervisor immediately of all work-related injuries or accidents and obtain prompt medical attention when necessary.
* EHS must:
  + Ensure implementation of the Pesticide Management Program; and
  + Provide oversight of the cleanup of spills and releases or improper use of pesticides and ensure that these incidents are properly reported to the appropriate regulatory authorities.

# Laws and Regulations Governing Pesticide Use

In Pennsylvania, pesticides are governed by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), the Pennsylvania Pesticide Control Act of 1973 and the regulations promulgated by the Pennsylvania Department of Agriculture (PDA), and the Federal Worker Protection Standard (WPS). In addition, spills and release of pesticides are covered by the Clean Streams Act and by the Emergency Planning Community Right-to-Know Act.

The EPA regulates pesticide use under FIFRA which provides the basis for regulation, sale and distribution of pesticides in the United States. FIFRA allows for the cancellation of a pesticide’s registration if subsequent information shows that its use poses an unreasonable risk. This law states that it is unlawful for any person “to use any registered pesticide in a manner inconsistent with its labeling.”

The Pennsylvania Pesticide Control Act and promulgated regulations cover many aspects of pesticide use in the Commonwealth including:

* Labeling, distribution, storage, and registration,
* Classification of restricted use pesticides,
* Certification of pesticide applicators,
* Licensing of pesticide dealers, pesticide application businesses, and pest management consultants,
* Registration of pesticide application technicians, and
* Notification procedures for pesticide applications.

The Worker Protection Standard is a regulation issued by the U.S. Environmental Protection Agency that governs pesticides used in the production of agricultural plants on farms, forests, nurseries, and greenhouses. **Agricultural plants include those grown or maintained for commercial or research purposes.** It requires Penn State to provide information to pesticide handlers and agricultural workers about exposure to pesticides, protection against exposure to pesticides, and ways to mitigate exposures to pesticides. **Penn State may not retaliate against anyone for complying or attempting to comply with the Worker Protection Standard.**

The WPS is aimed at reducing the risk of pesticide poisonings and injuries among agricultural workers and pesticide handlers. The WPS contains requirements for pesticide safety training, notification of pesticide applications, use of personal protective equipment, restricted entry intervals following pesticide application, decontamination supplies, and emergency medical assistance.

The WPS does not cover pesticides:

* Used for mosquito abatement or similar government-sponsored area-wide public pest control programs;
* Applied on plants that are in ornamental gardens, parks, golf courses, and public or private lawns and grounds that are intended only for decorative or environmental benefit;
* Used in a manner not related directly to the production of agricultural plants, including, for example, control of vegetation along rights-of-way and in other noncrop area, and structural pest control, such as termite control and wood preservation;
* Used for control of vertebrate pests such as rodents, unless directly related to the production of an agricultural plant;
* Applied as attractants or repellents in traps;
* Applied on pasture where the forage will not be harvested for hay or any other use;
* Applied on the harvested portions of agricultural plants or harvested timber; and
* Applied for research uses of unregistered pesticides.

Because both the federal and the state regulations apply to specific pesticide use, the types of use of the pesticide at Penn State will then dictate which regulations apply, and hence, what is required. This manual will attempt to cover all categories of use, and will specifically state when additional requirements for agricultural (agricultural plants on farms, forests, nurseries, and greenhouses) pesticide use are in effect.

Some examples of personnel who may use pesticides or come into contact with them at Penn State are given below along with the regulations which apply (definitions of “handler” and “worker” follow the table).

Table , Job Responsibilities and Regulations,

| Job Responsibility | Worker Protection Standard Applies | | Pennsylvania Department of Agriculture Regulations Apply |
| --- | --- | --- | --- |
| Handler | Worker |
| Landscape pesticide applicator (not in a nursery or greenhouse) | -- | -- | x |
| Landscape employee without pesticide responsibilities (not in a nursery or greenhouse) | -- | -- | -- |
| Greenhouse/enclosed space pesticide applicator | x | -- | x |
| Greenhouse/enclosed space worker (including researchers and students who receive any form of payment from Penn State) without pesticide responsibilities | -- | x | -- |
| Farm (including research or production) pesticide applicator | x | -- | x |
| Farm worker (including researchers and students who receive any form of payment from Penn State) without pesticide responsibilities | -- | x | -- |
| Nursery pesticide applicator | x | -- | x |
| Nursery worker (including researchers and students who receive any form of payment from Penn State) without pesticide responsibilities | -- | x | -- |
| Forest pesticide applicator | x | -- | x |
| Forest worker (including researchers and students who receive any form of payment from Penn State ) without pesticide responsibilities | -- | x | -- |
| Rodent or other vertebrate pest controllers | -- | -- | x |
| Animal workers who use pesticides | -- | -- | x |
| Pesticide applicators on turfgrass grown for commercial or research purposes | -- | -- | x |
| Workers without pesticide responsibilities (including researchers and students) on turfgrass grown for commercial or research purposes | -- | -- | -- |
| Pesticide applicators on turfgrass or other plants in ornamental gardens, parks, golf courses, athletic fields, and other grounds that are decorative or intended for environmental benefit | -- | -- | x |
| Workers without pesticide responsibilities on turfgrass or other plants in ornamental gardens, parks, golf courses, athletic fields, and other grounds that are decorative or intended for environmental benefit purposes | -- | -- | -- |
| Research use of unregistered pesticides | -- | -- | x |
| Mosquito abatement pesticide users | -- | -- | x |
| Pesticide applicators at swimming pools | -- | -- | x |
| Users of sanitizers and disinfectants not at swimming pools | -- | -- | -- |

**Additional Information for Agricultural Pesticide Use**

Throughout this manual, the terms “workers” and “handlers” will be used. As it relates to Penn State, the WPS identifies agricultural workers (“workers”) and pesticide handlers (“handlers”) as the following:

Workers – A worker is anyone who is:

1. Employed at PSU (including student employees that receive salary, wages, or other monetary compensation); and
2. Performs tasks, such as harvesting, weeding, or watering, relating to the production of agricultural plants on a farm, forest, nursery, or enclosed spaces (areas that are enclosed by nonporous coverings that are large enough to allow a person to enter such as greenhouses, polyhouses, high tunnels, mushroom houses, etc.).

Pesticide Handlers – A pesticide handler is anyone who is:

1. Employed at PSU (including student employees that receive salary, wages, or other monetary compensation) and is at least 18 years old; and
2. Uses pesticides in the production of agricultural plants on a farm, forest, nursery, or enclosed spaces (areas that are enclosed by nonporous coverings that are large enough to allow a person to enter such as greenhouses, polyhouses, high tunnels, mushroom houses, etc.); and
3. Performs any of the following tasks:

* Mixing, loading, transferring, or applying pesticides;
* Handling opened containers of pesticides; emptying, triple-rinsing, or cleaning pesticide containers according to pesticide product labelling instructions; or disposing of pesticide containers that have not been cleaned;
* Acting as a flagger;
* Cleaning, handling, adjusting, or repairing, the parts of mixing, loading, or application equipment that may contain pesticide residues;
* Assisting with the application of pesticides, including incorporating the pesticide into the soil after the application has occurred, or dipping plant cuttings into rooting hormones that are registered pesticides;
* Entering a greenhouse or other enclosed area after application and before the inhalation exposure level listed on the product labeling has been reached or one of the WPS ventilation criteria have been met to:
  + - Operate ventilation equipment,
    - Adjust or remove coverings, such as tarps, used in fumigation, or
    - Check air pesticide concentration levels;
  + Enters a treated area outdoors after application of any soil fumigant to adjust or remove soil coverings, such as tarpaulins;
  + Performs tasks as a crop advisor:
    - During any pesticide application,
    - Before any inhalation exposure level or ventilation criteria has been reached or one of the WPS ventilation criteria has been met,
    - During any restricted-entry interval; or
  + Disposes of pesticides or pesticide containers.

**At Penn State, anyone who applies pesticides must be a certified pesticide applicator. The only employees that can be pesticide handlers under the WPS but not certified pesticide applicators, are those that work on equipment that may be contaminated with pesticides.**

A person is not a handler if he or she only handles pesticide containers that have been emptied and cleaned according to instructions on pesticide product labeling, or if the labeling has no such instructions, have been triple-rinsed or cleaned by an equivalent method, such as pressure rinsing. A person is not a handler if he or she is only handling unopened pesticide containers and is not at the same time doing any handling work.

**Note: A handler, as identified by the Federal Worker Protection Standard, who applies pesticides is an “applicator” under the Pennsylvania regulations. Handlers are also workers under the WPS.**

# Certification/Licensing Requirements

Under the Pennsylvania Department of Agriculture (PDA) regulations, applicator certification is divided into three groups – Commercial Applicators, Public Applicators, and Private Applicators.

Penn State is defined by the PDA as a public applicator because it is a state-related entity engaged in the application of pesticides. Businesses, such as Penn State, must be licensed to apply general **or** restricted use pesticides. The license must be obtained indicating the certification categories in which the business makes applications. The business must, at all times, employ an applicator certified for each category in which it intends to make a pesticide application.

Because Penn State operates at multiple locations, we must maintain separate business licenses and records for each location. Supervisors of pesticide applicators or facilities must ensure that a business license has been obtained and is current. Licenses are obtainable through the [PDA](http://www.agriculture.state.pa.us/portal/server.pt/gateway/PTARGS_0_2_24476_10297_0_43/http%3B/10.41.0.77/AgWebsite/ProgramBrowse.aspx?action=browse-by-organization&navid=12&parentnavid=0&orgid=22&). Vehicles involved in the application phase of a business are required to display the business license number in 3-inch letters and numerals (see [Section V.B.2, General Requirements for Pesticide Use](#_General_Requirements_for)). This applies to all motorized vehicles – on or off-road.

There are currently 26 categories of commercial and public applicators. To be eligible for certification, a person must pass two written examinations (core and category) and be employed by a pesticide application business. Once exams have been successfully passed, that person has 12 months to apply for certification with the PDA. To maintain certification, applicators must attend update training programs in core and appropriate category-specific topics. Six core credits and from four to ten category credits (depending on the category in which the applicator is certified) are required every three years. The categories of public applicators are:

1. Agronomic crops – agricultural crops including tobacco, grain, soybeans, and forages, and the application of pesticide to noncrop agricultural land
2. Fruits and nuts – tree fruits, nuts, and berries
3. Vegetable crops
4. Agricultural animals – animals including beef cattle, swine, sheep , horses, goats, poultry, or other livestock, and the premises where the animals are confined
5. Forest pest control – forest, forest nursery, or forest seed producing area
6. Ornamental and shade trees – ornamental trees, shrubs, flowers, or other ornamentals
7. Lawn and turf
8. Seed treatment
9. Aquatic pest control – standing or running water, excluding the use of pesticide in a public health-related activity
10. Right-of-way – along a public road, power line, etc.
11. Household and health related – food handling establishments, human or nonagricultural animal dwellings, schools or hospitals, warehouses, grain elevators, and other types of structures
12. Wood destroying pests
13. Structural fumigation
14. Industrial weeds – vegetation around a structure such as a used oil tank, an airport runway, a parking lot, or a fence
15. Public health vertebrate pest control
16. Public health invertebrate pest control
17. Regulatory pest control – to control an organism designated by the Commonwealth or by the federal government to be a pest requiring regulatory restrictions or control procedures to protect man or the environment
18. Demonstration and research pest control
19. Wood preservation – includes pole treating or restoration and the use of fumigant for in-place treatment of utility poles
20. Commodity and space fumigation
21. Soil fumigation
22. Interior plantscape – plants located within an enclosed structure
23. Park or school pest control – campground or recreational area of a public or private park (schools are defined as preschools, kindergartens, elementary schools, and secondary schools)
24. Swimming pool
25. Aerial applicator
26. Sewer root control

At Penn State pesticides may only be applied by a certified applicator in the category for which he/she is certified. A person must be at least 18 years old to become a certified applicator.

Registered technicians are those applicators who have completed minimum training requirements under the direction of an applicator with at least one year's certification in the category for which the technician is being trained. They must also be under the supervision of a certified applicator who can be on site within five hours if necessary. **At Penn State, registered technicians are not permitted, and applications may be made only by a certified applicator. In rare cases, such as for academic experiences or emergencies, exemptions may be granted by EHS, however these will only be short term. Contact the EHS office for more information.**

Pesticide research in laboratories, which does not involve pesticide applications, does not require the researcher to be a certified pesticide applicator or to have a public applicator business license. However, applications for research of both registered and unregistered pesticides require that the facility has both a business license and a certified applicator in the appropriate category.

# Proper Storage, Handling and Use, and Disposal of Pesticides

## Storage

Proper storage of pesticides is necessary to prevent exposure to individuals and the accidental release of these materials into the environment as a result of leaks or spills. **Pesticides may never be stored in containers which have been labelled for food or drink or in refrigerators that are used for food storage.** They should be stored in their original container.

A pesticide storage facility has up to four components: a storage room, a mixing/loading room or area (if mixing will be done on-site), an area for safety equipment (including personal protective equipment) and record keeping, and an area for equipment rinsing. At some facilities, mixing and loading, as well as rinsing are done in the field (see below). Decontamination supplies (see [Section V.B.9](#_Decontamination_Supplies), Decontamination Supplies, below) are required at every mixing/loading area and rinsing area. In addition, these areas should be well ventilated. A fume hood must be used if required by the pesticide label. All facilities must have a clean area to dress and wash available.

A monthly inspection of each pesticide facility is required using the checklist given in [Section XIII, Forms](#_Forms). Supervisors must ensure that the monthly inspection is performed. The inspection is used to document that the facility meets all regulations and that hazards have been minimized.

### Properly Store Pesticides

The following storage practices must be followed, where applicable:

* Do not store pesticides on wooden shelving without secondary containment, as it can absorb pesticides.
* Store heavier bags of pesticides off the floor and low to the ground.
* Store liquid pesticides in secondary containment inside buildings on easily reachable shelves. Secondary containment can consist of a bucket, bin, containment pallet, etc. The purpose of the secondary containment is to keep liquid pesticides that might leak out of a container from reaching the environment. If the pesticide storage room is designed so that a spilled pesticide would be contained within the storage room, then the room is considered to provide adequate secondary containment.
* Segregate pesticides from other chemicals, as well as fertilizers and feeds – separate insecticides and fungicides from herbicides; store volatile liquids separately.
* Ensure that all pesticides are always properly labelled with the product name and active ingredient, and that the product label is readily available. Laminated tags will hold up better over time.
* Date all containers and use older inventory first.
* Keep an annual inventory of pesticides (see [Section XIII, Forms](#_Forms)); place a copy of the information in a location that is accessible to emergency responders.
* Ensure that access to Safety Data Sheets (SDSs) is available either in hard copy or through web access. You must have access to labels and safety data sheets for a period of three years following the use of a pesticide. The [Penn State Extension Pesticide Education](http://extension.psu.edu/pests/pesticide-education/applicators/labels-and-msdss) website provides links to pesticide SDSs and labels. The [National Pesticide Information Center](http://npic.orst.edu/NPRO/) also provides this information on its website.
* Maintain proper temperature, ideally between 40º and 90ºF, without excess humidity
* Keep containers out of direct sunlight.
* Keep all containers tightly closed; reseal packages with tape and staples as needed,
* Provide a location to store clean empty containers and those needing to be cleaned,
* Post pesticide warning on the door of the pesticide storage room “Danger – Pesticide Storage Area” as shown below.

Figure , Pesticide Storage Area Sign



* Maintain an appropriate spill kit including:
* Personal protective equipment - gloves (nitrile at least), footwear, apron, disposable coveralls, and goggles;
* Small broom, dust pan and small shovel;
* Spray bottle (for wetting down small spills on windy days);
* Paper towels;
* Absorbent material – loose, pads, pillows, and socks;
* Plastic cover/tarp for dry spills; and
* Plastic bags (to collect recovered materials for proper disposal)
* Clean up spills and leaks in the pesticide storage area immediately (see [Section VIII.D, Pesticide Spills](#_Pesticide_Spills)).
* Maintain a first aid kit.
* Maintain a fire extinguisher (minimum 10 lb. ABC inside building and within 50 feet of the pesticide storage room).
* Provide adequate ventilation.
* Secure against vandalism; promptly report all thefts or suspicious activity.
* Provide emergency contact information (see [Section VIII.A, Preplanning for Emergencies](#_Preplanning_for_Emergencies)).

The list below contains best management practices. These should be followed wherever possible, and should be considered in the design of a facility and in facility upgrades:

* Do not use wooden shelving for pesticide storage;
* Keep pesticide storage areas at least 100 feet from surface water and wells/springs;
* Ensure that the storage area does not flood; and
* Store pesticides in a cement-floored room to ease spill clean-up; reseal the floor as needed.

### Prevent Surface and Ground Water Contamination

Ensure that there are no floor drains in the pesticide storage room, or if present that they flow to appropriate holding tanks. Seal any drains which do not flow to the correct location. Ensure sink drains are properly connected to either the sanitary system or to the holding tank if they are used for pesticide rinsing. Establish procedures to ensure that holding tanks, if present, are inspected and emptied as needed.

### Reduce Quantities of Unused Pesticides

Mix only the amount that is needed. Order only the amount needed. Eliminate research pesticides that have been stored for more than three years by returning to the manufacturer. Pesticides that are used for operations may be kept up to eight years, but check with the manufacturer to see if the pesticide is still good. Recycle unopened and unused pesticides through EHS. Use CHEMSWEEP and the EHS Chemical Waste Management Program for disposal (see [Section V.C, Disposal](#_Disposal) below).

### Properly Store Safety Equipment

Each facility must have a location to store personal protective equipment (PPE) and other safety equipment, such as absorbent materials and first aid kit, which is separated from pesticide storage and is uncontaminated. Ideally this location is also the location for decontamination supplies, and the safety shower and eyewash station (see [Section V.B.9, Decontamination Supplies](#_Decontamination_Supplies)). This location should be easily accessible to the pesticide storage room so that PPE can be easily obtained. All of the PPE that is required to be worn for the pesticides stored at the facility must be available.

### Mixing/Loading Area Considerations

Mixing/loading of pesticides at Penn State is performed in a variety of manners. Some facilities mix their pesticides at a designated mixing/loading area. They then take the mixed pesticides to the application site. Other facilities mix the pesticides at the application site. Still other facilities have sprayers that are designed to mix while spraying, and pesticide concentrate and water tank remain separate. Each of these practices has advantages and disadvantages, but good practices can be used to reduce the risk of spills, contamination, or other incidents.

Mixing and loading at a facility has the advantage of being in a controlled, designed location, with easy access to water, and spill control materials if needed. The disadvantage to this practice is that the mixing and loading area may be subject to repeated, albeit small, spills. If mixing is performed at a facility on a paved or concrete surface, spills should be cleaned up promptly. If performed on an unpaved area or at an application site, it is important to not use the same area for mixing over and over again to reduce the possibility of numerous spills over time causing contamination in one area. Facilities that have sprayers that mix in the pesticides as they are spraying have the advantage of transporting tankers of water rather than mixed pesticide, so releases from hoses or damaged equipment will cause no harm. They are, however, carrying concentrated pesticides in smaller tanks which would cause greater harm than a diluted pesticide mixture should they have a release.

### Backflow Prevention

When filling pesticide tanks, backflow may occur if there is not an air gap between the tank and the hose used to provide water. In order to prevent this from occurring, install a small water tank that can be used to supply water for mixing pesticides, or a backflow prevention device should be installed on the water supply line to provide protection against backflow into a well or public water supply.

### Pesticide Rinsing Area

Similarly to mixing and loading, pesticide equipment rinsing is performed at Penn State both at the facility and in the field. In addition, those facilities that have equipment that mixes pesticides while they are being applied do not have to perform any rinsing. If needed, ideally rinsing of the equipment should be done in the field, with the rinsate then sprayed out over an area that the pesticide can be used on. Many facilities have designated areas for this, particularly where they use pesticides for few types of crops. It is required that the pesticide rinsate be sprayed on an area that the pesticide label allows. For example, a pesticide intended for fruit trees may not be able to be sprayed on turf unless the label specifically allows this. Some facilities use very few types of pesticides and can designate a specific sprayer only for that type of material, thereby eliminating the need to rinse the tank. In all cases, the quantity of mixed pesticide should be such that there is none left at the completion of the job.

Pesticide equipment should be triple rinsed after applications to ensure that residues in the tank do not cause unwanted effects to plants. The outside of the tank as well as nozzles should be cleaned. Pay particular attention to these areas:

* Sprayer surfaces or components where buildup of dried pesticides may occur;
* Sumps and pumps on the sprayer; and
* Around irregular surfaces on the sprayer, around baffles, and mixing units.

The document “[Cleaning Pesticide Application Equipment](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&cad=rja&uact=8&ved=0ahUKEwiV2IeEnc3VAhWJyoMKHR5wAWYQFgg5MAM&url=http%3A%2F%2Fextensionpublications.unl.edu%2Fassets%2Fpdf%2Fg1770.pdf&usg=AFQjCNHkRnnPyxI9QfArryQa2gpppfK2ng)” by the University of Nebraska- Lincoln Extension provides excellent guidance on this process.

Applicators performing this task should wear the label required personal protective equipment for making an application as well as a chemical-resistant apron. Also always wear protective eyewear, even if the label does not require it for the pesticide application. When rinsing is done at the facility, there must be provisions for capturing and properly disposing of the rinsates. Usually this is done by draining the wash area into a tank. It is important to have a process in place to ensure that these tanks do not get overfilled. Facilities that would like to install a rinsing area must contact EHS for guidance.

Rinsing the sprayer tank in the field where the pesticide has been applied is a good option if there is available water. A clean water tank attached to the sprayer can serve this purpose. A tank of 20 to 30 gallons is usually sufficient to triple rinse a 400 gallon spray tank and the clean water may also be used to meet the requirement for decontamination supplies. More water may be required for larger tanks. The tank should be clearly marked “Clean Water Only” or similarly.

For those facilities that have neither a rinsing area nor an attached clean water tank, the rinsing of the pesticide spray equipment can be time consuming, especially if there is not an area near the facility to spray out rinsate. In these situations, the applicator needs to make three trips from the facility to the spray location in order to properly rinse out the sprayer.

To triple rinse the spray tank, use as little water as possible and completely rinse down the inside of the tank. Then spray the rinsate onto the target area. It is a good practice to vary the target area so that pesticide residues are not concentrated. Perform this rinse and flush procedure three times, flushing the pump, lines, and booms.

## Handling and Use

### Integrated Pest Management (IPM)

The Pennsylvania Integrated Pest Management Program is a collaboration of The Pennsylvania Department of Agriculture and The Pennsylvania State University. The goal of this program is to promote Integrated Pest Management in both agricultural and nonagricultural environments.

The object of IPM is to prevent pests from reaching economically damaging populations. IPM is a pest management strategy that uses a full range of pest control methods in a cost efficient and environmentally sound manner. Pesticides are just one method for controlling pests. Nonchemical methods may provide longer and more permanent control of a pest and should be considered when developing a pest management strategy.

There are six steps to IPM

1. Identify pest
2. Understand pest biology
3. Monitor environment to determine pest levels
4. Determine action threshold
5. Choose tactics
6. Evaluate results

Pest management tactics include:

1. Cultural – routine management practices that prevent pests from developing (e.g., good sanitation, tilling soil, pruning plants),
2. Physical – manipulation of the pest environment (e.g., change in temperature, humidity, light),
3. Mechanical – devices that prevent the spread or reduce infestation (e.g., screens, fences),
4. Biological – encouragement of plants or animals that are predators or parasites of the pest,
5. Genetic – manipulation of pest genetics to reduce populations (e.g., introduction of sterile males),
6. Legal – limit the development of pest populations by restricting human activities (e.g., inspections, quarantines), and
7. Chemical – the use of natural or synthesized chemicals (e.g., repellents, herbicides, growth regulators).

IPM encourages the use of cultural and physical or mechanical methods first, with chemical methods as a last resort.

At Penn State, everyone must use IPM except those persons who are performing research where specific pesticide protocols are necessary. Facilities are encouraged to develop written IPM procedures. More information is available on the [Pennsylvania IPM website](http://paipm.cas.psu.edu/).

### General Requirements for Pesticide Use

A person may not use, handle, transport, store, display, or distribute a pesticide in a manner that endangers man or his environment or contaminates food, feed, feed supplements, medications, fertilizers, seed or other products that may be handled, transported, stored, displayed, or distributed with the pesticides.

Pesticides must not be used when weather conditions are such that the pesticide application could move off-site. They may not be applied on anyone else’s property without first obtaining permission, nor can they be used in a way that causes unwanted residues on the property of another.

Each pesticide must be registered or be used under the provisions of an experimental use permit, or be research conducted under the exemption of an experimental use permit.

**Every vehicle involved in pesticide application is required to prominently display the business license number assigned by the PDA. The number must be in figures at least three inches high and located on the side of the vehicle at a readily visible location.**

When a pesticide is to be applied as a fumigant, Standard Operating Procedures must be established and reviewed by Environmental Health and Safety (814-865-6391) prior to fumigation.

### Protected Designated Areas

Application of restricted use pesticides is not permitted within 100 feet of certain publicly owned or designated lands unless a waiver is granted by the PDA. Lands affected by this restriction include:

* State forest land designated as “Natural Areas and Wild Areas”
* Areas containing rare or endangered organisms

### Prior Notification

This section provides the requirements for prior notification for various types of pesticide applications. Not all pesticide applications require prior notification.

Prior notification refers to notification of a proposed application of pesticides given not more than 45 days and not less than 14 days prior to the date of application and which includes the following information:

1. The proposed range of dates of application.
2. The municipalities where the proposed application sites are located.
3. The name, address, and telephone number of a person to whom a request for additional information should be directed.

A person who receives prior notification may make a request to receive additional information. The request must be made at least seven days prior to the proposed application. Penn State must then provide the following information at least 12 hours prior to the time of application:

1. The proposed date and time of application, and
2. The brand name of every restricted use pesticide to be applied, including the EPA registration number.

Upon request, Penn State must within 10 days of the request provide a copy of the label for every restricted use pesticide to be used.

In addition to the specific requirements given in the subsections below, supervisors must keep records of the notifications. The following records shall be kept:

1. A copy of the newspaper advertisement or a statement describing other methods of prior notification as required below (e.g., a copy of the written notification to the applicable residences).
2. The name and address of every person requesting additional information.
3. The date and time of individual notification.
4. A copy of correspondence relating to prior notification.

These records need to be kept for three years and must be available to the PDA upon request.

The requests for notification expire on December 31st of the year in which it was made.

Note: Land contiguous to a restricted use pesticide application site is defined as “Premises which share a mutual border with the premises upon which the application site is located. The term does not include premises located more than 100 feet from the application site.”

#### Nonagricultural Specific Site Application

Penn State pesticide applicators may not make a nonagricultural specific site application of a **restricted use** **pesticide** (as noted on the label) without first giving prior notification orally or by certified mail to every person residing in a dwelling on land contiguous to the application site. A specific site application is defined as a nonagricultural pesticide application made by or at the direction of a person to property owned or rented by that person. An example of this would be an application of a restricted use pesticide to a gravel parking lot to control weeds. The area sprayed must be less than 25 acres to be considered a specific site application.

The following pesticides applications do not require prior notification:

1. An application within a detached structure,
2. An application of a restricted use pesticide where applied directly below the soil surface, except where a well or spring is located within 25 feet of the application site or where a soil fumigant is used, or
3. An application of a pesticide in a tamper resistant bait tray or placed in a rodent burrow which is inaccessible to children or pets.

#### Ornamental or Turf Application

A person who lives on a neighboring property and wishes to be notified of future pesticide applications to lawn, turf, ornamental or shade trees shall submit a written request to Penn State. This notification is limited to applications made by pesticide application businesses operating under pesticide applicator Category 06 or 07 (relating to ornamental and shade trees; and lawn and turf) and is limited to neighboring property sharing a mutual property border within 100 feet of the pesticide application site. This written request for notification must provide the neighboring property owner’s name and street address for each neighboring property where a pesticide application may occur and notification is desired. The requirement to notify becomes effective seven days following receipt of the request by the pesticide application business. There is no requirement to provide general notification to anyone – it must be specifically requested. Upon receiving a written request for notification at least seven days prior to the application date, the Penn State applicator shall make constructive notification to the requester at least 12 hours prior to the application.

#### Nonagricultural Area-Wide Application

When Penn State applicators are proposing to make an area-wide application of a **restricted use pesticide**, they must first make notice in two newspapers of general circulation in the affected area. An area-wide application is defined as a nonagricultural pesticide application to areas of 25 or more contiguous acres. At least seven days prior to the proposed application date, a person residing in a dwelling on land contiguous to the application site may request additional information from Penn State. Upon the request, the Penn state applicator shall make constructive notification and provide the information at least 12 hours prior to the time of application.

#### Agricultural Application

Penn State may not apply a **restricted use pesticide** for an agricultural purpose without first giving prior notification in two newspapers of general circulation in the affected area.

At least seven days prior to the proposed application date, a person residing in a dwelling on land contiguous to the restricted use pesticide application site may request additional information from Penn State. The person making the request shall identify his/her name and address and must share a common border and be within 100 feet of the application. Following this request, the Penn State applicator shall make constructive notification at least 12 hours prior to the time of application.

In lieu of the newspaper notice publication, facility supervisors may give prior notification orally or by certified mail to every person residing in a dwelling on land contiguous to the restricted use pesticide application site at least 18 hours before the time of application. In lieu of this notification, an applicator may post placards at usual points of entry to the application site and at the borders with adjoining properties owners at least 18 hours prior to the time of application. This placard must remain posted until the conclusion of any restricted reentry time listed on the pesticide label. The placards must be at least 8 1/2 inches by 11 inches in size and be printed with ‘‘Public Notice of Pesticide Application’’ and contain the Penn State business’s name (as indicated on the pesticide license), address, phone number and the brand name of every restricted use pesticide to be applied including the EPA registration number.

An application of a restricted use pesticide does not require prior notification where applied directly below the soil surface, except where a well or spring is located within 25 feet of the application site or a soil fumigant is used.

### Experimental Use Permit and Exemptions

EPA grants permits to allow a pesticide producer to test a new pesticide, product, or use outside the laboratory. Experimental use permits (EUPs) are used for large-scale testing of efficacy and gathering of environmental fate, ecological effects, and crop residue chemistry data. The EUP sets requirements for transportation, application, and disposal of unregistered test products. Regulations governing EUPs are found in 40 CFR 172. Generally these permits are granted to a manufacturer and Penn State may be a cooperator under the permit.

Experimental use of pesticides may be performed without a permit under the following conditions:

* The application area is under 10 acres (if land) or one acre-foot (if water),
* The pesticide use is experimental and limited,
* There is no financial gain from the use of the pesticide, and
* The food or feed crop is destroyed.

In the event that a pesticide with an approved EPA experimental use permit is used, the PA Department of Agriculture must be notified. The notification must include copies of the EPA approval letter, product label, and a list of participants and cooperators involved in the program. Please note the Worker Protection Standard applies to research that involves registered pesticides on unregistered pests or crops.

### Pesticide Hypersensitivity Registry

The PDA requires that prior to a pesticide application, each individual on the pesticide hypersensitivity list within 500 feet of the application site must be notified. A list of hypersensitive individuals is sent by the PDA to certified applicators on a quarterly basis. It is every supervisor’s responsibility to determine if anyone on the list is located within 500 feet of property where pesticides may be applied by their facility. The notification shall consist of providing the following information:

* Date, location (application site), earliest possible start time and latest possible finish time of application. The range between the start and finish time shall be no more than 24 hours.
* Brand name, EPA number, and active ingredient common name (if on the label) of the pesticide products which may be used.
* The name, address, telephone number, and pesticide business license number of the pesticide application business.
* If requested by the hypersensitive individual, a copy of the label for every pesticide used must be provided within 10 days of the request.

The notification must be made by telephone, personal contact, email, or certified mail between 12 and 72 hours prior to the pesticide application. The notification requirements are met if the information is placed on an answering machine activated by calling the registrant’s telephone number, or if the information is given to an adult at any of the contact numbers. If the contact cannot be made by at least two attempts by telephone, notification can be made by placing the written information on the front door of the listed residence or location. A record shall be kept of every contact and contact attempt. An email notification must have a response from the recipient. All records of notifications must be kept for a period of three years and be available to the Department of Agriculture or a medical facility, if requested.

The following types of pesticide applications do not require notification under this section:

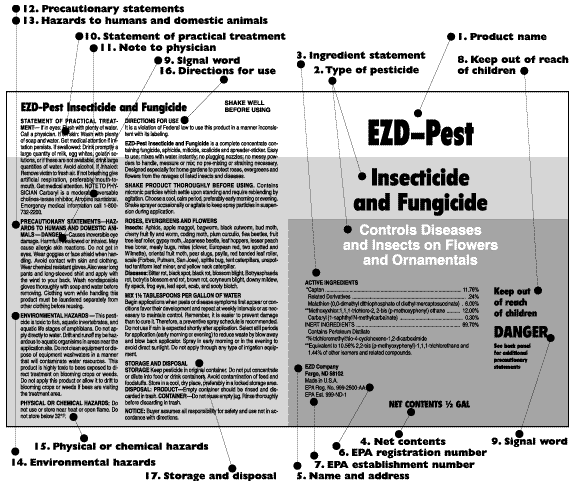
1. An application within a single family detached residence,
2. An application of a pesticide below the soil surface,
3. An application of a pesticide in a tamper resistant bait station,
4. An application of a pesticide to a tree by means of injection,
5. An application of a disinfectant or sanitizer, or
6. An application to a swimming pool.

At Penn State we strive to be mindful of concerns over pesticide use. We limit pesticide applications in areas where there are children present, such as daycares. In addition, if a person wants to be notified about pesticide applications (even if they are not on the hypersensitivity list), we try to oblige. These persons should contact EHS to be added to the notification lists.

### Pesticide Labels/Selection

All pesticide labels are required to contain specific types of information including the use, site, and target pest requirements as well as mixing, application, safety, environmental, storage, and disposal precautions. These are the minimum standards for using the product safely. It is the responsibility of the user to follow the label in its entirety. **It is a violation of federal and state law to use the product inconsistent with its labeling.**

Figure , Sample Pesticide Label



The pesticide label contains the following information at a minimum:

1. Trade, Brand, or Product Name: The trade or brand name shows up plainly on the front panel of the label, and often indicates the type of formulation and the percentage of active ingredient.
2. Type of Pesticide: This section provides information in general terms of what the pesticide will control, for example: “Insecticide for the control of certain insects on fruits, nuts, and ornamentals” or “Herbicide for the control of woody brush and weeds.”
3. Ingredient Statement
   * Active Ingredient: This section identifies the active ingredient in the pesticide.
   * Other Ingredients (Inert Ingredients): This section identifies the percent of other or “inert” ingredients in the pesticide. These may or may not be shown on the label. They do not control the pest, but serve other purposes such as dissolving active ingredients or affecting how the product works.
4. Net Weight/Net Contents: This section identifies how much pesticide is in the container.
5. Manufacturer’s Address: This section also may include the phone number of the manufacturer or distributor of the product.
6. EPA Registration Number: All pesticides sold in the US must be registered with the EPA. The registration number shows the product has been reviewed by the EPA and that the EPA has determined the product can be used with minimal risk if the directions on the label are followed properly.
7. EPA Establishment Number: The section provides the number which identifies the particular facility where the final phase of production of the pesticide took place.
8. Keep Out of the Reach of Children: This is required to be listed on all pesticides.
9. Signal Word: On the label is one of the following signal words: Caution, Warning, Danger, or Danger – Poison. The signal word indicates the pesticide’s potential hazard level to humans, with “Caution” being the least harmful and “Danger – Poison” the most harmful. If a pesticide is labelled as “Danger – Poison,” it is due to high oral, inhalation, or dermal toxicity and is also required to have “poison” written in red and the skull and crossbones symbol. Generally, the more toxic a pesticide is, the greater the requirement for PPE.
10. Statement of Practical Treatment - First Aid Instructions: This section provides information on procedures if someone accidentally swallows or breathes the pesticide, or gets it into their eyes or on their skin.
11. Note to Physicians: Labels may also include a “Note to Physicians” which provides doctors with specific medical information.

12, 13. Precautionary Statements, Hazards to Humans and Domestic Animals: This section describes potential hazards to people or pets and actions that can be taken to reduce these hazards. The minimum personal protective equipment (PPE) required to be worn is included in this section, or is sometimes listed as its own section.

* + Typical DANGER-POISON label statements include:
* Fatal if absorbed through skin. Do not get in eyes, on skin, or on clothing.
* Fatal if inhaled. Do not breathe (dust, vapor, or spray mist).
  + Typical DANGER label statements include:
* Fatal if swallowed
* Poisonous if inhaled
* Extremely hazardous by skin contact – rapidly absorbed through skin
* Corrosive – causes eye damage and severe skin burns
  + Typical WARNING label statements include:
* Harmful or fatal if swallowed
* Harmful or fatal if absorbed through the skin
* Harmful or fatal if inhaled
* Causes skin and eye irritation
  + Typical CAUTION label statements include:
* Harmful if swallowed
* May be harmful if inhaled
* May irritate eyes, nose, throat, and skin

1. Environmental Hazards: If the product is potentially harmful to wildlife, fish, endangered plants or animals, or may adversely impact wetlands or water resources, this section will provide additional information on what to do to avoid environmental damage.
2. Physical or Chemical Hazards: This section notes hazards such as corrosivity or flammability of the product.
3. Directions for Use: This section contains information on what the pesticide controls, and where, how, and when to use the product. The restricted entry interval (REI), if it exists, may also be given in this section.
4. Storage and Disposal: This section provides the best method to store the product and what to do with the unused portion of the product and the empty container (Refer to [Section V.C](#_Disposal), Disposal for disposal requirements).

**Additional Information That May Be On the Label:**

* Use Classification Statement: Every pesticide is classified by EPA as either a General Use or Restricted Use pesticide. Every restricted use pesticide must include the following statement: “Restricted Use Pesticide. For retail sale to and use only by certified applicators or persons under their direct supervision and only for those uses covered by the certified applicator’s certification.” Some general use pesticides may not have a use classification statement.
* Agricultural Use Requirements: This section is found on product labels that are covered by the Worker Protection Standard. It provides requirements for training, decontamination, notification, emergency assistance, PPE, and restricted entry intervals. Note that some pesticide uses are not covered by the Worker Protection Standard as discussed in [Section III](#_Laws_and_Regulations), Laws and Regulations Concerning Pesticide Use, even if the product bears this label.
* Warranty Statement:This statement is intended to limit the liability of the company or to act as a disclaimer or as a warranty for the product.

Pesticides come in many formulations including: emulsifiable concentrates, solutions, soluble powders, wettable powders, flowables, dry flowables/water dispersible granules, micro-encapsulated pesticides, dusts, granules, baits, aerosols, and fumigants. Choosing the right formulation for a particular job is part of choosing the right pesticide. Generally, emulsifiable concentrates present higher risks of skin absorption due to the presence of petroleum-based solvents. Inhalation hazards are present for soluble and wettable powders, aerosols, and fumigants, whereas dry flowables, granular, and microencapsulated formulations have much less dust.

The hazard of a pesticide is a function of both the toxicity and the exposure. Toxicity is a measure of the capacity of the pesticide to cause injury. Hazard or risk is the potential for injury or the degree of danger involved with using a pesticide under a given set of circumstances or conditions. The potential hazards of pesticide use can be lowered by reducing the concentration of the pesticide purchased, using the least toxic pesticide for the job, and selecting a method of application that minimizes personal contact.

The pesticide applicator must read the label prior to using the product and must be aware of all of the labeling requirements related to the safe use of the pesticide such as signal words, human hazard precautions, PPE requirements, first aid instructions, environmental precautions, and any additional precautions pertaining to the handling activity to be performed. In addition the pesticide handler must have access to the label during handling activities.

### Personal Protective Equipment

In order to prevent exposure to pesticides, personal protective equipment (PPE) is required during preparation and use of the material. PPE for pesticide applications includes gloves, eye protection, respirators, protective clothing, and headgear. The types of PPE required vary according to the toxicity of the pesticide and the route of exposure. **The pesticide label contains complete information on the required PPE.** It is important to understand that the PPE listed on the pesticide label as required by the WPS and the PDA provides the minimum protection. The applicator may elect to wear more protective clothing or equipment than that required with the exception of respirators, which may only be worn if the applicator has the approval of the supervisor and safety officer, and is in compliance with all relevant aspects of the EHS Respiratory Protection Program (see [Section V.B.8.c](#_Respirators), Respirators below). Each facility must have all of the PPE required for the pesticides that are applied and stored at the facility.

The EPA’s Worker Protection Standard requires that labels of pesticides list the PPE that must be worn with each product, with few exceptions for using pesticides in closed systems, and enclosed cabs (see below). The PDA requires that pesticide use must be consistent with the label. Therefore, everyone that uses pesticides at Penn State must use the proper PPE. There are no exceptions. **Supervisors need to ensure that the proper PPE is always worn. The label is the law – applicators must follow it.**

Labels may specify the type of chemical-resistant gloves or may refer to chemical resistance categories (A-H) for PPE. Items in these categories are made of materials that the pesticide cannot pass through during the times indicated in the key below the chart. Choose the category of resistance which best matches the handling task duration. The categories are based on the solvents used in the pesticides, NOT the pesticides themselves. Therefore, there will be instances where the same pesticide with two different formulations (wettable powder-WP and emulsifiable concentrate-EC, for example) will require PPE from two different chemical resistance categories.

Table , Chemical Resistance of Types of Personal Protective Material

| Selection Category Listed on Pesticide Label ↓ | Barrier Laminate | Butyl Rubber > 14 mils | Nitrile Rubber > 14 mils | Neoprene Rubber > 14 mils | Natural Rubber > 14 mils | Polyethylene | Polyvinyl Chloride (PVC) > 14 mils | Viton > 14 mils |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A (a dry and water- based formulation) | high | high | high | high | high | high | high | high |
| B | high | high | slight | slight | none | slight | slight | slight |
| C | high | high | high | high | moderate | moderate | high | high |
| D | high | high | moderate | moderate | none | none | none | slight |
| E | high | slight | high | high | slight | none | moderate | high |
| F | high | high | high | moderate | slight | none | slight | high |
| G | high | slight | slight | slight | none | none | none | high |
| H | high | slight | slight | slight | none | none | none | high |

**KEY:**

HIGH: Highly chemical-resistant. Clean or replace PPE at end of each day's work period. Rinse off pesticides at rest breaks.

MODERATE: Moderately chemical-resistant. Clean or replace PPE within an hour or two of contact.

SLIGHT: Slightly chemical-resistant. Clean or replace PPE within ten minutes of contact.

NONE: No chemical-resistance. Do not wear this type of material as PPE when contact is possible.

PPE should be used properly following the manufacturer’s instructions. It is to be stored in a clean location separately from pesticides. Personnel that wear PPE need to be instructed on the signs of heat-related stress when PPE is being worn and should be prepared to take action, if needed (see [Section VIII.C, Heat Stress](#_Heat_Stress)).

Prior to donning PPE, it should be inspected for leaks, holes, tears, or other worn places; repair or discard damaged items. PPE that has been soaked or otherwise heavily contaminated should be discarded. If the pesticide on the PPE is a restricted use pesticide concentrate, the PPE should be disposed of a hazardous waste (see [Section V.C, Disposal](#_Disposal)); otherwise it can be thrown in the trash. Prevent any person from wearing or taking home contaminated PPE.

If PPE will be reused, clean it after use according to the instructions from the PPE manufacturer. Thoroughly wash and dry all PPE before it is reused or stored; in the absence of pesticide product instructions, wash thoroughly in detergent and hot water. Any person who cleans or launders PPE that is not a certified applicator needs to be informed that the equipment may be contaminated with pesticides and that there are potentially harmful effects from exposure to pesticides. They need to know the correct way to protect themselves (i.e., the gloves specified on the product label for mixing and loading the pesticide) when cleaning PPE. They should also be informed of how to decontaminate themselves after handling contaminated PPE.

All personnel must have a clean location to wash at the end of pesticide handling activities. At a minimum soap, single-use towels, and water shall be provided where the PPE is removed. In addition, a clean place shall be provided to store personal clothing away from pesticide contaminated areas.

#### Gloves

The pesticide label specifies the type of gloves to be worn, chemical resistant vs. waterproof. However, it is a good idea to wear chemical-resistant gloves routinely. Gloves made of leather, cotton, or other absorbent materials may not be worn while working with pesticides unless the pesticide label allows this.

Glove selection and use tips:

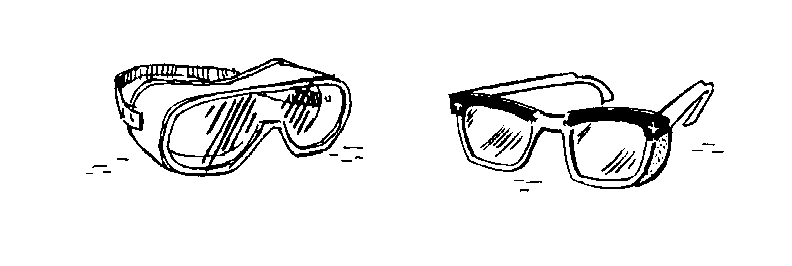
* Glove materials must resist the product’s active ingredient and its solvents (use the label and [Table 2, Chemical Resistance of Types of Personal Protective Material](Table%202,%20Chemical%20Resistance%20of%20Types%20of%20Personal%20Protective%20Material), above, to determine the correct material).
* Gloves must be thick enough to provide protection during the entire task.
* Gloves should allow adequate grip so that applicators can perform all duties safely.
* Gloves should fit well.
* Gloves should be long enough to protect both the hands and arms from splashes.
* Gloves must be unlined to prevent pesticide absorption into the lining – separable glove liners may be worn beneath chemical resistant gloves unless the pesticide prohibits their use. They may not extend beyond the outside of the chemical-resistant gloves and if used must be discarded after a total of 10 hours of use or within 24 hours of when first put on, whichever comes first. If the liners have contact with the pesticide, they must be replaced immediately. Used glove liners may not be reused.
* If chemical-resistant gloves with sufficient durability and suppleness are not obtainable, then during activities with plants with sharp thorns, leather gloves may be worn over the chemical-resistant glove liners. However, once leather gloves have been worn for this use, thereafter they may only be worn with chemical-resistant liners and they must not be worn for any other use.
* New gloves should be provided regularly.
* Extra gloves must be immediately available in case of rips, tears, or contamination.
* Reusable gloves should be washed with soap and water prior to removing.
* Inspect gloves prior to use – discard as necessary.

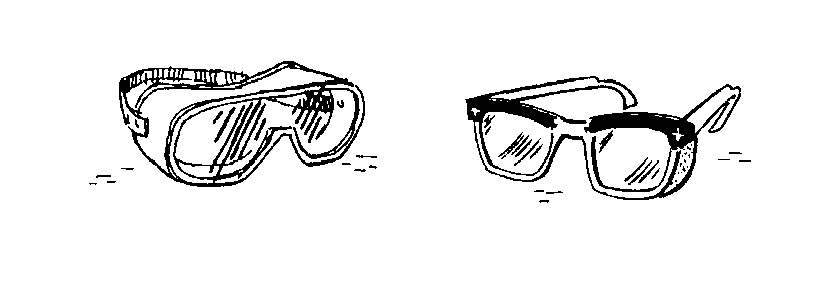
The appropriate glove size can be determined by measuring the circumference of the hand (palm and back); a hand circumference of eight (8) inches indicates a size 8 glove. A translation to size for gloves sold as small, medium, large, etc., is given below:

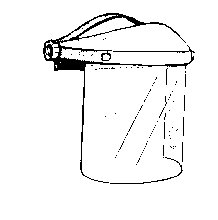
* 5 – 7 inches: extra small
* 7 – 8 inches: small
* 8 – 9 inches: medium
* 9 – 10 inches: large
* 10 – 12 inches: extra large

#### Eye protection

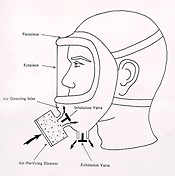
Eye protection should be worn when handling or applying all pesticides, and in some cases is required as indicated by the pesticide label. EPA defines protective eyewear as safety glasses with side shields and brow guards, goggles, face shields, or full facepiece respirators.

Safety glasses are used to protect eyes from particles in the air. They are generally recommended only for the least toxic products under minimal exposure conditions. They do not provide full coverage against chemical splashes.



Goggles with polycarbonate lenses protect the eyes from flying objects, but some (vented) may not fully protect against chemical splashes. Goggles must have either no vents or indirect vents to be considered splash resistant.

Face shields are intended as a secondary means of eye protection and are designed to be worn over safety glasses or goggles for full face protection.

Full facepiece respirators, which are tight-fitting respirator that covers the nose, mouth and eyes from approximately the hairline to below the chin, also provide eye protection.

Eye protection and use tips:

* Eye protection must be assigned and fitted to each employee; it should not be shared.
* Eye protection must comply with the standards set by ANSI Z87.
* Discard damaged eye protection, including when pitted, scratched, stained, or cracked.
* Replace face shield and goggle head straps when they do not firmly anchor eye protection to the face.
* Clean contaminated eyewear immediately after use by rinsing under running water.
* Regularly soak eyewear in a solution of soap and water for 10-15 minutes.

Remember to pour or mix pesticides below eye level to reduce the chance of injury.

#### Respirators

Respirators must be used if required by the pesticide label. All respirator users fall under the jurisdiction of the [Penn State Respiratory Protection Program](http://ehs.psu.edu/respiratory-protection/overview). If a respirator is needed, EHS must be contacted at 814-865-6391. The website provides more information on the program including information on respirator selection, medical evaluation, fit testing, proper respirator care and use, training, and recordkeeping.

If a respirator is used, dust/mist filters must be replaced when:

* Breathing becomes difficult;
* The filter is damaged or torn;
* Whenever the respirator manufacturer or pesticide labeling says to replace them, whichever is more frequent; or
* At the end of eight hours of cumulative use, if no other instructions are available.

Gas and vapor removing respirators or canisters must be replaced when:

* Breathing becomes difficult,
* The first sign of odor, taste, or irritation; whenever the respirator manufacturer or pesticide labeling says to replace them; whichever is more frequent, or
* At the end of eight hours of cumulative use, if no other instructions are available.

#### Protective Clothing

In order to minimize contact exposure through splashes and during spraying, the right protective clothing must be worn. **Even under minimal exposures, a long-sleeved shirt, long pants, socks, and shoes are essential.** The pesticide label may require additional protective clothing such as coveralls, chemical-resistant boots, or apron.

*Coveralls –* Coveralls must be loose-fitting one- or two-piece garments that cover, at a minimum, the entire body except the head, hands, and feet. Coveralls are available in reusable, limited use, and disposable styles. When the label requires coveralls, it means cloth garments. However, because they can retain trace amounts of pesticides, even after washing, frequent replacement is advisable. Cotton coveralls should never be used without additional protection when handling liquid pesticide concentrate. Coveralls should fit well to provide full coverage and to prevent them from becoming entangled in machinery. A chemical-resistant suit may be substituted for coveralls, and this waives the label requirement for an additional layer of clothing underneath the coveralls.

Limited use or disposable coveralls are designed to be worn for one workday and then discarded. These materials differ in their breathability, weight, thickness, flexibility, strength, durability, abrasion resistance, and chemical resistance. Most disposable coveralls do not ravel and can be cut to shorten sleeves or pant legs if needed.

*Chemical-Resistant Suits* – must be loose-fitting, one- or two-piece chemical resistant garments that cover, at a minimum the entire body except the head, hands, and feet. Consult the pesticide label and the product specifications to determine the type of fabric needed to provide the required protection.

Tyvek disposable coveralls are most frequently used. There are three types available for different situations.

* Regular tyvek provides similar protection to cotton coveralls for granules and dusts, but performs better than cotton for sprays or mists. It does not provide protection for pesticide concentrates.
* Tyvek QC is polyethylene coated to repel water and offers better resistance than cotton or regular tyvek.
* Tyvek/Saranex-23P provides chemical resistance for pesticides with higher toxicities and is also resistant to corrosive pesticides. While it provides good chemical resistance, it is not breathable, and wearers should be alert to signs of heat stress.

*Sleeve Guards and Chaps -* Sleeve guards are designed to cover the arms when wearing a long-sleeved shirt. They cover the arm from the wrist to the elbow and have elastic at each end to hold them closed and block pesticide entry. Chaps are designed to provide an extra layer of protection to the legs. They fasten to the belt and are held to the ankle by elastic. Long protective pants are also available. These types of protective clothing may be disposable or reusable. If reusable, they must be cleaned thoroughly after each use.

*Aprons -* Chemical-resistant aprons can be used to reduce exposures to pesticides. For some products, these may be required by the pesticide label. Aprons should not be backed with materials like cotton that can absorb pesticides. Aprons can cause danger when worn by personnel who must climb ladders; in these cases alternatives should be chosen. These aprons should be worn when pouring and mixing concentrates. A chemical-resistant suit may be substituted for a chemical-resistant apron.

*Footwear -* There are many types of chemical resistant footwear that are designed to be worn directly over socks. Other types may be worn over shoes, such as disposable booties. Pants legs should hang outside of boots and shoes so that spilled pesticides will not be funneled into the shoes or boots. Footwear should be washed with soap and water after use. All footwear worn during pesticide applications should not be worn indoors and must be disposed if damaged or leaking.

#### Headgear

Some pesticides are sprayed overhead, allowing the head, neck, back, and shoulders to become exposed. Labels direct applicators to wear chemical-resistant headgear (use the label and [Table 2, Chemical Resistance of Types of Personal Protective Material](Table%202,%20Chemical%20Resistance%20of%20Types%20of%20Personal%20Protective%20Material), above, to determine the correct material). Headgear may be either soft, or stiff and impact resistant. It may be a hat with a broad brim or may be a hood tied tightly around the face that drapes to the shoulders. If not disposable, headgear should be washed with soap and water following pesticide applications.

#### PPE Exceptions

*Closed Systems* – Closed systems have the advantage of providing the ability to mix and load a pesticide with minimal exposure. Because of this, there are some exceptions to the PPE requirements, however the following conditions must be met:

1. The closed system must be able to remove the pesticide from the original container and transfer it through hoses, tubing, and couplings that are sufficiently tight to prevent exposure of the pesticide product to the applicator except for negligible escape; or when loading intact, sealed, water soluble packaging into a mixing tank or system, **and**
2. Each closed system must have written standard operating procedures (SOP) that are clear and legible at the mixing and loading site, and are available to all applicators. All applicators must receive training on the use of the system in accordance with the SOP. The operating instructions shall include:
   1. Operating procedures for use, including the safe removal of a probe;
   2. Maintenance, cleaning, and repair;
   3. Known restrictions or limitations of the systems;
   4. Any limits on the ability to measure a pesticide; and
   5. Special procedures or limitations regarding partially filled containers.
3. The system must be cleaned and maintained in accordance with the SOP.
4. All PPE specified on the product label must be immediately available to the applicator for use during an emergency.
5. Protective eyewear must be worn when using closed systems operating under pressure.

If all of the conditions above are met, the following exceptions to the label-specified PPE are permitted:

* For pesticides with the signal words “Danger” or “Warning”:
  + Long-sleeved shirt,
  + Long pants,
  + Socks and shoes,
  + Chemical-resistant apron,
  + Protective eyewear, and
  + Protective gloves specified on the label for applicators.
* For pesticides with any other signal words:
  + Long-sleeved shirt,
  + Long pants,
  + Socks and shoes, and
  + Protective eyewear.

*Enclosed Cabs –* If an applicator applies pesticides from inside a vehicle’s enclosed cab that has a properly functioning air ventilation system which is used and maintained in accordance with the manufacturer’s written operating instructions, there are exceptions to the PPE requirements as given below:

1. If the product label requires a filtering facepiece respirator, it need not be worn in the cab; however any other type of respirator required by the label must be worn.
2. Applicators may substitute a long-sleeved shirt, long pants, and socks and shoes for the label-required PPE for skin and eye protection.

However, persons occupying the cab must have all the label specified PPE immediately available and stored in a chemical resistant container such as a plastic bag. If they must exit the cab and contact pesticide-treated surfaces in the treated area or in an area where a restricted entry interval is in effect, they need to wear the PPE. It must be removed before re-entering the cab to prevent contamination of the cab.

### Decontamination Supplies

Decontamination supplies are required to be located at all mixing and loading sites, at areas within ¼ mile of areas where pesticides are being applied, and at areas where applicators remove their PPE (there are additional requirements under the WPS, see Sections [V.B.14.g](#_Decontamination_–_Workers), Decontamination – Workers and [V.B.14.h, Decontamination – Handlers](#_Decontamination_–_Handlers).)

At mixing and loading sites, there must be sufficient water to wash the entire body in the case of an emergency. A drench hose or safety shower meets this requirement. In addition, soap and single-use towels must be supplied in sufficient quantities to meet the needs of all of these applicators. There must also be clean clothes, such as one size fits all coveralls in case the pesticide applicator needs to change.

If the facility is mixing pesticides from concentrates or is transferring the pesticides from one container to another, a flowing eyewash or drench hose must be provided at the mixing and loading site for eyeflushing. Where pre-mixed pesticides are being used directly from the container, to provide for emergency eyeflushing, there must be at least one pint of water or saline solution in a sterile emergency eyewash bottle for each pesticide applicator.

Decontamination supplies are also required to be within ¼ mile of areas where pesticides are being applied. At these sites there must be a minimum of three gallons of water per pesticide applicator. Soap and single-use towels must also be provided.

**If the pesticide in use requires eye protection, then applicators must have one pint of eyeflush immediately accessible during the pesticide application.**

At the site where pesticide applicators remove their PPE, there must be soap, clean towels, and enough water to allow personnel to wash thoroughly.

### Mixing Pesticides

The most hazardous activities involving pesticides are mixing and loading of concentrates. Ensure that anyone who is performing this task understands how the sprayer works before they begin mixing. Always wear the proper personal protective equipment. Carefully choose the location to mix and load pesticides. It should be located away from people and livestock. If possible, do not work alone. The proper PPE (as designated by the label) must be worn. Decontamination supplies must be present in all mixing and loading locations (see [Section V.B.9, Decontamination Supplies](#_Decontamination_Supplies), above.)

Do not tear paper containers to open them – use a scissors or knife. Clean the knife or scissor afterwards, and do not use them for other purposes. When pouring from a container, keep the container below eye level, and avoid splashing or spilling the pesticide on your face or clothing. Never use the mouth to siphon a pesticide. Always stand upwind so that the pesticide does not blow towards the body. To prevent spills, close containers after use, even if you plan to mix more.

Mix only the amount of pesticide that is required for immediate use and measure the pesticide carefully and accurately. All measuring devices (spoons, cups, and scales) should be kept in the pesticide storage room and not used for any other purpose. Some pesticides react violently with metal, so when using these materials avoid using metal measuring tools. Label them for the materials that they are used to measure. Rinse cups and spoons after use and pour the rinsate into the spray tank.

Before any equipment is to be used for mixing pesticides, the appropriate training must be provided. When filling pesticide tanks, ensure that there is an air gap between the tank and the hose used to provide water. This will prevent any material from being sucked back into the hose. In addition, the installation of a small water tank that can be used to supply water for mixing pesticides provides added protection against backflow into a well or public water supply.

When mixing pesticides:

1. Always start with a clean tank and use clean water. The tank should be filled with about one-quarter to one-half of the water or carrier needed. Never leave the spray tank unattended while being filled.
2. Next make a slurry of any dry products before adding, and agitate fully after each component is added. For small hand held applicators, the agitation may be created by shaking the sprayer. Use caution when using dry products to avoid spillage and inhalation.
3. Then add in the following order:

Compatibility buffering or defoaming agents (if needed);

Wettable powders, dry flowables, water-dispersible granule products;

Flowables, liquids, microencapsulated products;

Solutions, soluble powder products;

Remaining adjuvants, such as surfactants or crop oils (if needed); and

Emulsifiable concentrates.

1. Finally add the remaining water or carrier.

### Pesticide Application

Before using any equipment for pesticide application, be sure that the pesticide applicator has the appropriate training. The supervisor must ensure that the applicator knows how the equipment functions and what to do in the case of a malfunction. Each day before use the equipment must be checked for leaks, clogging, and worn or damaged parts. Any damaged equipment must be repaired or replaced. Before allowing anyone to repair, clean, or adjust any equipment used for mixing, loading, or applying pesticides, all pesticide residue must be removed from the equipment. If this is not feasible, the person repairing, cleaning, or adjusting the equipment must be informed that the equipment is contaminated with pesticides, that it may be harmful to be exposed to pesticides, and the correct way to handle such equipment. The proper PPE (as designated by the label) must be worn. In addition, they must be instructed that personal hygiene practices, such as hand washing, removing contaminated clothing, and showering after work reduces pesticide exposure. If the equipment used in the pesticide application is covered by the WPS and the person working with the equipment is a Penn State employee, they must be trained as a pesticide handler if they are not a certified applicator.

All facilities are required to maintain an application list, which must include:

* Date of the application and for a pesticide requiring a reentry time, the date of the application shall include the time completed;
* Name and address of application site;
* Brand name and amount used;
* Dosage rate of each pesticide used;
* Name of applicator and registration number of each person making the application;
* EPA registration number; and
* Identification of the application site including specific field or land area and the crop.

A sample form for this (which includes the information required for both the PDA and WPS) is attached in [Section XIII, Forms](#_Forms), but any format is acceptable as long as all the required information is displayed.

The application list should be updated by the end of the work period, but must be completed within 24 hours and maintained for three years and must be available to medical personnel in an emergency, along with the SDS.

Pesticide spray equipment is manufactured to be adjustable. A calibration check should be made periodically to measure the amount applied on a given area. The benefits of a calibration check are:

* Cost effectiveness – If not enough pesticide is applied it may fail to control the targeted pest. If too much pesticide is applied it may: result in damage to the treated plant, animal, or surface; produce illegal residues on treated crops; and can cause adverse effects to the environment and non-target organisms.
* Catalog data for nozzles and other equipment may not be accurate under field conditions due to pressure gauge error, wheelslip, speedometer error, or friction loss.
* Application of a pesticide at a rate higher than that specified on the label is illegal.

During the pesticide application, the weather should be closely monitored. Do not apply pesticides during or just before expected high winds, as the chance of pesticide drift increases in these situations. Do not apply pesticides before an expected heavy rain as they may be washed off the treated surfaces. It is often preferable to apply pesticides in the early morning or early evening hours when wind speeds are usually lower and protective clothing may be worn more comfortably.

Applications should always be made in a manner that minimizes drift from the treated area to nearby water bodies, crops, pastures, livestock, or residential areas. Drift becomes most severe when wind speeds and air temperatures increase, when relative humidity is low, when nozzle height and pump pressure is high, and when spray droplets are small. Significant drift can also occur during temperature inversions.

If a nozzle becomes clogged while making an application, stop the sprayer and move to a non-treated area to try to correct the problem. Never touch your mouth to a spray nozzle or a clogged pump part.

Never leave pesticide application equipment unattended at the application site.

Clean all equipment after the pesticide application, following any cleaning instructions on the label. Ensure that the required PPE is worn during the cleaning of equipment, and that the PPE is also properly cleaned following use.

After cleaning application and personal protective equipment, personal clean-up is next. Ensure that the hands and face are well washed with soap and water before eating, drinking, smoking, or using the toilet. Shower and change clothing as soon as possible.

### Handling Pesticide-Contaminated Clothing

Always assume that clothing worn when working with pesticides has been contaminated. It must be laundered after each use separately from other clothing. **Clothing that has been contaminated with liquid pesticides concentrates should be discarded.** If the liquid pesticide concentrate on the clothing is a restricted use pesticide, the clothing should be disposed of a hazardous waste (see [Section V.C, Disposal](#_Disposal)); otherwise it can be thrown in the trash. Non-absorbent items may be rinsed and reused.

Success in washing pesticide residues from common work fabrics depends on several factors including the formulation of the pesticide, the type and thickness of the clothing fabric, the laundering method, and the time between contamination and laundering. In general, the longer the wait, the less contaminant is removed. **Always follow the instructions on the pesticide label, if given, for laundering.** Follow these instructions when washing pesticide contaminated clothing:

* Wear rubber or chemical-resistant gloves before handling contaminated clothing
* Empty pocket and cuffs outdoors in an appropriate location to ensure that any granular pesticide residues are properly disposed. This should be done where the pesticide can be legally applied according to the label (don’t do it on the grass if the pesticide cannot be used on turf).
* If possible, use a separate dedicated tub to pre-rinse
* Do not mix clothing that has been used to apply pesticides with other clothing
* Wash the clothing on the day that the pesticides were applied
* Underclothes may also be contaminated with pesticides and should be treated as such
* Open the washer before handling pesticide contaminated clothing to avoid contaminating the outside of the washer
* Pre-soak the clothing in hot water with a heavy-duty detergent. Drain the pre-soak water and then run a complete wash (at least 10 minutes) and rinse cycle.
* Wash only a few items at time to ensure ample agitation and dilution
* Use hot water to wash, cold or warm to rinse
* Use two full rinse cycles
* Check clothes for staining or residues before drying – rewash as necessary
* Line dry to avoid dryer contamination and to allow the pesticides which are broken down by sunlight to degrade.
* Clean the washing machine after use by running a complete cycle with detergent using hot water with no clothes.
* Ammonia, chlorine bleach, and fabric softeners are not effective in removing pesticide residues

### Pesticide Transportation

Transportation of pesticides should always be performed with care. Never transport pesticides with food, livestock feed, or minerals. Never transport pesticides in the passenger compartment of a vehicle. The safest way to transport is in the back of an open truck or pickup to ensure adequate ventilation. It is best to have a non-porous bed liner that can be cleaned in the event of spills or releases. Ensure that pesticides are properly secured in the vehicle and that secondary containment is provided for liquid pesticides while transporting. A small (five-gallon bucket size) spill kit (which contains absorbent material, gloves (nitrile at least), a small dust broom and dust pan, and a plastic bag for disposal) must be kept in a vehicle transporting pesticides. **Every vehicle involved in pesticide application is required to prominently display the business license number assigned by the PDA. The number must be in figures at least three inches high and located on the side of the vehicle at a readily visible location.**

Inspect each pesticide container before loading and ensure that the labels are attached and legible, the cap is tightly closed and properly sealed, and the outside of the container is not contaminated with pesticides. It is a good practice to carry a SDS for each pesticide being transported. Never leave pesticides unattended in a vehicle. Move the pesticides into the storage facility as soon as possible.

Service containers are containers other than the original labelled pesticide container that are used for holding, storing, or transporting the original pesticide or the pesticide in the end-use dilution. Service containers must be legibly marked to indicate the name and percentage of the active ingredients and must be accompanied by the label that represents the pesticides contained in the service container.

The U.S. Department of Transportation has rules that address the transportation of hazardous materials, including pesticides. When a PSU employee is transporting pesticides in a PSU vehicle, we are exempt from those regulations. However, we are not exempt from those regulations if we use a commercial carrier for shipment. In these cases the shipment is governed by PSU’s [Hazardous Materials Shipping Program](https://ehs.psu.edu/hazardous-materials-shipping/overview) and EHS must be contacted.

In the case of pesticide research where a company provides the pesticide to PSU for research use, with the remainder of the pesticide to be returned to the company, the company often makes the arrangements to pick up the pesticide and must follow U.S. DOT regulations. This is the preferred manner to return the pesticide. If the pesticide is to be shipped back to the manufacturer by PSU, then the EHS Hazardous Materials Shipping Program requirements must be followed.

### Extra Requirements for Agricultural Pesticide Use

#### Centrally Located Information about Pesticide Application

Agricultural facilities are required to have a central location for posting information as described below. The location must be easily seen and Penn State supervisors must tell workers and pesticide handlers where the centrally located information is, and to ensure that they have access to the information at all times during normal working hours. Facilities that use pesticides for agricultural applications are required to post the following information:

* A pesticide safety poster which must be either the WPS safety poster or equivalent (available from the [Pesticide Educational Resources Collaborative (PERC) website](http://www.pesticideresources.org/wps/cp.html)) and must have the following information to direct personnel to help keep pesticides from entering their body. At a minimum, the following points shall be conveyed:
  + Avoid getting on your skin or into your body any pesticides that may be on or in plants, soil, irrigation water, tractors, and other equipment, on used personal protective equipment, or drifting from nearby applications.
  + Wash before eating, drinking, using chewing gum or tobacco, or using the toilet.
  + Wear work clothing that protects the body from pesticide residues (long-sleeved shirts, long pants, shoes and socks, and a hat or scarf).
  + Wash or shower with soap and water, shampoo hair, and put on clean clothes after work.
  + Wash work clothes separately from other clothes before wearing them again.
  + If pesticides are spilled or sprayed on the body use decontamination supplies, and as soon as possible, wash or shower with soap and water, shampoo hair, and change into clean clothes.
  + Follow directions about keeping out of treated areas and application exclusion zones.
  + Instructions to employees to seek medical attention as soon as possible if they believe they have been poisoned, injured, or made ill by pesticides.
  + The name, address, and telephone number of a nearby operating medical care facility capable of providing emergency medical treatment (see [Appendix](APPENDIX)). This information must be clearly identified as emergency medical contact information on the display.
  + The name, address, and telephone number of the nearest Pennsylvania Department of Agriculture office (see [Appendix](APPENDIX)).
* Application list, which must include:
  + All of the information required by [Section V.B.11, Pesticide Application](#_Pesticide_Application), plus
  + Active ingredient of pesticide,
  + Date and time the pesticide application started and ended, and
  + Restricted entry interval for pesticide.
* Hazard information consisting of a copy of the Safety Data Sheet (SDS) for each pesticide product.

Application records, pesticide labels, and SDS must be kept for three years.

The pesticide safety poster must also be posted at any permanent decontamination site and at any location where decontamination supplies are required in quantities for 11 or more workers. In addition, Penn State supervisors must ensure that the safety poster and the emergency information remain legible, and promptly (within 24 hours) inform workers if there are any changes to the emergency information.

The information must be posted whenever a worker or handler that is employed by Penn State is on the agricultural establishment and within the past 30 days a pesticide has been applied or a restricted entry interval has been in effect.

If the workplace is in a forest, the information may be displayed near the forest in a location where workers and handlers can easily read it and where they are likely to gather or pass by.

The pesticide application and hazard information must be displayed within 24 hours after the end of the application if the workers or handlers are at the facility. It must remain displayed for:

1. At least 30 days after the restricted entry interval expires, or
2. At least 30 days after the end of the application if there is no restricted entry interval for the pesticide.

#### Restrictions during Application

Facilities shall assure that no pesticide is applied so as to contact either directly or through drift any worker or other person other than an appropriately trained and equipped handler.

The Application Exclusion Zone (AEZ) is a zone or area surrounding pesticide application equipment that exists only during outdoor production pesticide applications. When applications of WPS-labelled pesticide products are in progress, supervisors must not allow or direct any worker or other person, such as a student non-employee conducting research, to enter or to remain in the treated area or the AEZ.

**The AEZ is not restricted to the property boundary and applies to all areas including roadways. Applicators must suspend application for any persons who may be in the AEZ such as pedestrians or passing vehicles.**

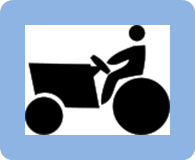
Only certified applicators/handlers who are assisting in the application are allowed in the AEZ. After the application is complete, the AEZ no longer exists and the treated area is subject to the REI specified on the pesticide product labelling and to the relevant WPS restrictions after applications.

Measure the AEZ from the application equipment horizontally in all directions. The AEZ moves with the application equipment as it proceeds. It generally is within the treated area except when the application equipment is near the edges where it will extend beyond the treated area. Once the application is over, the AEZ does not exist.

Figure , Illustration of the Agricultural Exclusion Zone

Treated Area

Application Exclusion Zone (AEZ)



If the application is suspended due to persons located on non-Penn State property being within the AEZ, the applicator should ask the persons to leave the area to complete the application. If they agree, the application can be resumed. **If they refuse, however, the application can only be resumed with caution if the certified applicator determines that based on the wind direction there will not be a possibility of drift onto these persons in the AEZ.** This is EPA’s interpretation of the regulation:

If workers or other persons are within the AEZ, the handler must suspend the application whether the workers and other persons are located on or off the agricultural establishment. Before resuming the application when workers and other persons are *in the AEZ but located off the establishment*, the handler must take measures to ensure that such workers and other persons will not be contacted by the pesticide application either directly or through drift. Examples of such measures include assessing the wind and other weather conditions to confirm they will prevent workers or other persons from being contacted by the pesticide either directly or through drift; adjusting the application method or employing drift reduction measures in such a way to ensure that resuming the application will not result in workers or other persons off the establishment being contacted by the pesticide; asking the workers or other persons to move out of the AEZ until the application is complete; or adjusting the treated area or the path of the application equipment away from the workers or other persons so they would not be in the AEZ. The handler may resume the pesticide application when a worker or other person is in the AEZ only if the handler can ensure that it can be carried out in compliance with all of the pesticide’s applicable labeling requirements and restrictions, and that workers and other persons on and off the establishment will not be contacted by the pesticide as a result of the application except as may be permitted by the pesticide’s labeling. It is important to note that this only applies in regard to workers and other persons beyond the boundaries of the establishment; if a handler were to resume an application while workers or other persons on the establishment are still within the AEZ, that would give rise to a violation of §170.405.

The size of the AEZ is determined by the application method and spray quality. Spray quality considers several factors including the nozzle design, system pressure, and speed of the application equipment. The eight spray quality categories include:

* Smaller then medium
  + Extra fine (XF)
  + Very fine (VF)
  + Fine (F)
* Medium or larger
  + Medium (M)
  + Coarse (C)
  + Very coarse (VC)
  + Extra coarse (XC)
  + Ultra Coarse (UC)

The AEZ must be a minimum of 100 feet when the pesticide is applied:

* By air (fixed wing or helicopter)
* By air blast
* As a spray using a spray quality smaller than medium
* As a fumigant, smoke, mist, or fog.

The AEZ must be a minimum of 25 feet when the pesticide is:

* Not applied in a manner that would require a 100 foot AEZ, and
* Sprayed from a height of greater than 12 inches from the planting medium (soil) using a spray quality of medium or larger.

No AEZ is required when the pesticide is applied in a manner other than those covered above.

Any handler who is performing any handling activity with a product that has the skull and crossbones symbol on the front panel of the label must be monitored visually or by voice communication at least every two hours.

Any handler who handles a fumigant in a greenhouse or other enclosed space, including a handler who enters the greenhouse before the acceptable inhalation exposure level or ventilation criteria have been met to monitor air levels or initiate ventilation, must maintain continuous visual or voice contact with another handler. The other handler must have access to the PPE required for handlers in the event entry into the fumigated greenhouse becomes necessary for rescue.

#### Special Application Restrictions in Enclosed Space Production

Enclosed spaces, which include greenhouses, are defined by the WPS as operations that produce agricultural plants indoors in an area that is enclosed with nonporous covering and that is large enough to allow a person to enter. Indoor areas that grow plants primarily for decorative or environmental benefits, such as atriums, are not included.

When a pesticide is applied as a fumigant, Standard Operating Procedures must be established and reviewed by Penn State Environmental Health and Safety prior to fumigation.

During any application of a pesticide described in Column A, of [Table 3, Worker Exclusion Areas in Enclosed Space Production](Table%204,%20Worker%20Exclusion%20Areas%20in%20Enclosed%20Space%20Production), below, no one other than a trained and equipped handler may be present in the areas in Column B. If Column C indicates that ventilation restrictions apply, make sure that the following ventilation criteria are met before entry by other than a trained and equipped handler:

* The concentration of the pesticide in the air is measured to be less than or equal to the inhalation exposure level required on the labeling.
* If no inhalation exposure level is listed on the label, keep workers out until after:
  + 10 air exchanges, or
  + Two hours of ventilation using fans or other mechanical ventilation systems, or
  + Four hours of ventilation using vents, windows, or other passive ventilation, or
  + 11 hours with no ventilation followed by one hour of mechanical ventilation, or
  + 11 hours with no ventilation followed by two hours of passive ventilation, or
  + 24 hours with no ventilation
* After the ventilation criteria are met and until the REI (restricted entry interval – see [Section V.B.14.e, Restricted Entry Interval Requirements and Exceptions](#170.110)) expires,
  + Do not allow workers into the treated area (see Column D)
  + Workers may be allowed to enter the areas just outside the treated area that were off-limits during the application

Table , Worker Exclusion Areas in Enclosed Space Production

| **A. When a pesticide is applied:** | **B. Workers and other persons, other than appropriately trained and equipped handlers, are prohibited in:** | **C. Until:** | **D. After the expiration of time in Column C, the area subject to the REI is:** |
| --- | --- | --- | --- |
| (1) As a fumigant | Entire enclosed space plus any adjacent structure that cannot be sealed off from the treated area | The ventilation criteria above are met | No post-application entry restrictions after criteria in column C are met |
| (2) As a   (i) Smoke, or   (ii) Mist, or   (iii) Fog, or   (iv) As a spray using a spray quality (droplet spectrum) of smaller than medium | Entire enclosed area | The ventilation criteria above are met | Entire enclosed area |
| (3) Not in 1 or 2 above, and for which a respiratory protection device is required for application by the product labeling | Entire enclosed area | The ventilation criteria above are met | Treated area |
| (4) Not in 1, 2, or 3 above, and:  (i) From a height of greater than 12 in. from the planting medium, or  (ii) As a spray using a spray quality (droplet spectrum) of medium or larger | Treated area plus 25 feet in all directions in the enclosed area, but not outside the enclosed space | Application is complete | Treated area |
| (5) Otherwise | Treated area | Application is complete | Treated area |

#### Restricted Entry Interval Requirements and Exceptions

Some pesticides have a restricted entry interval (REI), which is a time delay immediately following a pesticide application when entry into the treated area is limited. The REI is located on the pesticide label under the heading “Agricultural Use Requirements” or in the “Directions for Use” section, next to the crop or application method for which it applies. The REI begins immediately after the pesticide application. If more than one pesticide is applied, the REI is the longest of the applicable intervals.

When an application of a WPS-labelled pesticide to an area of **outdoor production** is complete, workers must remain out of the treated area:

* Until the REI specified on the product label has expired,
* All treated area warning signs have been removed, and
* The applicable pesticide application information and Safety Data Sheet is displayed at the Central Posting Location.

When an application of a WPS-labelled pesticide to an area of **enclosed space production** is complete, workers must remain out of the treated area specified in Column D in the [Table 3, Worker Exclusion Areas in Enclosed Space Production](Table%204,%20Worker%20Exclusion%20Areas%20in%20Enclosed%20Space%20Production), above:

* Until the REI specified on the product label has expired,
* All treated area warning signs have been removed, and
* The applicable pesticide application information and Safety Data Sheet is displayed at the Central Posting Location.

All applicators should make every attempt to respect the restricted entry intervals for workers, however there are some allowed exceptions, as described below:

* Activities with no-contact,
* Short-term activities,
* Activities during an agricultural emergency, or
* Limited contact and irrigation activities.

For all of these early-entry tasks, the worker must be at least 18 years old. They must wear the PPE required by the label for early entry workers. **If a respirator is required as PPE, the early entry worker must be in the EHS Respiratory Protection Program.**

Early entry workers are to be provided with special protections orally in a manner that the worker can understand:

* Location of early-entry area where work will be performed,
* Pesticide applied,
* Date and time that the restricted entry begins and ends,
* Which exception is the basis for entry and a description of the tasks that may be performed under the exception,
* Whether contact with treated surfaces is allowed by the exception,
* Amount of time the worker is allowed to remain in the treated area, and
* Personal protective equipment required by the label for early entry.

Prior to early entry, the facility supervisor must ensure that each worker who will perform the early entry either has read the pesticide label or has been informed in a manner that the worker can understand of all the labelling requirements and statements related to human hazards or precautions, first aid, and user safety. They should review labeling information and instructions, including PPE required for early entry, and any other precautions or instructions related to safe use or early entry.

Personal protective equipment must be provided to the early entry worker along with training instructions on how to put on, use, and take off early entry PPE properly. The facility supervisor must ensure that the worker who uses the PPE does so as intended by the manufacturer and by the pesticide label. The PPE must be maintained by the facility in good condition. The worker must be instructed on the importance of washing thoroughly after removing PPE and that PPE that is contaminated with pesticides must not be taken home. They must also be instructed on how to prevent, recognize, and give correct first aid for heat stress (see [Section VIII.C, Heat Stress](#_Heat_Stress)).

Decontamination supplies must be provided for early entry workers. The decontamination supplies given in [Section V.B.14.g, Decontamination – Workers](#_Decontamination_–_Workers), are required to be located within ¼ mile of, but not within, the treated area covered by the REI. If the pesticide requires protective eyewear, emergency eyeflush must be immediately accessible to the worker. At the site where workers remove their PPE there must be soap, clean towels, and at least three gallons of water to allow early entry workers to wash thoroughly after removing their PPE.

The requirements for the exceptions to entry in the area covered by the REI are described below.

*Exceptions for activities with no contact -* If workers will have no contact with anything that has been treated with the pesticide (including pesticide on plants, on or in the soil, in water, or in air) to which the REI applies, they may enter the treated area when the application is complete if the inhalation exposure level listed on the product labeling has been reached or any WPS ventilation criteria have been met. The early entry worker must not touch anything treated by the pesticide to which the REI applies. This means no contact with things like soil, water, air, or surfaces of plants. There must be no contact with anything that may have pesticide residues even if the worker wears PPE.

*Short term tasks with no hand labor* – Hand labor is defined as any agricultural act performed by hand that might cause a worker to have substantial contact with surfaces (such as plants, plant parts, or soil) that may contain pesticide residues. Examples include: harvesting, detasseling, thinning, weeding, topping, planting, girdling, caning, sucker removal, pruning, disbudding, rouging, and packing produce in containers in the field. A worker may enter the treated area during the REI for short-term activities, if the following requirements are met:

1. No hand labor is performed.
2. The time in the treated area lasts less than one hour for any 24-hour period where the REI is in effect.
3. No early-entry worker is allowed in the treated area during the first four hours after the application ends.
4. No early entry worker is allowed in the treated area until after any inhalation exposure level listed on the product label has been reached or any ventilation criteria has been met.

*Tasks during an agricultural emergency* – An agricultural emergency means a sudden occurrence or circumstances that could not be anticipated and over which there is no control that requires entry into a treated area during the REI, and when no alternative practices could prevent or mitigate a substantial loss. A worker may enter the treated area where the REI is in effect during an agricultural emergency to perform tasks necessary to mitigate the effects of the emergency including hand labor if the following conditions are met:

1. A state or federal agency with jurisdiction over the facility area must declare that circumstances exist, have occurred, or are forecast that might cause an agricultural emergency (e.g., flooding, hail, frost, etc.), **and**
2. The facility supervisor determines that it is subject to the circumstances that result in an agricultural emergency, **and**
3. If the pesticide label requires double notification (oral and posted), then the facility supervisor must ensure that no individual worker spends more than four hours out of an 24-hour period in the treated area during the REI, **and**
4. No entry is allowed during the first four hours after the application ends, **and**
5. No early entry worker is allowed in the treated area until after any inhalation exposure level listed on the product label has been reached or any ventilation criteria has been met.

*Limited-contact tasks that could not have been foreseen, cannot be delayed, and do not involve hand labor and irrigation activities* – Limited-contact tasks are defined as those where early entry workers only contact with treated surfaces (including soil, water, surfaces of plants, and irrigation equipment) is minimal and is limited to their feet, lower legs, hands, and forearms. Hand labor tasks are not limited-contact tasks. Examples of limited-contact tasks include operating, moving, or repairing irrigation or watering equipment; repairing greenhouse heating, air conditioning, and ventilation equipment; repairing non-application field equipment; and maintaining and moving beehives. Limited-contact activities are those tasks that could not be anticipated. Irrigation related activities are generally anticipated and are not limited-contact tasks, however they have the same requirements for early entry. The following requirements must be met:

1. The early entry tasks do not include hand labor, **and**
2. No worker is allowed in the treated area for more than eight hours in a 24-hour period, **and**
3. No entry is allowed during the first four hours after the application ends, **and**
4. No entry is allowed until any inhalation exposure level listed on the pesticide label has been reached or any ventilation criteria has been met, **and**
5. If the early-entry tasks are delayed, the delay would cause significant economic loss and there are no agricultural practices that would prevent the loss, **and e**xcept for irrigation tasks, the need for the early-entry task could not have been foreseen, **and**
6. The worker has no contact with pesticide-treated surfaces other than minimal contact with limited to the workers’ feet, lower legs, hands, and forearms, **and**
7. The pesticide product’s Agricultural Use Requirement box does not contain the following “double notification” statement, “Notify workers of the application by warning them orally and by posting warning signs at entrances to the treated area.”

#### REI Required Worker Notices about Pesticide Applications

In order to inform workers of pesticide applications and the entry restrictions associated with them, the Worker Protection Standard requires that facility supervisors perform notifications. Workers may be notified either orally, by posting, or both depending on the situation. Some pesticide labels require **both** oral and written notification – this is known as double notification. In those cases the following statement will be in the *Direction for Use* section under the *Agricultural Use Requirements*: “Notify workers of the application by warning them orally and by posting warning signs at entrances to treated areas.” When a pesticide requires double notification, it must be followed as it is more stringent than the WPS notification requirement. The table below contains the posting requirements.

Table , WPS Posting Requirements

| Treated Site | Restricted Entry Interval (REI) | Post Warning Sign | Post Warning Sign or Oral Notification |
| --- | --- | --- | --- |
| Outdoor | > 48 hours | X |  |
| Outdoor | ≤ 48 hours |  | X |
| Enclosed Space | > 4 hours | X |  |
| Enclosed Space | ≤ 4 hours |  | X |

There are certain occasions where worker notification is not required:

* *For enclosed space production -* The worker will not enter any part of the entire enclosed space from the beginning of the application until the end of the REI
* *For outdoor production* – The worker will not enter, work in, remain in, or pass on foot through the treated area or any area within ¼ mile of the treated area within PSU boundaries, from the beginning of the application to the end of the REI.
* *For enclosed space or outdoor production* – The worker was involved in the application of the pesticide as a pesticide handler, and is fully aware of the location of the treated area, timing of the entry restrictions, and restrictions on entering that area.

The oral warnings must be given in a manner that workers can understand and include the location and description of the treated area, the time during which the entry is restricted, and instructions to not enter the treated area or agricultural exclusion zone during an application, and that entry to the restricted area is not allowed until the restricted-entry interval has expired. **The notification must be given to workers before the pesticide application takes place, or if they are not at the establishment at the start of the application, at the beginning of their work period.**

If the pesticide label requires either oral or posted notification and if your facility has workers that arrive at different times throughout the day and no one is available consistently to provide oral notification, then you must post the area to meet the requirement. In the case where both types of notification are required by the label, supervisors must ensure that each worker that arrives at the site receives the oral notification, in addition to the posting.

WPS-designed signs must be used when you post warnings at entrances to treated areas. The warning signs must have a white background and have the words “Danger” and “Peligro,” “Pesticides” and “Pesticidas,” at the top of the sign. The words “Keep Out” and “No Entre” must be on the bottom of the sign. All letters must be legible. In the center of the sign must be a circle with an upraised hand on the left and a stern face on the right. The inside of the circle must be red and a large portion of the face must be white. Examples are given below:

Figure , Sample Worker Protection Standard Restricted Entry Postings



The standard sign needs to be 14 inches by 16 inches with letters one inch high, however smaller signs may be used where appropriate, such as a smaller treated area as shown below:

Table , Size Requirements for Worker Protection Standard Restricted Entry Postings

| Overall size of sign | Size of Hand | Red Graphic Circle | Lettering for Words “Danger” and “Peligro” | Lettering for Other Words | Posting Locations |
| --- | --- | --- | --- | --- | --- |
| 14” x 16” | 2” | >3” | 1” | 1” | Visible from points of entry including across roads, borders of worker housing within 100 feet, footpaths |
| ~7” x 8” | 1” | 3” | 7/8” | ½” | Same as standard sign and every 50 feet around perimeter |
| ~4½” x 5” | ½” | 1½” | 7/16” | ¼” | Same as standard sign and every 25 feet around perimeter |

On farms, forests, and nurseries post the signs so that they can be seen from all points where workers usually enter the treated areas including access roads and established walking routes that enter the treated area. When there are no usual points of worker entry, post the signs in the corners of the treated area or in places where they will most easily be seen.

In greenhouses or other enclosed space production, post the signs so they can be seen from all points where workers usually enter the treated area, including doorways, aisles, and other walking routes. When there are no usual points of worker entry, post the signs in the corners of the treated area or in places where they will most easily be seen.

When using smaller signs, ensure that they are no further apart than the locations in [Table 5, Size Requirements for Worker Protection Standard Restricted Entry Postings](Table%206,%20Size%20Requirements%20for%20Worker%20Protection%20Standard%20Restricted%20Entry%20Postings).

Timing and visibility of warning signs:

1. Post signs 24-hours or less before the scheduled application of the pesticide.
2. Keep signs posted during the application and throughout the REI (if any).
3. Remove signs within three days after the end of the REI. If there is no REI for that application, remove the signs within three days after the end of the application. Signs may remain posted but beyond the three day period only if the area is treated as if it was under an REI (instructing workers that come within ¼ mile not to enter the area and ensuring that the only workers that enter the area are early-entry workers).
4. Keep workers out during the entire time the signs are posted.
5. Keep signs visible and legible when they are posted.

When several adjoining areas are to be treated on a rotating or sequential basis, the entire area may be posted at the same time.

In nurseries or greenhouses during pesticide applications the entry-restricted area may be larger than the treated area (Refer to [Section V.B.14.c, Special Application Restrictions in Nurseries](#_Special_Application_Restrictions) and [Section V.B.14.d, Special Application Restrictions in Enclosed Space Production](#_Special_Application_Restrictions_1).)

#### Decontamination – Workers

Facilities must provide decontamination supplies for workers in accordance with this section whenever:

* Any worker is performing an activity in the area where a pesticide was applied or an REI was in effect within the last 30 days and the worker contacts anything that has been treated with the pesticide, including soil, water, plant, plant surfaces, and plant parts.
* Exception – The 30 day time period shall not apply if the only pesticides used are those with an REI of four hours or less. In this case facilities must provide decontamination supplies for not less than seven days following the expiration of any REI.

The following decontamination supplies must be provided:

1. Facilities must provide workers with enough water for routine washing and emergency eyeflushing. It must be of quality and temperature that will not cause illness or injury when it contacts the skin or eyes or is swallowed. When the water source is also used for mixing pesticides, it shall not be used for decontamination or eyeflushing unless extra protections are established to prevent contamination of the water (e.g., back-flow prevention device, air gap, etc.) EPA requires at least one gallon per worker using the supplies.
2. Facilities must provide soap and single-use towels in quantities sufficient to meet worker’s needs.

Hand sanitizing gels and liquids, and wet towelettes do not meet these requirements.

The decontamination supplies shall be located together and be reasonably accessible to and not more than ¼ mile from where workers are working, and must be outside of the treated area or any area under an REI. For worker activities performed more than ¼ mile from the nearest place of vehicular access, the soap, single-use towels, and water may be at the nearest place of vehicular access. It is also permitted to allow workers to use clean water from springs, streams, lakes, or other sources for decontamination at remote sites if such water is more accessible than the water located at the nearest place of vehicular access.

The decontamination supplies cannot be maintained in the area being treated with pesticides or in an area that is under an REI unless the workers for whom the supplies are provided are performing early entry activities involving contact with treated surfaces and the decontamination supplies would otherwise not be reasonably accessible to those workers. Refer to [Section V.B.14.e, Restricted Entry Interval Requirements and Exceptions](#170.110), for more information on decontamination supplies for early entry workers.

#### Decontamination – Handlers

Decontamination supplies for handlers shall meet the requirements for workers (above) with the following additions:

1. There must be sufficient water to wash the entire body in the case of an emergency. To meet this requirement three gallons should be available for each handler. Hand sanitizing gels and liquids, and wet towelettes do not meet these requirements.
2. Clean clothes, such as one size fits all coveralls, shall be provided in case a handler’s garments become contaminated and the handler needs to change.
3. Handler decontamination supplies must be located so that they are reasonably accessible to handlers (within ¼ mile or at the nearest vehicular access). They should be located outside the treated area, or the area where an REI is in effect unless the soap, single-use towels, and clean change of clothing are in a pesticide protected closed container. They must also be located at the mixing and loading site.
4. Each handler shall be provided with at least one pint of emergency eyeflush water when the pesticide requires protective eyewear for the handling task.
5. Emergency eye flushing supplies are required at each mixing and loading site where handlers are using a pesticide that requires eye protection or are mixing and loading any pesticides using a closed system that is operated under pressure. To meet the required flow rate and volume, Penn State requires that there be a drench hose or other flowing emergency eyewash in this area.
6. At the site where handlers remove their PPE, there must be soap, clean towels, and enough water to allow handlers to wash thoroughly.

#### Request for Records of Pesticide Application and Hazard Information

The WPS requires that pesticide application records be kept for two years, however, the PDA requires them to be kept for three years. Any Penn State employee at the facility may request information on the pesticide application and the hazards of the pesticide. The request may be made orally or in writing. Information must be provided within 15 days of the request.

A designated representative may request access to, or a copy of this information on behalf of the worker or handler. The request must be made in writing and contain the following information:

* The name of the worker or handler being represented;
* A description of the specific information being requested, including:
  + Dates of employment of the worker or handler,
  + The date(s) for which the records are requested,
  + The type of work conducted by the handler or worker during the period for which the records are requested, and
  + The specific application and hazard information requested.
* A written statement clearly designating the representative to obtain this information on the worker’s or handler’s behalf, with the worker’s or handler’s printed name and signature, the date of the designation, and the printed name and contact information for the designated representative; and
* Where to send the information, if the information is to be sent.

This information must be provided within 15 days of the request.

### Special Considerations for Swimming Pools

Swimming pool applications of pesticides are a unique subset that present different issues. Pesticides that are used in swimming pools include chlorine and bromine compounds, algaecides, and algaestats – all of these should have an EPA registration number which identifies them as a pesticide. Special considerations for pesticide use in swimming pools are:

* Prior notification is not required.
* Hypersensitivity notification is not required.
* When mixing, never add water to pesticide chemicals – always mix chemicals into water.
* Do not add different chemicals to the pool over one another without giving the previous chemical time to disperse.
* Application records require that the start time and completion time of the application be recorded. For swimming pool pesticides such as materials that come in carboys which have continuous application, the time the application begins is when the particular cylinder or carboy is connected to the chlorination system and the end time is when it is emptied or additional application is made. For manual applications, the start and completion time will be close to the same.
* Any adjustment to the chemical feed rate must be done by a certified pesticide applicator; testing of the levels in the pool (e.g., pH) need not be done by a certified applicator.

## Disposal

A person may not dispose of, store or receive for disposal or storage a pesticide (whether registered or experimental), pesticide container, or pesticide container residue in a manner that does one or more of the following:

1. Is inconsistent with its label or labeling,
2. Causes or allows the open dumping of pesticides or pesticide containers,
3. Causes or allows dumping of pesticides in a stream, river, pond, or lake except where specifically permitted by the Department of Environmental Protection (DEP) and the Pennsylvania Fish and Boat Commission (PFBC), or
4. Violates an applicable state or federal pollution standard.

Unused pesticides (including aerosol spray cans which malfunction) shall be disposed of either:

* Through the PDA program [CHEMSWEEP](http://www.agriculture.pa.gov/Protect/PlantIndustry/Pages/CHEMSWEEP%20Waste%20Pesticide%20Disposal%20Program.aspx), a waste pesticide collection program that is designed to provide all citizens of the Commonwealth of Pennsylvania with a means to dispose of cancelled, suspended, or unwanted pesticide products.
* Through EHS’s [Chemical and Chemical Waste Management Program](https://ehs.psu.edu/waste-disposal).

Personal protective equipment and clothing that has been contaminated by a restricted use pesticide concentrate must be disposed through EHS’s Chemical and Chemical Waste Management Program (see above). PPE that has been contaminated by other pesticides, including dilute restricted use or concentrated general use, may be thrown in the trash. Spill cleanup materials, such as used absorbent, must be disposed through the EHS Chemical and Chemical Waste Management Program.

Empty pesticide containers must be either triple or pressure rinsed unless the pesticides are mini-bulks, water-soluble bags, or a plastic jugs containing granular materials prior to disposal. Unless specifically listed on the container, triple or pressure rinsed containers can be disposed in the trash.

* Triple rinsing procedure:
  1. Remove cap from pesticide container and empty all remaining pesticide into the spray tank, allowing container to drain for 30 seconds;
  2. Fill the container 20% full of water;
  3. Secure the cap;
  4. Swirl the liquid inside the container to rinse all inside surfaces;
  5. Remove the cap and add the rinsate to the spray container – allow to drain for 30 seconds;
  6. Repeat two more times; and
  7. Dispose of the container according to the label instructions.
* Pressure rinsing procedure:

1. Remove cap from pesticide container and empty all remaining pesticide into the spray tank, allowing container to drain for 30 seconds;
2. Insert the pressure rinser nozzle by puncturing through the lower side (not the bottom) of the pesticide container;
3. Hold the pesticide container upside down over the spray tank so that the rinsate drains into the tank;
4. Rinse for the length of time recommended by the pesticide manufacturer – usually 30 seconds or more – while circulating the nozzle inside the container to thoroughly rinse all surfaces;
5. Rinse caps in a bucket of spray water for at least one minute and pour this rinse water into the spray tank; and
6. Dispose of the container according to the label instructions.

Rinse pesticide application equipment at the site of use, if possible and spray the rinsate onto the treated area. If pesticides are contained in pressurized cans and are not fully used, dispose of through the EHS Chemical Waste Management Program or through the PDA program CHEMSWEEP.

Store empty and cleaned pesticide containers in a separately labelled location from the pesticides while awaiting recycling. Pesticide containers can be recycled through the Plastic Pesticide Container Recycling Program (PPCR). To find the nearest recycling center, check the [Plastic Pesticide Container Recycling Program (PPCR) website](http://www.agriculture.pa.gov/Protect/PlantIndustry/Pages/Plastic-Pesticide-Container-Recycling-Program.aspx). At University Park, pesticide containers can be recycled at the Rock Springs Agronomy Farm. The following are guidelines for participation in the program:

1. All containers must be triple rinsed and free of all pesticide residue inside and outside. The containers must be empty, dry, and not cut up or crushed. Staining is acceptable provided the container is free of all pesticide residues.
2. All lids and label booklets must be discarded. The booklets are contaminants in the recycling process and the lids are made from a different, non-recyclable plastic. That portion of the label which is glued to the container is acceptable.
3. Applicators may contribute containers during business hours only, preferably each time the applicator restocks with new materials. Check with the PPCR Partner site to obtain their hours before going. DO NOT leave your containers at the site after hours. Please try to avoid saving a large number of containers before recycling them.
4. Recyclable pesticide containers include:
   * All #2 HDPE plastic crop protection product containers
   * Plastic CPP drums and barrels up to 55 gal. (cut in half, then quartered\*)
   * Plastic spray tank (cut into 18 wide pieces and free of any hardware\*)

\*Cutting drums and tanks in this manner facilitates proper cleaning and inspection, reduces storage area, and allows for direct feed into the granulation machine.

# Training Requirements

## Applicator Recertification

Every three years, all Penn State certified applicators must provide evidence of having received current up to date training in technology relating to pesticides in the specific categories in which he/she is certified to maintain certification. The training must be approved by the PDA and meet their requirements. Penn State personnel can find the nearest class from the [Pennsylvania Plants website](https://www.paplants.pa.gov/PesticideApplicator/MeetingSearch.aspx).

## Extra Requirements for Agricultural Pesticide Use

The WPS requires extra training for both workers and pesticide handlers. At Penn State, all pesticide applications must be made be certified pesticide applicators. These certified applicators are exempt for the WPS worker and handler training. There are, however, employees who are not certified applicators and repair pesticide application equipment. These employees are required to be trained as pesticide handlers if they work at a facility covered by the WPS.

The WPS training requirement has been met if the worker or handler has been trained within the last year as a worker or handler, or is currently a certified applicator. Workers and handlers must be retrained annually (every 12 months).

The WPS specifically states when workers and handlers must be trained:

1. Handlers must be trained before they do any handling work.
2. Early entry workers who **will** contact anything that has been treated with pesticide which caused the REI must be trained before they do any early entry task.
3. Early entry workers who **will not** contact anything that has been treated with pesticide which caused the REI must be trained in the same time period as that described for workers below.
4. Workers must be trained prior to entering an area that has been treated during the last 30 days with a WPS-labeled pesticide or an REI for such pesticide has been in effect.

**Supervisors must be able to document compliance with the training requirements for all personnel at their facility.**

### General Training Requirements for Workers

Pesticide safety information shall be presented to workers either orally from written materials or audio visually. The information must be provided in a manner that the worker understands using non-technical terms. The presenter must also respond to the workers questions.

The person who conducts the training shall meet at least one of the following criteria:

1. Be currently certified as an applicator of restricted use pesticides,
2. Be currently designated as a trainer of certified applicators or pesticide handlers by the state or EPA,
3. Have completed a pesticide safety train-the-trainer program approved by EPA.

The person that issues the Worker Protection Standard worker training certificate (See [Section XIII, Forms](#_Forms)) must assure that the worker who receives the training certificate has been trained in accordance with the WPS training materials approved by EPA.

Training must be verified by assuring that the worker is in possession of a worker training certificate and that this certificate has been issued within the last year (See [Section XIII, Forms](#_Forms)).

### Pesticide Safety Training Requirements for Handlers

Before any handler performs any handling task, Penn State shall assure that the handler has been trained during the last year.

General pesticide safety shall be presented to handlers either orally from written materials or audio visually. It must be presented in a manner that the handlers can understand. The presenter also shall respond to the handler’s questions.

The person who conducts the training shall meet at least one of the following criteria:

1. Be currently certified as an applicator of restricted use pesticides,
2. Be currently designated as a trainer of certified applicators or pesticide handlers by the state or EPA, or
3. Have completed a pesticide safety train-the-trainer program approved by EPA.

The person that issues the Worker Protection Standard handler training certificate (See [Section XIII, Forms](#_Forms)) must assure that the handler who receives the training certificate has been trained with the WPS training materials approved by EPA.

Verification of training can be by assuring that a worker possesses a handler training certificate (see [Section XIII, Forms](#_Forms)) or is a certified applicator. If the handler training certificate has not been issued to a handler in accordance with this section, or it has been more than one year since the training was completed, the handler’s possession of the certificate does not meet the training requirements.

# Application of Pesticides by a Contracted Vendor

At Penn State, contracted vendors may be used to apply pesticides both to inside and outside locations. It is the responsibility of the vendor to have the proper pesticide certification for the products being applied; a copy of the pesticide applicator’s business license and the applicator’s certification card must be kept on file by the PSU person responsible for the contract to demonstrate that the license is valid and current.

It is important to keep in mind that some pesticide applications which may be made by an uncertified pesticide applicator in a home must be made by a certified commercial applicator for the University.

If not hiring a vendor for a specific pesticide application, ensure that the vendor uses Integrated Pest Management to make pesticide application decisions. The vendor’s pesticide application vehicle must have the business number clearly labelled on the vehicle. When a pesticide is applied by a contracted vendor, a copy of the record (a list of the pesticides applied, location, date, and time) shall be provided by the application business to the Penn State location where the application occurred within 30 days of application.

**Extra Requirements for Contracted Vendors for Agricultural Establishments**

For an agricultural establishment, the following additional information is required by the WPS:

* Specific location and description of area to be treated,
* Time and date pesticide is scheduled to be applied,
* Product name, EPA registration number, and active ingredient(s),
* REI,
* Whether the pesticide labeling requires both treated area posting and oral notification, and
* Any other specific requirements on the pesticide labeling concerning protection of workers and other persons during or after application.

Penn State must provide the following information to the contracted certified pesticide applicator:

* Specific location and description of any areas on the agricultural establishment that may be treated with pesticides or under an REI while the commercial applicator is there, and
* Restrictions on entering those areas.

# Safety Information and Emergency Procedures

## Preplanning for Emergencies

All facilities that store pesticides should preplan for emergencies. Each facility must have/do the following:

* Provide a 10-lb. ABC fire extinguisher located inside the pesticide storage building and within 50 feet of every area in the facility,
* Post these emergency telephone numbers near the phone:
  + Facility Manager (home, office, and cell phone numbers)
  + Facility Alternate (home, office, and cell phone numbers)
  + Safety Officer (home, office, and cell phone numbers)
  + Facilities Coordinator (home, office, and cell phone numbers)
  + PSU Environmental Health and Safety
    - 814-865-6391 (8 am – 5pm)
    - 814-863-1111 (after hours)
  + Fire, Police Ambulance (911)
  + Nearest Emergency Medical Facility
  + Poison Control Center 800-222-1222
  + Pennsylvania Department of Agriculture District Office
  + Department of Environmental Protection District Office,
* Provide exit signage,
* Provide a spill kit that is appropriate for the pesticides stored (See [Section V.A.1, Properly Store Pesticides](#_Properly_Store_Pesticides), which provides the contents of the spill kit),
* Provide emergency eyewash/decontamination supplies where required,
* Provide a first aid kit,
* Label the door of the pesticide storage room or cabinet “Danger Pesticides – Keep Out,” and
* Provide a copy of the annual pesticide inventory and labels in a location that would be accessible if the pesticide storage facility was on fire.

The proper use of fire extinguishers can prevent a small fire from becoming a larger emergency. EHS offers classes in fire extinguisher training for anyone who would like to learn how to use one. Please refer to the following [Fire Prevention and Protection](https://ehs.psu.edu/fire-prevention-and-protection/overview) website for information.

During the monthly pesticide storage area inspection, facility personnel shall identify unsafe conditions and situations, and correct them or develop procedures if it is not possible to correct – PPE should be the last line of protection. In addition, as part of the annual self-audit (See [Section X.G, Annual Audit](#_Annual_Audit)) or when any facility or material changes are made, the facility should be checked more carefully to identify and correct hazards. It may be helpful to have facility personnel provide input in this assessment. Call EHS for assistance if needed to assess hazardous or unsafe situations.

It is recommended that every pesticide storage facility invite the local fire company to the facility. For some outlying separate pesticide storage facilities that store a large amount of pesticides, if water is used to control a large fire, runoff would be contaminated and would therefore contaminate the surrounding environment. It is preferable in those situations to let the fire burn, rather than try to extinguish it. Work with fire and emergency response agencies prior to a fire to establish procedures. Familiarity with the facility will help during an actual emergency.

The required annual pesticide inventory provides the emergency responders with information about facility storage and provides the facility with critical quantities of certain pesticides that may be required to be reported to regulators if a release occurs. The EPA provides a document called the “List of Lists” which lists chemicals that are subject to Emergency Planning and Community Right-to-Know Act (EPCRA) and the Clean Air Act. The List of Lists provides a listing of chemicals and their reportable quantity (RQ) should a release occur. Some of the chemicals in the list are known as “extremely hazardous substances.” Releases of RQs of these chemicals are subject to state and local reporting under section 304 of EPCRA. Other chemicals in the list are regulated under the Comprehensive Environmental Response, Compensation, and liability Act of 1980 (CERCLA). Releases of CERCLA hazardous substances, in quantities equal to or greater than their RQ are subject to state and local reporting as well as reporting to the National Response Center (federal reporting). **These rules are complicated, so call EHS (814-865-6391) if you need clarification**.

The “Lists of Lists” can be downloaded as a pdf document form the [EPA’s website](https://www.epa.gov/epcra/epcracerclacaa-ss112r-consolidated-list-lists-march-2015-version). Pesticides per se are not listed in the “List of Lists,” however the active ingredient(s) may be in the list. Each facility should review their active ingredients to see if they are included in the document and enter the active ingredient and the RQ for the chemical in the appropriate column of the annual pesticide inventory. If a spill of this quantity occurs, specific regulatory reporting must be done within a very short time period (see [Section VIII.F, Reporting of Pesticide Incidents and Accidents](#_Reporting_of_Pesticide)). Knowing these quantities in advance greatly facilitates this reporting. In addition, if your facility stores an extremely hazardous substance in an amount exceeding the threshold planning quantity (TPQ) of these chemicals as contained in the List of Lists, please contact Environmental Health and Safety (814-865-6391).

## Pesticide Exposure Emergencies

If there is reason to believe a person has been poisoned or injured by exposure to pesticides, including, but not limited to exposures from application, splash, spill, drift, or pesticide residues, take the following actions:

1. Remember to protect yourself first – you don’t want to be the next victim. Ensure that you are wearing the proper PPE and that the area is safe to enter.
2. If a person has been exposed to a pesticide, prevent further exposure and make sure that the victim is breathing.
3. Decontaminate the victim immediately – wash thoroughly.
4. Contact emergency medical personnel (911).
5. If you are trained, administer first aid. CPR techniques may be required.
6. The supervisor must provide any obtainable information to medical personnel, including:
   1. Product name, EPA registration number, and active ingredient of any product to which that person might have been exposed;
   2. SDS and pesticide label - antidote, first aid, and other medical information from the product labeling;
   3. The circumstances of application or use of the pesticide; and
   4. The circumstances of exposure of that person to the pesticide.

If an employee has been exposed to a pesticide and is experiencing non-emergency symptoms, they should contact Penn State Occupational Medicine or a panel physician as soon as possible.

Specific instructions for pesticide exposures are given below:

*Ingested pesticides:* Act immediately. Refer to the pesticide label to determine if vomiting should be induced. The decision must be made quickly and accurately. If the pesticide has entered the mouth but has not been swallowed, the mouth should be rinsed with large amounts of water. Never induce vomiting if the victim has ingested petroleum products unless directed to do so by the label, physician, or a poison control center. Never induce vomiting if the victim has swallowed a corrosive poison – a strong alkali or acid. Seek emergency assistance.

*Pesticides on the skin:* Wash the pesticide off as soon as possible to prevent continued exposure and injury. Remove clothing and drench the skin with water that is neither too hot nor too cold, which can increase pesticide absorption. If you are assisting, avoid contact with pesticide contaminated clothing (use gloves and carefully bag the clothing). Thoroughly clean skin and hair with soap and water, being careful not to abrade skin. Dry the person and wrap in a blanket. Seek medical assistance.

*Chemical burns on the skin:* Remove contaminated clothing immediately. Wash skin with large amounts of cool running water. Immediately cover the affected area with a dry, loose, soft, clean cloth. Do *not* use materials recommended as first aid treatments for chemical burns. Seek emergency assistance.

*Pesticides in the eye:* It is very important to wash the eye out as soon as possible. Hold eyelids open and rinse with a gentle stream of clean running water (at body temperature if possible) for 15 minutes or more. Turn the head with the affected eye toward the eyewash to avoid contamination of the other eye if only one eye is involved. Flush under the eyelids to remove debris. If contact lenses are in use, flush over the contact lens, which may dislodge the lens. It is extremely difficult to manually remove the contact lens due to involuntary eye spasms. If the lens is flushed out, continue flushing the eye for at least 15 minutes. Seek emergency assistance.

*Inhaled pesticides:* Immediately move or carry the victim to fresh air – do not allow the victim to walk. Loosen all tight clothing. Apply artificial respiration if breathing is stopped or irregular. Keep the victim as quiet as possible. Prevent chilling but do not overheat. If the victim is convulsing, watch breathing and protect against injury. Pull the chin forward so that the tongue does not block the air passage. Seek emergency assistance.

## Heat Stress

Heat stress can occur when performing any type of outdoor work in the summer, but pesticide applicators and early entry workers that wear PPE are at higher risk. Fortunately, there are several things facility personnel can do to reduce their chance of getting heat stress:

* Drink plenty of water – enough to replace body fluid lost through sweating.
* Gradually adjust to working in the heat.
* If possible, alter work hours to avoid or limit working in the hottest/most humid time of day.
* Take periodic breaks in a shaded or air conditioned area whenever possible.
* Ensure that supervisors are monitoring environmental conditions and their personnel.

When a person works in a hot environment, the body must get rid of excess heat to maintain a stable internal temperature. It does this mainly through circulating blood to the skin and through sweating.

When the air temperature is close to or warmer than normal body temperature, cooling of the body becomes more difficult. Blood circulated to the skin cannot lose its heat. Sweating then becomes the main way the body cools off. But sweating is effective only if the humidity level is low enough to allow evaporation, and if the fluids and salts that are lost are adequately replaced.

If the body cannot get rid of excess heat, it will store it. When this happens, the body's core temperature rises and the heart rate increases. As the body continues to store heat, the person begins to lose concentration and has difficulty focusing on a task, may become irritable or sick, and often loses the desire to drink. The next stage is most often fainting and even death if the person is not cooled down.

Excessive exposure to heat can cause a range of heat-related illnesses, from heat rash and heat cramps to heat exhaustion and heat stroke. Heat stroke can result in death and requires immediate medical attention.

Exposure to heat can also increase the risk of injuries because of sweaty palms, fogged-up safety glasses, and dizziness.

The key to preventing heat stress from becoming a life-threatening situation is to recognize the signs and symptoms and to act immediately. The following chart was taken from EPA’s “A Guide to Heat Stress in Agriculture.”

Table , Heat Stress Identification and Treatment

| Illness | Signs and Symptoms | Cause and Problem | Treatment |
| --- | --- | --- | --- |
| Early heat illness | * Mild dizziness, fatigue, or irritability; decreased concentration; impaired judgment | * Reduced flow of blood to the brain * May lead to heat exhaustion or heat stroke | * Loosen or remove clothing * Rest in the shade 30 minutes or more * Drink water |
| Heat rash  “prickly heat” | * Tiny, blister-like red spots on the skin; pricking sensation * Commonly found on clothed areas of the body | * Sweat glands become plugged and inflamed from unrelieved exposure of skin to heat, humidity, and sweat | * Clean skin, apply mild drying lotion or corn starch * Wear loose clothing * Preventable by regular bathing and drying the skin and by periodic relief from humid conditions of work * See physician if rash persists |
| Heat cramps | * Painful spasms of leg, arm, or abdominal muscles * Heavy sweating, thirst * Occurs during or after hard work | * Loss of body salt in sweat * May be totally disabling | * Loosen clothing * Drink lightly salted beverages * Massage * Rest |
| Heat exhaustion  ***Immediate Treatment Required***  ***Call 911*** | * Fatigue, headache, dizziness, muscle weakness, loss of coordination, fainting, collapse * Profuse sweating; pale, moist, cool skin; excessive thirst, dry mouth; dark yellow urine * Fast pulse, if conscious * Low or normal oral temperature, rectal temperature usually 99.5 – 101.3 degrees F * May also have heat cramps, nausea, urge to defecate, rapid breathing, chills, tingling of the hands or feet, confusion, giddiness, slurred speech, irritability | * Dehydration, lack of acclimatization; reduction of blood in circulation; strain on circulatory system, reduced flow of blood to the brain * Worker may resist treatment * May lead to heat stroke | * Removal to cooler, shaded area as quickly as possible * Rest lying down * If conscious, have worker drink as much water as possible * ***Do not give salt*** * If unconscious or if heat stroke is also suspected, treat for heat stroke until proven otherwise * Loosen or remove clothing * Splash cold water on body * Massage legs and arms * If worker collapsed, get evaluation by physician, nurse, or EMT before worker leaves for the day; shower in cold water; rest for balance of day and overnight |
| Heat stroke  ***Immediate Treatment Required***  ***Call 911*** | ***Life-threatening medical emergency***   * Often occurs suddenly * Headache, dizziness, confusion, irrational behavior, coma * Sweating may slow down or stop * Fast pulse, if conscious * Rapid breathing * Rectal temperature 104 degrees F and over * May also have convulsions, nausea, incoherent speech, very aggressive behavior | * Sustained exertion in heat, lack of acclimatization, dehydration, individual risk factors; reduced flow of blood to the brain and other vital organs, body’s temperature-regulating system fails, body cannot cool itself * Risk of damage to vital organs, including the heart, brain, central nervous system, liver, and kidney * Worker may resist treatment * ***Brain damage and death can result even with prompt treatment*** | * Move to a shaded area * Remove outer clothing/shoes * Immediately wrap in wet sheet, pour water on and fan vigorously, avoid over-cooling * Treat shock if present, once temperature is lowered * If worker vomits, make sure all vomit is cleared from mouth and nose to prevent choking on vomit * Transport to nearest medical treatment facility at once * While awaiting transport, elevate legs, continue pouring on water and fanning * If conscious, have worker drink as much water as possible * ***Do not give salt*** |

## Pesticide Spills

Pesticides spills can occur despite careful handling. Small spills can result from leaking containers or splashes that occur during pesticide mixing and loading. Larger spills may occur from equipment malfunctions or vehicle accidents. **For all spills, it is extremely important to prevent any of the spilled material from entering a body of water, including storm sewers or drains, no matter how small the spill.**

The person observing the spill or release shall:

* Identify the problem.
* Ensure that you have on the proper PPE.
* Stop the source of the spill/release. If a sprayer has tipped over or if a hazardous chemical is leaking from a damaged tank, take only those measures that can be done while protecting yourself. If a smaller chemical container is found to be leaking, place it in secondary containment. Do not expose yourself unnecessarily to the spilled pesticide and do not place yourself at risk.
* If the spill is large or dangerous, call 911 for assistance, and then call EHS (see [Section VIII.F, Reporting of Pesticide Incidents and Accidents](#_Reporting_of_Pesticide), below). Do not leave the spill unattended, but stand back far enough so that you are not in danger.
* Contain the spill/release by using absorbent socks, soil, or other materials, or construct a dike to prevent the spill/release from migrating to other areas such as soil, drains, or surface water. If it is a windy day and the pesticide spilled is a solid that may be blown, use the spray bottle in the spill kit to moisten the surface or cover the spill with a plastic cover or tarp. ([Section V.A.1, Properly Store Pesticides](#_Properly_Store_Pesticides), contains a list of materials that must be in the spill kit.) If the spill occurs remotely from the pesticide storage area, use any available materials to contain the spill that will not react with the spilled pesticide. Avoid using sweeping compounds or sawdust if the material spilled is a strong oxidizer (check the label or SDS) because such a combination presents a possible fire hazard.
* Recover the spilled/released material and impacted soil or gravel by covering it with absorbent materials (pads, pillows, or loose absorbent). Other materials can be used as needed including shop rags, sawdust, etc. All free product must be absorbed. If the spill/release is to soil or gravel, excavate all material that is impacted. Use both visual observations and odors to determine the extent of material to be excavated. If the spill is to a concrete or paved area, it may be necessary to decontaminate or neutralize the area, especially if a carbamate or organophosphate insecticide was involved. Use ordinary bleach in water (30% solution) or hydrated lime, **but not both**. Work this cleaning material into the spill with a stiff broom and then use fresh absorbent material to soak up the now contaminated cleaning solution. This material should be swept up for disposal with the recovered spilled/released material.
* Place all recovered material/absorbents in a plastic bag, bucket, or drum and label with the contents. Ensure that this waste has secondary containment.
* Properly dispose of the used absorbent materials and excavated soil/gravel through the EHS Chemical and Chemical Waste Management Program.

## Fires

In the event of a fire, smoky condition, or explosion, the following actions should be promptly taken:

* Employees should actuate the nearest fire alarm pull station and/or make a telephone call to 911 and evacuate the building. It may be necessary to activate additional fire alarm pull stations, or verbally announce the alarm, if people are still in the building and the alarm has stopped sounding, or if the alarm does not sound. This should be done while exiting the building.
* To report all emergencies, employees should call 911. State you name, your location, and the nature of the call. Speak slowly and clearly. Wait for the dispatcher to hang up first. On occasion the dispatcher may need additional information or may provide you with additional instructions.
* When the fire alarm sounds, occupants should ensure that nearby personnel are aware of the emergency, quickly shutdown operating equipment (e.g., compressed gas cylinders), close doors (DO NOT LOCK) and exit the building using established evacuation routes.
* Occupants shall assist visitors, students and others who are not familiar with the facility to safely evacuate.
* All occupants should proceed to the designated meeting site and await further instructions. All personnel should know where primary and alternate exits are located, and be familiar with the various evacuation routes available. Building occupants must NOT use elevators as an escape route in the event of a fire.
* You may not re-enter the building until given the all clear by emergency responders.
* Inform the fire department of the nature of the pesticides stored. Provide them with the annual inventory list and labels/SDSs for each material stored. Be prepared to present an overview of the types of hazards related to pesticide storage at the facility – e.g., if there are emulsions with petroleum products these increase the risk of fires.
* Keep people away.
* If significant smoke is generated, evacuate people from downwind areas.
* Have an ambulance standing by at the fire.
* Be aware that any runoff generated may be contaminated with pesticides.

**Notes and Precautions:**

* Portable fire extinguishers can be used for small fires. However, an immediate readiness to evacuate is essential.
* Never enter a room that is smoke filled.
* Before opening doors check to ensure it is not hot to the touch. If hot do not open. If warm open slowly to check room/hallway conditions.

## Reporting of Pesticide Incidents and Accidents

All significant pesticides accidents and incidents must be reported to the supervisor and safety officer. A significant pesticide accident or incident is defined as “an accident or incident involving a pesticide which creates a danger to human beings or results in damage to plant or animal life.” This has been further defined by the PDA to mean an accident or incident involving a pesticide which requires a person to obtain medical treatment, results in illness requiring veterinary treatment of any wild or domestic animal, results in the unintended death of a human or animal, pollutes the waters of the Commonwealth, or causes damage which results in an economic loss of plants, organisms, structures, or stored commodities. **These types of incidents and accidents must be reported to EHS as soon as possible to determine the needed regulatory reporting.** In addition, a PSU accident report (FROI – First Report of Injury) should be filed if anyone is hurt, no matter how minor the injury may seem.

The Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and Superfund Amendments and Reauthorization Act (SARA) Emergency Planning and Community Right-to-Know Act (EPCRA) require that spills or releases of reportable quantities of hazardous substances and extremely hazardous substances as defined by the “List of Lists” must be reported immediately. [Section VIII.A, Preplanning for Emergencies](#_Preplanning_for_Emergencies) provides information on how to determine if a pesticide may be covered by these regulations.

A release is reportable under EPCRA and CERCLA if it meets the following criteria:

* Listed as either an extremely hazardous substance (EHS) or CERCLA chemical,
* Meets or exceeds the reportable quantity of such substance, and
* Enters the environment.

In addition, to reporting significant pesticide incidents and accidents to the PDA, the Pennsylvania Clean Streams Law requires the reporting of any release to the regional office of the PADEP and to the PA Fish and Boat Commission if pollution is discharged to waters of the Commonwealth, including sewers, drains, ditches or other channels of conveyance into the waters, regardless of the quantity. The notification to the regional office of the PADEP must be done as soon as the emergency actions have been taken. The location and phone number of the regional PDA, PADEP, and Fish and Boat Commission offices is provided in the Appendix – Emergency Contact Information.

**Pesticide applicators and supervisors should know the reportable quantities, if any, of the pesticides that are stored and should call Environmental Health and Safety (814-865-6391) immediately following any release to ensure that the regulatory requirements are met. If the facility is not located at University Park, the facility personnel should also contact their Emergency Coordinator as designated in the Environmental Hazards Emergency Response Plan; Preparedness, Prevention, and Contingency Plan; or other spill plan for their location, who will perform this regulatory reporting.**

What to report:

* Name and title of the person reporting the incident,
* Name and location of the facility (address and phone number),
* Phone number where the person reporting the spill can be reached,
* Date, time, and location of the incident,
* A brief description of the incident, nature of the materials involved, estimated quantity of the materials spilled, extent of any injuries, possible hazards to human health or the environment, and type of containment and clean-up actions taken,
* The extent of contamination of land, water, or air, if known (e.g., bodies of water), and
* The names and organizations of the individuals who have already been contacted.

This information should be reported as soon as possible (i.e., within one hour).

# Pesticide Incident/Accident Documentation and Investigation

All pesticide incidents and accidents are to be documented and a post-incident investigation conducted. If your facility is covered by an Environmental Hazards Emergency Response Plan, Preparedness, Prevention, and Contingency (PPC) Plan or other spill plan, follow the procedures in that plan, otherwise use the following procedures.

## Pesticide Incident/Accident Documentation

All incidents must be documented by the Facility Manager and maintained at the facility. [Section XIII, Forms](#_Forms), provides a template of the required information. The incident documentation is required to be completed within one week of the incident’s occurrence. The supervisor shall complete this form. A copy of the completed form shall be sent to EHS, and if not at University Park and covered by an Environmental Hazards Emergency Response Plan, Preparedness, Prevention, and Contingency Plan, or other spill plan, to the Emergency Coordinator.

## Pesticide Post-Incident/Accident Investigation

A post-incident investigation is required for all pesticide incidents and accidents. The Facility Manager, in general, will conduct this investigation, with assistance from the Emergency Coordinator (if covered by a spill plan), EHS, and/or the Safety Officer, if needed. For large incidents, other non-PSU agencies may participate. [Section XIII, Forms](#_Forms), provides a template for the post-incident investigation. Additional information not addressed in this form shall be obtained as necessary to fully understand the root cause(s) of the incident/accident and to determine and implement the corrective action necessary to prevent a repeat of the incident/accident, if possible. At the completion of the incident investigation, the information learned shall be communicated to facility personnel, implemented at the facility, and documented at the facility. The investigation shall be completed within one week of the incident/accident. EHS may require a copy of the post-incident investigation.

# Documentation and Record Keeping

## Business License and Applicator Certification

A copy of the pesticide application business license and the current certification for each applicator must be kept at the facility. This information must be kept up to date and be available for review.

## Hypersensitivity Registry Contacts

A record must be kept of every contact and contact attempt to a person on the hypersensitivity registry when these notifications are required to be made (See [Section V.B.6, Pesticide Hypersensitivity Registry](#_Pesticide_Hypersensitivity_Registry)). The record must include the date, time, and method of notification, and must be maintained for a period of three years. The information must be available to the PDA or to medical personnel during an emergency.

## Prior Notification

Supervisors must keep records of prior notifications for pesticide applications (see [Section V.B.4, Prior Notification](#_Prior_Notification)). The following records shall be kept:

* A copy of the newspaper advertisement or a statement describing other methods of prior notification.
* The name and address of every person requesting additional information.
* The date and time of individual notification.
* A copy of correspondence relating to prior notification.

These records must be kept for three years and shall be available to the PDA upon request.

## Records of Pesticide Application

Penn State applicators must keep a record for every application of a pesticide containing the following information:

* Date of the application and for a pesticide requiring a reentry time, the date of the application shall include the time completed;
* Name and address of application site;
* Brand name and amount used;
* Dosage rate of each pesticide used;
* Name of applicator and registration number of each person making the application;
* EPA registration number; and
* Identification of the application site including specific field or land area and the crop.

Extra requirements for pesticide applications for agricultural facilities are given in the next section.

When a pesticide is applied by a contracted vendor, a copy of the record shall be provided by the application business to the Penn State location where the application occurred within 30 days of application.

These records (application records, label, and SDS) must be maintained for at least three years and shall be made available immediately to workers, the PDA upon request, or to medical personnel in an emergency.

## Extra Requirements for Agricultural Pesticide Use

Supervisors must be able to verify compliance with the training requirements for workers and handlers. A copy of the training record must be on file at the facility for each worker or handler that is present. The PDA certification requirements are sufficient for handler training.

Pesticide-specific application information must be maintained by the facility including:

* All of the information required by [Section V.B.11, Pesticide Application](#_Pesticide_Application), plus
* Active ingredient of pesticide,
* Date and time the pesticide application started and ended, and ,
* Restricted entry interval for pesticide.

This information must be displayed continuously in the central posting area until:

* At least 30 days after the restricted entry interval expires, or
* At least 30 days after the end of the application, if there is no restricted entry interval for the pesticide.

## Monthly Pesticide Storage Area Inspection

Every month an inspection must be made of the pesticide storage area. The form given in [Section XIII, Forms](#_Forms), contains the required information. The records must be kept for one year.

## Annual Inventory

Every year an inventory of the pesticides at the facility must be made. The form given in [Section XIII, Forms](#_Forms), contains the required information; however the inventory must be entered into the EHS online chemical inventory system as per University Safety Policy [SY39](http://guru.psu.edu/policies/SY39.html), Hazardous Chemical Inventory Management. It is acceptable to add the additional required information to the printout from the online inventory.

## Annual Audit

Every year supervisors must perform an audit of their pesticide storage facility as well as their pesticide practices and recordkeeping. The annual audit form is given in [Section XIII, Forms](#_Forms). The purpose of the self-audit is to provide an opportunity to supervisors to ensure that their facility and personnel are meeting all of the Pesticide Management Program requirements. **The completed audit must be signed by the supervisor and the department/unit head, and submitted to EHS by January 31st of each year for the previous year.**

The components of the annual audit are:

* A check to determine if the monthly Pesticide Storage Area Inspections are being performed;
* A check to see if the facility has a business license and if it is up to date;
* A list of all certified applicators at the facility, and copies of their current licenses;
* A copy of the annual pesticide inventory which includes all of the required information;
* Copies of all notifications, and if none an explanation, including:
  + Newspaper
  + Adjacent landowner
  + Hypersensitive individuals;
* A check to determine that the list of all pesticide application records for the preceding three years is available;
* The location of SDSs and how they are available (hard copy, web, etc.);
* A check that all pesticides have labels and that copies of these labels are in another safe location in the event of a fire;
* A check that secondary containment is present for all liquid pesticides;
* A check that Emergency Information is posted;
* A review of pesticide storage area requirements and best management practices and deficiencies found;
* A review and correction of hazards/unsafe conditions or practices at the facility; and
* For those facilities covered by the Worker Protection Standard:
  + A check that all workers have received the worker training within the past 12 months, and that copies of the training certificates are on file,
  + A check that all handlers have received the handler training within the past 12 months, and that copies of the training certificates are on file, or that the handlers are also are certified applicators, and
  + The central location postings are complete including the Worker Safety Poster.

# Summary of Program Requirements

In order to be in compliance with the Penn State Pesticide Management Program, the following must be done at your facility:

* Review responsibilities ([Section II](#_Responsibilities));
* Determine which regulations apply to your facility ([Section III](#_Laws_and_Regulations));
* Ensure that you have a business license and that employees who apply pesticides at your facility are certified applicators in the correct category ([Section IV](#_Certification/Licensing_Requirement));
* Review storage area requirements as they relate to your facility ([Section V.A](#_Storage));
* Ensure that handling and use of pesticides is done in a safe and legal manner including ([Section V.B](#_Handling_and_Use)):
  + Use of IPM,
  + Proper vehicle business license display,
  + Prior notification performed, when required,
  + Hypersensitive persons notified if present and required,
  + Follow label requirements,
  + Wear proper PPE at all times,
  + Maintain decontamination supplies in required quantities and locations,
  + Mix pesticides carefully, calibrate equipment,
  + Keep records of pesticide applications,
  + Properly handle pesticide contaminated clothing, and
  + Transport pesticides safely;
* If covered by the Worker Protection Standard (WPS) also ([Section V.B.14](#_Extra_Requirements_for)):
  + Review central location posting requirements,
  + Follow special restrictions in nurseries and greenhouses, if applicable,
  + Ensure restricted entry intervals (REIs) are respected, and if activities are performed prior to the end of an REI, that they meet the requirements for early entry tasks,
  + Perform oral/posted notifications as required by the label, and
  + Maintain decontamination supplies in required quantities and locations;
* Dispose of unwanted pesticides through EHS’s Chemical Waste Handling Program or through CHEMSWEEP ([Section V.C](#_Disposal));
* Ensure that training responsibilities are met ([Section VI](#_Training_Requirements));
* Ensure that contracted vendors provide the required documentation/records ([Section VII](#_Application_of_Pesticides));
* Review Safety and Emergency Procedures ([Section VIII](#_Safety_Information_and)):
  + Preplanning for emergencies - Proper postings and safety equipment,
  + Ensure personnel understand heat stress and measures to prevent it,
  + Review pesticide spills and response procedures,
  + Review fire emergency procedures, and
  + Ensure facility personnel know which incidents and accidents need to be reported and how to do it;
* Ensure that pesticide incidents/accidents are documented and investigated ([Section IX](#_Pesticide_Incident/Accident_Documen)); and
* Review documentation and recordkeeping ([Section X](#_Documentation_and_Record)).

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40 CFR Part 170 – Worker Protection Standard, US EPA

7 Pa Code Chapter 128 – Pesticides, PDA

# Forms

* Monthly Pesticide Facility Checklist
* Annual Pesticide Inventory
* General and Restricted Use Pesticide Application Records for Public Applicators
* Pesticide Facility Annual Self Audit
* Worker Protection Standard - Worker Training Certificate
* Worker Protection Standard - Handler Training Certificate
* Pesticide Incident/Accident Documentation
* Pesticide Post-Incident/Accident Investigation
* OSHA Quick Card – Heat Stress

**Monthly Pesticide Facility Checklist**

Location:

Date: Inspector:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Yes | No | N/A |
| *General Information* |  |  |  |
| * Clean, neat pesticide storage site |  |  |  |
| * Clean area to dress available |  |  |  |
| * All required PPE available in clean location |  |  |  |
| * Current, on-site annual pesticide inventory |  |  |  |
| * Labels on file for all pesticides |  |  |  |
| * Accurate monthly storage inspection log maintained |  |  |  |
| * Storage area temperature between 40º and 90º F. |  |  |  |
| *Pesticide Containers* |  |  |  |
| * Containers marked with purchase date (old pesticide inventory to be used first) |  |  |  |
| * Insecticides, herbicides, and fungicides segregated |  |  |  |
| * Pesticides stored in original containers |  |  |  |
| * Labels legible and attached to containers |  |  |  |
| * Container caps tightly closed |  |  |  |
| * Containers out of direct sunlight |  |  |  |
| * No reused pesticide containers present |  |  |  |
| * Pesticides stored off the floor and low to the ground |  |  |  |
| * Liquid formulations have secondary containment |  |  |  |
| * Feeds stored separately from pesticides |  |  |  |
| * Used containers properly rinsed |  |  |  |
| * Rinsed and unrinsed containers separated |  |  |  |
| *Spills and Disposal* |  |  |  |
| * Storage area free of spills or leaks |  |  |  |
| * Spill kit present and stocked |  |  |  |
| * Floor drains sealed if flow to other than holding tank |  |  |  |
| * Holding tank in good condition and not full |  |  |  |
| *Safety Information* |  |  |  |
| * Safety equipment separated from pesticides |  |  |  |
| * Fire extinguisher in good working order |  |  |  |
| * First Aid kit available |  |  |  |
| * Phone available and emergency phone numbers posted |  |  |  |
| * Storage room/cabinet and windows locked |  |  |  |
| * Storage area posted: “Danger Pesticide Storage Area” |  |  |  |
| * Storage site well-lit and ventilated |  |  |  |

Comments:

**Annual Pesticide Inventory**

Location:

Date: Completed By:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pesticide Trade Name | Active Ingredient | Restricted Use/ General Use | Container Size | CERCLA RQ\* |
| EPA Registration Number | Signal Word | Storage Location | Max. # Containers | EHS RQ\* |
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**General and Restricted Use Pesticide Application Records for Penn State Applicators**

Business License Name: Business Unit License Number:

| Date  (m/d/y) | Site Name/Address | Brand  Name | EPA  Registration  # | Dosage  or Rate  Used | Amount of Pesticide Used | Completion  Time  (AM/PM) | Applicator Name |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Start  Time\*  (AM/PM) | Application Location Detail | Active  Ingredient\* | Reentry  time\*  (hrs.) | Applicator Certification  Number |
|  |  |  |  |  |  | AM  PM |  |
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**Pesticide Facility Annual Self Audit**

Location:

Date: Inspector:

|  |  |  |
| --- | --- | --- |
| **Item** | **Y/N/NA** | **Comments** |
| Monthly Pesticide Storage Area Inspections performed |  |  |
| Business License copy available and up to date |  |  |
| List of all certified applicators and copies of licenses available |  |  |
| Annual Pesticide Inventory available (date of last inventory) |  |  |
| Copies of all notifications:   * Newspaper * Adjacent Landowner * Hypersensitivity Registry contacts |  |  |
| Pesticide application records for preceding three years available |  |  |
| SDSs available (how?) |  |  |
| Pesticide labels available |  |  |
| Secondary containment present for all liquid pesticides |  |  |
| Emergency Information posted |  |  |
| Review storage area requirements/best management practices and deficiencies found |  |  |
| Review and correction of hazards/unsafe conditions or practices |  |  |
| **WPS Only:** |  |  |
| Copies of training records for all workers not more than one year old |  |  |
| Copies of training records for all handlers not more than one year old |  |  |
| Following Agriculture Exclusion Zone requirements |  |  |
| Worker Safety Poster posted |  |  |

Department/Unit Head Name Department/Unit Head Signature and Date

**Send a copy of this Annual Self Audit to EHS (6 Eisenhower Parking Deck, University Park) by January 31st of each year.**

**Penn State University**

**Worker Protection Standard**

**Acknowledgement of Worker Training**

I hereby acknowledge having received instruction on the safety precautions to be used as a worker in areas which have been treated with pesticides. I understand that these requirements are established in the Federal Worker Protection Standard Worker Safety Rules, Code of Federal Regulations Title 40 CFR Part 170. I acknowledge receiving instruction in the area of worker safety as listed above and in a language that I can understand.

Name (Last, First, Middle) Signature

Date PSU ID#

College/Unit Department/Division

Trainer and Trainer Certified Applicator # Worker’s Supervisor

EPA Approved Training Materials

**Penn State University**

**Worker Protection Standard**

**Acknowledgement of Handler Training**

I hereby acknowledge having received instruction on the safety precautions to be used when working as a pesticide handler with pesticides and treated areas. I understand that these requirements are established in the Federal Worker Protection Standard Worker Safety Rules, Code of Federal Regulations Title 40 CFR Part 170. I acknowledge receiving instruction in the area of worker safety as listed above and in a language that I can understand.

Name (Last, First, Middle) Signature

Date PSU ID#

College/Unit Department/Division

Trainer and Trainer Certified Applicator # Handler’s Supervisor

EPA Approved Training Materials

Pesticide Incident/Accident Documentation

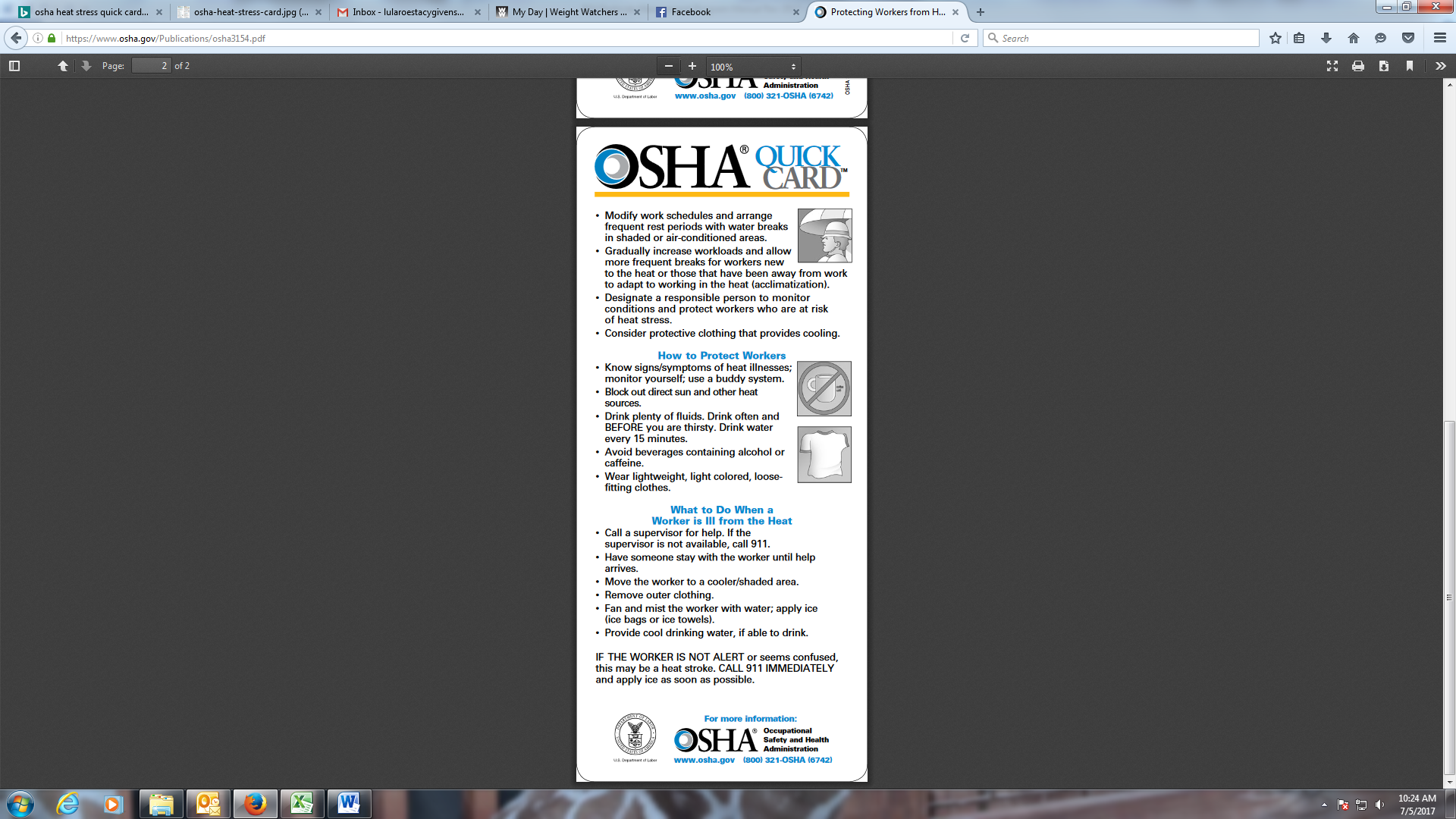
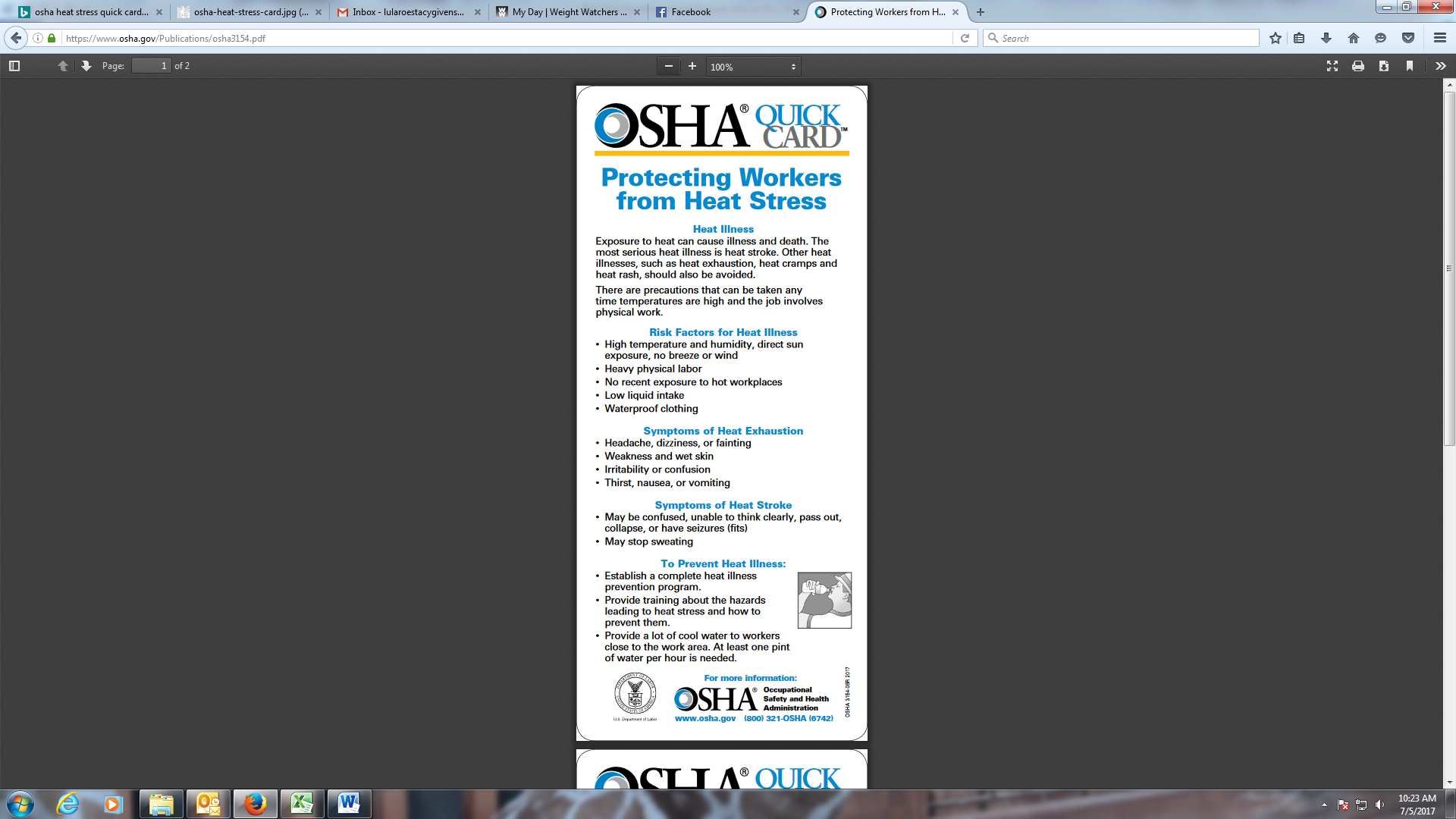
**All incidents/accidents are required to be documented at the facility.**

1. Date and time of the incident:
2. Employee name(s), title(s), telephone number(s), and email(s):
3. Location of incident:
4. Witnesses, if any:
5. Brief description of the incident/accident, materials involved, condition and size of container, estimated quantity spilled/released, extent of any injuries, environmental receptors (paved surface, soil, surface water, etc.), actual or potential hazard to human health:
6. Measures taken to clean-up spill/release:
7. Estimated quantity and disposition of the recovered material that resulted from the incident:
8. EHS notification – Date: Time: Person Reached:
9. Sketch of incident location, if needed:

Pesticide Post-Incident/Accident Investigation

A post-incident/accident investigation is required for all pesticide incidents and accidents. This form must be attached to the Pesticide Incident/Accident Documentation form and must be kept at the facility. A copy of this form is required to be submitted to EHS.

1. Date and time of incident/accident:
2. Employee name(s), title(s), telephone number(s), and email(s) involved in the incident:
3. Location of incident:
4. Name(s) and title(s) of person(s) performing the post-incident/accident investigation:
5. What was the nature of the task being performed at the time of the incident/accident?
6. Was the person performing the task appropriately trained?
7. Was the equipment being used appropriate to the task and was the proper procedure being followed?
8. Was this a new type of task?
9. Was supervision of the task appropriate?
10. Were there unusual (physical or otherwise) conditions at the time that contributed to the incident/accident?
11. Has the root cause of the incident been determined? What was it?
12. What actions could have prevented the incident/accident?
13. Has this type of incident/accident occurred previously at the facility? Was there a corrective action identified? Was it implemented? If not, why?
14. What corrective action has been taken (procedure, equipment, training, etc.)?
15. Has information learned from the post-incident/accident investigation been communicated to all employees?



**Appendix**

**Emergency Contact Information**

| Campus/Facility | County | Nearest Emergency Medical Facility | PDA Regional  Office | PFBC Regional Office | DEP Regional  Office |
| --- | --- | --- | --- | --- | --- |
| Abington | Montgomery | Abington Hospital-Jefferson Health, 215/481-2000 | 7 | Southeast | Southeast |
| Altoona | Blair | UPMC Altoona, 814/889-2011 | 5 | Southcentral | Southcentral |
| Beaver | Beaver | The Medical Center, 724/728-7000 | 4 | Southwest | Southwest |
| Behrend – Erie | Erie | UPMC Hamot, 814/877-6000  St. Vincent Health System,  814/452-5000 | 1 | Northwest | Northwest |
| Berks | Berks | Reading Hospital 484/628-8000 | 7 | Southeast | Southcentral |
| Biglerville Fruit Research | Adams | WellSpan Gettysburg Hospital, 717/334-2121 | 6 | Southcentral | Southcentral |
| Delaware County | Delaware | Riddle Hospital, 484/227-9400 | 7 | Southeast | Southeast |
| Dickinson School of Law | Cumberland | Carlisle Regional Medical Center 717/249-1212 | 6 | Southcentral | Southcentral |
| DuBois | Clearfield | DuBois Regional Medical Center, 814/375-3372 | 5 | Northcentral | Northcentral |
| Fayette | Fayette | Uniontown Hospital 724/430-5000 | 4 | Southwest | Southwest |
| Great Valley | Chester | Paoli Hospital, 484/565-1000 | 7 | Southeast | Southeast |
| Harrisburg | Dauphin | Hershey Medical Center,  717/531-7235  Harrisburg Hospital, 717/782-3131 | 6 | Southcentral | Southcentral |
| Hazleton | Luzerne | Lehigh Valley Hospital - Hazleton, 570/501-4000 | 3 | Northeast | Northeast |
| Lake Erie Regional Grape Research | Erie | UPMC Hamot- Vineyard Primary Care,  814/877-7711 | 1 | Northwest | Northwest |
| Lehigh Valley | Lehigh | Lehigh Valley Hospital – Cedar Crest, 610/402-2273 | 7 | Southeast | Northeast |
| Greater Allegheny | Allegheny | UPMC – McKeesport,  412/664-2000 | 4 | Southwest | Southwest |
| Mont Alto | Franklin | Waynesboro Hospital,  717/765-4000  Chambersburg Hospital,  717/267-3000 | 6 | Southcentral | Southcentral |
| New Kensington | Westmoreland | Allegheny Valley Hospital, 724/224-5100  Community Health Clinic,  724/335-3334 | 4 | Southwest | Southwest |
| Schuylkill | Schuylkill | Schuylkill Medical Center South Jackson Street, 570/621-5000  Schuylkill Medical Center East Norwegian Street,  570/621-4000 | 7 | Southeast | Northeast |
| Shenango | Mercer | Sharon Regional Health System,  724/983-3911 | 1 | Northwest | Northwest |
| Southeast Field Research | Lancaster | Lancaster General Hospital,  717/544-5511 | 6 | Southeast | Southcentral |
| Stone Valley | Huntingdon | Mt. Nittany Medical Center,  814/231-7000 | 5 | Southcentral | Southcentral |
| University Park | Centre | Mt. Nittany Medical Center,  814/231-7000 | 5 | Northcentral | Northcentral |
| University Park Airport | Centre | Mt. Nittany Medical Center,  814/231-7000 | 5 | Northcentral | Northcentral |
| Wilkes-Barre | Luzerne | Wilkes-Barre General Hospital,  570/829-8111 | 3 | Northeast | Northeast |
| Worthington Scranton | Lackawanna | Moses Taylor Hospital  570/770-5000  CMC – Trauma Unit  570/703-8000 | 3 | Northeast | Northeast |
| York | York | WellSpan York Hospital,  717/851-2345 | 6 | Southcentral | Southcentral |

**Emergency Regulatory Reporting Phone Numbers**

**Pennsylvania Department of Agriculture Regional Offices:**

Region 1, Meadville

*814/332-6890*Region 2, Montoursville

*570/433-2640*Region 3, Tunkhannock

*570/836-2181*

Region 4, Gibsonia

*724/443-1585*Region 5, Altoona

*814/946-7315*Region 6, Harrisburg

*717/346-3223*

Region 7, Collegeville

610/489-1003

**Pennsylvania Department of Environmental Protection Regional Offices:**

Northwest Regional DEP Office, Meadville

*814/332-6945*

*800/373-3398 (evenings and weekends)*

Southwest Regional DEP Office, Pittsburgh

*412/442-4000*

Northcentral Regional DEP Office, Williamsport

*570/327-3636*

Southcentral Regional DEP Office, Harrisburg

*717/705-4741*

*877/333-1904 (evenings and weekends)*

Northeast Regional DEP Office, Wilkes-Barre

*570/826-2511*

Southeast Regional DEP Office, Norristown

*484/250-5900*

Central DEP Office, Harrisburg (to be contacted if the PADEP Regional Office cannot be reached)

*717/783-2300*

**Pennsylvania Fish and Boat Commission Regional Offices:**

Northwest Regional DEP Office, Meadville

*814/337-0444*

Southwest Regional DEP Office, Somerset

*814/445-8974*

Northcentral Regional DEP Office, Pleasant Gap

*814/359-5250*

Southcentral Regional DEP Office, Newville

*717/486-7087*

Northeast Regional DEP Office, Sweet Valley

*570/477-5717*

Southeast Regional DEP Office, Elm

*717/626-0228*

**National Response Center (NRC)**

*800/424-8802*

**Pennsylvania Emergency Management Agency (PEMA)**

*800/424-7362*

**Local Emergency Planning Committee (LEPC)**

*911 (or for Centre County non-emergency 800/479-0050)*