

Worker Protection Standard for Agricultural Establishments

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This publication describes the federal Worker Protection Standard (revised 2015), to help owners or operators of agricultural operations determine if it applies to their businesses, and provide information on how to comply.

The U.S. Environmental Protection Agency (EPA) issued the Worker Protection Standard (WPS) to protect employees working on agricultural establishments from exposure to agricultural pesticides, both general and restricted use. Similar to the goal of the Occupational Safety and Health Administration (OSHA), the WPS was put in place to provide employees with a safe workplace; the obligation for safety falls on the employer. The WPS requires employers to protect two types of agricultural employees: agricultural workers and pesticide handlers (see definitions under ‘Key Terms’), as well as others who may be in the vicinity of a pesticide application. The WPS is part of the pesticide label; it is enforceable when a pesticide with a label referencing the WPS is used to produce an agricultural plant. Any farm or community garden that produces agricultural plants for sale, trade, or use in another location meets the definition of an agricultural establishment under the rule, and is subject to the WPS. The WPS also applies to commercial pesticide handler employers and employers of researchers who grow/harvest plants.

The EPA manual *How to Comply with the Worker Protection Standard for Agricultural Pesticides—What Employers Need to Know* provides complete, detailed information about the WPS. Employers will find this manual to be a valuable resource for compliance. Additional resources, including WPS training materials and recordkeeping forms, are also available. Access information is listed in the Resources section at the end of this publication.

Key Terms

Understanding key terms used in the WPS is important for compliance. Here are definitions for some key terms:

General terms

Agricultural employer: any person who (1) is an owner of, or is responsible for the management or condition of, an agricultural establishment, and (2) employs any worker or handler.

Agricultural establishment: any farm (including a vineyard, sod farm, etc.), forest operation, or nursery engaged in the outdoor or enclosed space production (greenhouse, polyhouse, mushroom house, hoop house, high tunnel, etc.) of agricultural plants.

Agricultural owner: any person who possesses or has interest (fee, leasehold, rental, or other) in an agricultural establishment.

Agricultural plants: plants grown or maintained for commercial or research purposes. Examples include plants for food, feed, or fiber; trees; turfgrass; flowers; shrubs; ornamentals; and seedlings. Horticultural plants grown for future transplant are included. Pasture or rangeland used for grazing is not included.

Workers: those who perform tasks related to the production (pruning, roguing, detasseling, etc.) or harvesting of plants on agricultural establishments who may work in areas where pesticide residues are present. Crop advisors are considered workers if they perform crop advising tasks outside of a restricted entry interval (REI).

Handlers: those who mix, load, transfer, or apply agricultural pesticides; clean, adjust, or repair pesticide application equipment; dispose of pesticides or containers; act as flaggers; perform crop advising tasks during a pesticide application or during an REI; or may otherwise have direct contact with concentrated pesticides or tank mixes.

Commercial pesticide handler employer (CPHE): any person, other than an agricultural employer, who employs any handler to perform handler activities on an agricultural establishment. A labor contractor who does not provide pesticide application services or supervise handler activities, but merely employs laborers who perform handler activities at the direction of an agricultural or handler employer, is not a CPHE.

Commercial pesticide handling establishment: any enterprise, other than an agricultural establishment, that provides pesticide handler or crop advising services to agricultural establishments.

Crop advisors: those who assess pest numbers or damage; pesticide distribution (the performance of a pesticide on a crop after application such as the spray pattern or coverage and/or its effectiveness); or the status, condition, or requirements of agricultural plants. Crop advisors include crop consultants, crop scouts, and integrated pest management (IPM) monitors.

Labor contractor: a person, other than a commercial pesticide handler employer, who employs workers or handlers to perform tasks on an agricultural establishment for an agricultural employer or a commercial pesticide handler employer.

Employ: to obtain, directly or through a labor contractor, the services of a person in exchange for a salary or wages, including piece-rate wages, without regard to who may pay or who may receive the salary or wages. It includes obtaining the services of a self-employed person, an independent contractor, or a person compensated by a third party. The exception is an agricultural employer obtaining the services of a handler through a commercial pesticide handler employer or a commercial pesticide handling establishment.

Immediate family: the agricultural owner's spouse, parents, stepparents, foster parents, father-in-law, mother-in-law, children, stepchildren, foster children, sons-in-law, daughters-in-law, grandparents, grandchildren, brothers, sisters, brothers-in-law, sisters-in-law, aunts, uncles, nieces, nephews, and first cousins.

First cousin: the child of a parent's sibling (the child of an aunt or uncle).

Terms regarding personal protective equipment (PPE):

Chemical-resistant: made of material that prevents any measurable movement of the pesticide being used through the material during use.

Waterproof: made of material that prevents any measurable movement of water or water-based solutions through the material during use.

Chemical-resistant suit: a loose-fitting, one- or two-piece chemical-resistant garment that covers, at a minimum, the entire body except head, hands, and feet.

Coveralls: a loose-fitting, one- or two-piece garment that covers, at a minimum, the entire body except head, hands, and feet.

Protective eyewear: goggles; a face shield; safety glasses with front, brow, and temple protection; or a full-face respirator.

Chemical-resistant apron: an apron that covers the front of the body from mid-chest to the knees, made of material that prevents any measurable movement of the pesticide being used through the material.

Chemical-resistant headgear: a chemical-resistant hood or chemical-resistant hat with a wide brim.

Terms regarding pesticide applications

Closed system: an engineering control used to protect handlers from pesticide exposure hazards when mixing and loading pesticides.

Enclosed cab: a cab with a nonporous barrier that totally surrounds the occupant(s) of the cab and prevents dermal contact with pesticides that are being applied outside of the cab.

Enclosed space production: production of an agricultural plant indoors or in a structure or space that is covered in whole or in part by any nonporous covering and that is large enough for a person to enter, such as a greenhouse, polyhouse, mushroom house, hoop house, high tunnel, and similar structure.

Outdoor production: production of an agricultural plant in an outside area that is not enclosed or covered in any way that would obstruct the natural air flow.

Application Exclusion Zone (AEZ): the area surrounding the pesticide application equipment that must be free of all people other than appropriately trained and equipped handlers during pesticide applications.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval (REI). The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the REI of **24 hours**.

PPE required for early entry into treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

Coveralls worn over short-sleeved shirt and short pants

Chemical-resistant gloves made of any waterproof material

Chemical-resistant footwear plus socks

Chemical-resistant headgear for overhead exposure

Protective eyewear

Figure 1. The pesticide label contains information regarding WPS requirements when a product is used to produce agricultural plants on farms, forests, nurseries, or enclosed spaces, such as greenhouses.

The WPS on Pesticide Labeling

All pesticide products affected by the WPS carry a statement in the Agricultural Use Requirements section of their labels (Figure 1). This statement informs users that, if they are using the pesticide product to produce an agricultural plant, they must comply with all WPS provisions. If an agricultural pesticide will be used for a labeled nonagricultural use, WPS requirements do not apply.

Who Is Affected by the WPS?

Employers who may be required to follow the WPS include:

- Managers or owners of an agricultural establishment;
- Labor contractors (crop advisors, detasslers, etc.);
- Commercial pesticide handling establishments, including self-employed applicators.

Most provisions of the WPS are protections that employers must provide to their employees and, in some instances, to themselves. The task(s) an employee will be performing determines whether or not they fit the definition of a worker or handler, as well as the protections the employer must provide to them. Owners of agricultural establishments and their immediate families are exempt from many, but not all, WPS requirements (refer to the EPA manual, *How to Comply*). However, the owners of agricultural establishments must still provide all of the applicable protections for any employees or other persons on the establishment who are not members of their immediate family.

Pesticide Applications Regulated by the WPS

Pesticide applications on an agricultural establishment that are within the scope of the WPS include:

- applications to agricultural plants (including transplants) that are in growth media;
- applications to agricultural plants or plant portions (seeds, roots, bulbs, cuttings, etc.) on an agricultural establishment immediately prior to or during planting, transplanting, or grafting.
- applications to the “parent” portion of the agricultural plant that remains after the crop has been harvested, if the application is made to continue production of the parent plant or eliminate the parent plant;
- applications to the growth media that remains behind after the crop has been harvested, if the application is made to
 - continue production of the parent plant, or
 - eliminate the parent plant, or
 - prepare the media for replanting or reseeding of an agricultural plant;

Exceptions

The WPS does not cover pesticides applied on an agricultural establishment in the following circumstances:

- on pastures or rangeland where the forage will not be harvested for hay;
- on livestock, or in and around animal premises;
- for control of vertebrate pests, such as rodents, unless directly related to the production of agricultural plants;
- on plants grown in home gardens and home greenhouses;
- on plants that are in golf courses (except those areas set aside for plant production) or right-of-way areas;
- on public or private lawns, although sod farms are covered by WPS;
- on plants already planted (not grown for distribution) for decorative or ornamental use, such as trees and shrubs in lawns;
- for mosquito abatement, or similar wide area public pest control;
- for structural pest control, such as termite control;
- for research uses of unregistered pesticides; or
- on harvested portions of plants or on harvested timber.

Regarding the last bullet, pesticide applications to harvested portions of agricultural plants or to harvested timber are outside the scope of WPS. Once a crop is harvested, WPS does not apply to workers performing activities related only to the harvested portion of the agricultural plant. Harvesting includes packing produce into containers in the field. For purposes of WPS, an agricultural plant is considered harvested when:

- a desirable portion of the agricultural plant (seed, fruit, flower, stem, foliage, or roots) is detached from its parent; or
- a whole agricultural plant is separated from its growth media (soil, water, or other media).

Requirements of Agricultural Owners and Those Hired to Work on the Agricultural Establishment

The WPS covers a great deal of information, more than can be addressed in this publication. This section will cover some requirements that everyone who owns or works on an agricultural establishment must follow regarding personal protective equipment, restrictions during and after pesticide

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS WARNING

Causes substantial but temporary eye injury. Do not get in eyes or on clothing. Wear protective eyewear (goggles or face shield). Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse. May be fatal if swallowed. Harmful if inhaled or absorbed through skin. Do not breathe vapors or spray mist. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

Long-sleeved shirt and long pants

Barrier laminate or Viton® gloves.

Shoes plus socks

Protective eyewear

Mixer/loaders supporting aerial applications and chemigation applications must wear also (except when using closed mixing/loading systems): a dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C), or a NIOSH approved respirator with any R, P, or HE filter.

Figure 2. The Hazards to Humans section lists the required PPE for the pesticide product.

applications, and minimum age requirements. Some exemptions exist for immediate family members of the agricultural owners. These will be covered later in this publication.

1. Wear appropriate personal protective equipment (PPE)

The PPE and other work attire required to be worn when handling a pesticide are listed under the Hazards to Humans section of the pesticide label (Figure 2). These requirements may differ according to the task being performed (e.g., applying vs. mixing/loading). If an applicator is using a closed system or working in an enclosed cab, some protective equipment exceptions are allowed unless expressly prohibited by the product labeling. In the case of enclosed cabs, how-

ever, all normally required equipment must be kept within the enclosed cab, to be worn if the applicator needs to exit the cab during the application.. Always use the PPE listed on the label. Refer to the *How to Comply* manual for additional details.

2. Restrictions during pesticide applications

During a pesticide application, handlers and/or their employers must make sure to:

- follow all label requirements;
- apply pesticides so that they do not contact anyone either directly or through drift; and
- ensure no one enters treated areas or the Application Exclusion Zone (AEZ) within the boundaries of the establishment.

In most cases, handlers who have been trained, wear the appropriate PPE, and are involved in the application are allowed to be in treated areas and the AEZ. Agricultural employers must keep workers and other people out of treated areas and the AEZ within the boundary of the establishment owner's property. The EPA realizes that handlers and employers cannot keep people out of an AEZ that extends beyond the boundaries of the establishment; however, at the time of revising this Extension Circular, the AEZ nonetheless extends beyond property lines.

The AEZ is measured horizontally from the application equipment in all directions; it moves with the application equipment like a halo (Figure 3).

The size of an AEZ depends on the type of application and other factors, including droplet size and height of

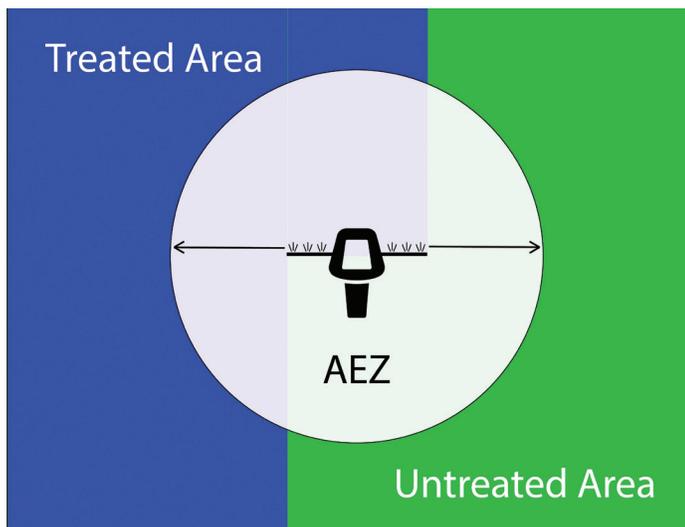


Figure 3. Viewed from above, the AEZ surrounds the application equipment and moves with it. The AEZ extends from the outermost point(s) of pesticide discharge in all directions.

In October 2020, the EPA issued revised AEZ rules. These revised rules were challenged in court, and, as of spring 2022, are being litigated. While the litigation runs its course, the original 2015 AEZ rules remain in effect. If the 2020 AEZ rules were to go into effect, key differences would be:

- The criteria for determining the size of an AEZ would be simplified;
- The AEZ would not extend past the boundaries of the establishment, however, a pesticide application would still need to be suspended if a person outside the boundaries were at risk of being contacted with the pesticide.

Check with the Nebraska Department of Agriculture or the Nebraska PSEP Office for the latest information on AEZ requirements.

nozzles above the planting medium. The AEZ extends 100 feet from the outermost nozzle in all directions for aerial, air blast, fumigant, smoke, mist, and fog applications. It also extends 100 feet for spray applications using extremely fine, very fine, or fine droplet sizes. An AEZ of 25 feet is required when the pesticide is sprayed using medium or larger droplet sizes and from more than 12 inches above the planting medium. An application that does not fall into one of these categories does not require an AEZ.

When an AEZ is in effect, the handler must suspend the pesticide application if a person is in the AEZ. The requirement to suspend application is NOT limited by the boundary of the establishment owner's property. For example, if a person is walking next to the field that is being treated and is within the AEZ, the pesticide application must temporarily stop (be suspended). Application may resume when the applicator can ensure that the pesticide will not contact any people in the AEZ that extends beyond the boundary of the establishment. The applicator can take the following measures to ensure that people are not contacted by pesticides:

- assessing wind and other weather conditions to confirm that people will not be contacted directly or through drift;
- adjusting the application method or using drift reduction measures;
- asking people to move out of the AEZ until the application is completed; or
- adjusting the treated area or path of the application equipment so that people will not be in the AEZ.

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Do not enter or allow worker entry into treated areas during the REI of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

Coveralls

Barrier laminate or Viton® gloves

Shoes plus socks

Protective eyewear

toxicity of the active ingredient and the worker tasks involved during the production of the agricultural plant. In most cases, REIs range from 4 to 72 hours. When tank mixing two or more pesticide products, follow the longest REI required by any of the individual product labels.

During the REI, do not allow anyone, including the owner or members of their immediate family, to enter a treated area or contact anything treated with the pesticide(s) to which the interval applies.

Exceptions to REIs. In general, an agricultural owner/operator, family members, hired handlers, and hired workers must stay out of a treated area during the REI. This restriction has four exceptions:

- no-contact activities;
- short-term activities;
- agricultural emergencies; and
- limited contact and irrigation activities.

Each early-entry exception has certain conditions that must be met. For all of the early-entry exceptions, the agricultural employer must provide the worker with certain information, the required PPE, and decontamination supplies. Consult the EPA *How to Comply* manual for specifics.

4. Minimum age requirements.

Any handler and any early-entry worker must be at least 18 years old. Adolescents under the age of 18 who work on an establishment owned by an immediate family member are exempt from this requirement.

Basic Duties of Employers of Pesticide Handlers and Agricultural Workers

Some WPS requirements for employers are the same whether the employees are workers or handlers. The following describes some of these requirements.

Safety Information. If, within the last 30 days, a pesticide has been applied or a pesticide's REI has been in effect on an agricultural establishment, employers must provide (1) basic pesticide safety information and (2) specific information about the pesticide applied. All of this information must be displayed at a place on the establishment where employees can readily see and read it, in a manner they can understand. In addition, the basic pesticide safety information must be displayed at any permanent site with decontamination sup-

Figure 4. Information about the restricted-entry interval (REI) is in the Agricultural Use section of the pesticide label.

The above steps are required when the AEZ extends beyond the boundaries of the establishment. An applicator cannot resume application while workers or others on the establishment are within the AEZ.

AEZ requirements for enclosed space production, such as in a greenhouse, differ from the requirements for outdoor production. Refer to the EPA *How to Comply* manual for details.

3. Restrictions during restricted-entry intervals (REIs)

The WPS establishes specific restricted-entry intervals for all pesticides covered by the WPS. The restricted-entry interval (REI) is the amount of time that must pass after a pesticide application before anyone other than a trained and equipped handler involved with the application may enter the treated area. The REI is listed on the pesticide label under Agricultural Use Requirements (Figure 4). It is based on the

Protect Yourself from Pesticides
Protéjase de los Pesticidas

**IN AN EMERGENCY:
EN UNA EMERGENCIA:**

Get medical help nearby.
Busque atención médica cercana.

Name | Nombre: _____
Address | Dirección: _____
Phone number | Número telefónico: _____

If you need an ambulance, tell them where you are.
Si usted necesita una ambulancia, dígame dónde se encuentra.

Facility name | Nombre del establecimiento: _____
Facility location | Ubicación del establecimiento: _____

If you have questions or concerns, call the pesticide regulatory agency.
Si tiene preguntas o inquietudes, llame a la agencia reguladora de pesticidas.

Name of state/tribal pesticide regulatory agency
Nombre de la agencia reguladora estatal / tribal: _____
Address | Dirección: _____
Phone number | Número telefónico: _____

FOR MEDICAL TREATMENT INFORMATION, CALL THE PESTICIDE CONTROL CENTER: 1-800-858-7378
PARA INFORMACIÓN SOBRE TRATAMIENTO MÉDICO, LLAME AL CENTRO DE CONTROL DE ENVENENAMIENTOS: 1-800-858-7378

This poster contains pesticide safety information that is required under the Worker Protection Standard as revised in 2017. 40 CFR 170.341(a)(3)(i).

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PERC
Pesticide Education Resources Collaborative

Avoid getting pesticides on your skin or in your body. Pesticides can be in many places. They can be on plants, in plants, in soil, and in irrigation water. Pesticides can drift in the air from nearby applications. They can also be on tractors and other equipment. Pesticides can also be found on used goggles, gloves, boots, and other personal protective equipment.

Evite que los pesticidas hagan contacto con su piel o entren en su cuerpo. Los pesticidas pueden estar en muchos lugares. Pueden estar sobre las plantas, dentro de las plantas, en el suelo y en el agua de riego. Los pesticidas pueden ser llevados por el viento desde aplicaciones cercanas. También pueden estar en tractores y otras maquinarias agrícolas. Los pesticidas también pueden encontrarse en lentes protectores, guantes, botas y otros equipos de protección personal usados anteriormente.

Protect your body from pesticide residue. Wear long-sleeved shirts and long pants when working. Also, wear shoes, socks, and a hat or scarf. Protect your face from the residue of pesticides. Use canvas or mackinaw long and pantones largos cuando trabaje. Además use zapatos, calcetines y un sombrero o pañuelo.

Stay out of treated areas when told, and whenever you see signs like this displayed. When you see a pesticide application taking place, stay back. Applicators must suspend their work if you get too close.

Manténgase fuera de las áreas tratadas cuando se lo indiquen, y siempre que vea carteles como éste. Hágase cuando vea que una aplicación de pesticidas está en curso. Los aplicadores deben suspender su trabajo si usted se acerca demasiado.

Wash your hands before you eat, drink, or chew gum. Also, wash before smoking, using the toilet, or using your phone.

Lávese las manos antes de comer, beber o masticar chicle. Lávese también antes de fumar, usar el baño o usar su teléfono.

Wash your body and hair with soap or shampoo right after work; then put on clean clothes.

Lávese el cuerpo y el cabello con jabón o champú inmediatamente después del trabajo; luego póngase ropa limpia.

Wash your work clothes before wearing them again. Wash them separately from other clothes.

Lávese su ropa de trabajo antes de volver a usarla. Lávela separada de otra ropa.

Get medical help as soon as possible if you think pesticides caused an injury or illness. Consiga ayuda médica lo más pronto posible si usted cree que los pesticidas le han causado una lesión o enfermedad.

Questions about pesticides? Call 1-800-858-7378 (National Pesticide Information Center)
¿Tiene preguntas sobre pesticidas? Llame al 1-800-858-7378 (Centro Nacional de Información de Pesticidas)

Figure 5. Pesticide safety poster from PERC.

plies, and at any temporary location providing decontamination supplies for 11 or more employees.

The Pesticide Education Resources Collaborative (PERC) offers posters (Figure 5) that contain the basic pesticide safety information employers must display, plus spaces for employers to add local information. They are available in several languages, including Spanish. To meet WPS requirements, these posters must include:

- Seven strategies for preventing pesticide exposure:
 - Avoid getting pesticides on skin or body;
 - Wash before eating, drinking, chewing gum, using tobacco, or using the toilet;
 - Wear protective clothing;
 - Wash/shower after work with soap, water, and shampoo;
 - Wash work clothes separately;

- Use decontamination supplies to wash immediately if pesticides are spilled/sprayed on the body;
- Follow directions/signs about keeping out of treated areas and AEZs;
- Instructions for employees to seek medical attention as soon as possible if they are poisoned, injured, or made ill by pesticides;
- The name, address, and telephone number of a nearby emergency medical facility; and
- The name, address, and telephone number of the Nebraska Department of Agriculture (NDA) or Tribal pesticide regulatory agency.

Employers must also display specific information about pesticides applied on the establishment. This information must be displayed no later than 24 hours after the end of the application, and must continue to be displayed for 30 days after the last REI expires. The Nebraska PSEP Office offers forms online to help employers meet this requirement. Specific pesticide information must include:

- The product's name, EPA registration number, and active ingredient(s);
- The crop or site treated;
- The location and description of the treated area;
- The date and start/end times of the application;
- The applicable REI; and
- A copy of the product's Safety Data Sheet (SDS).

Pesticide safety training. Employers must provide WPS safety training to workers and handlers each year before they begin work. Agricultural owners, their immediate family members, certified/licensed pesticide applicators, and certified crop advisors do not need to receive this training when acting as workers or handlers. WPS safety training can be conducted by certified/licensed pesticide applicators or by persons who have completed an EPA-approved train-the-trainer program. The training must be conducted in a manner and language that the employees can understand, using EPA-approved training materials. The trainer must also be present to answer employees' questions after the training, especially if a video or other media is used.

PERC maintains a collection of free-to-use, EPA-approved WPS training materials for both workers and handlers. These materials are available in a variety of formats (e.g., videos, PowerPoints) and languages. By using EPA-approved materials, the employer is assured that all required content is covered.

Employers must keep records of their employees' WPS

safety training for two years, and must provide copies to workers and handlers upon request. The records must include the trained person's name and signature, the date of training, the trainer's name, evidence of the trainer's qualification to train, the employer's name, and which EPA-approved training materials were used (identified by an EPA approval number). The Nebraska PSEP Office offers forms online to help employers meet this requirement.

Decontamination supplies. Employers must provide supplies so that workers and handlers can wash pesticides or their residues from their hands and bodies. Accessible decontamination supplies must be located within ¼ mile of all workers and handlers. However, if worker or handler activity is more than ¼ mile from the nearest place of vehicular access or more than ¼ mile from any non-treated area, the decontamination supplies may be placed at the nearest place of vehicular access outside any treated area or area subject to a REI. For more details, refer to the EPA *How to Comply* manual. Decontamination supplies must include the following:

- 1 gallon of water for each worker and 3 gallons for each handler and each early-entry worker; measured at the beginning of the worker's or handler's work period;
- if a handler is mixing/loading a product that requires eye protection or using a closed system under pressure, at least six gallons of eyeflush water (Figure 6) must be immediately available at the mix/load site for handler eye flushing; the water must either be in a system capable of delivering 0.4 gallons per minute for 15 minutes, or in containers suitable for providing a gentle eye flush for 15 minutes;



Figure 6. Water for eye flushing must be available for handlers when using a pesticide that requires eye protection. Haws Corporation photo.

- if handlers are applying a product that requires eye protection, 1 pint of water must be immediately available to each handler;
- plenty of soap and single-use towels; and
- a clean change of coveralls for use by each handler (not required for workers).

Water must be safe and cool enough for washing and eye flushing. Employers may not use tank-stored water that is also used for mixing or diluting pesticides unless there are safeguards to prevent contamination, such as anti-backflow devices.

Employers must provide handlers with the previously mentioned supplies at each mixing site and at the place where PPE is removed at the end of a task. Supplies for handler decontamination may be in the treated area where the handler is working, as long as the materials are stored in closed containers. Worker decontamination supplies must not be located in areas being treated or under an REI.

Emergency medical assistance. When there is a possibility that a handler or worker has been poisoned or injured by a pesticide, an employer must promptly provide transportation to a nearby medical facility. Information about the medical facility must be displayed at a central location and, if applicable, at permanent decontamination supply sites and locations where 11 or more workers are present. In addition, the employer must give medical personnel who provide treatment the following information:

- the product name, EPA registration number, and active ingredient(s);
- the SDS;
- a description of how the pesticide was used; and
- information about the employee's exposure.

Enclosed space production. Owners and operators of greenhouses, polyhouses, mushroom houses, hoop houses, high tunnels, and other enclosed spaces have additional requirements. These include special application restrictions, ventilation criteria, early-entry restrictions, and additional handler protection. Consult the EPA *How to Comply* manual and the pesticide label for specifics.

Additional Duties for Employers of Workers

As described previously under 'Requirements of Agricultural Owners and Those Hired to Work on the Agricultural Establishment,' only appropriately trained and equipped

Table 1. Notifying Workers of Pesticide Applications or Restricted Entry Intervals (REIs)

Application location	Pesticide label requirement	Employer obligation
Any	Label requires both posting and oral notification	Post warning signs AND Provide oral notification
Outdoor production area	REI > 48 hours	Post warning signs
	REI ≤ 48 hours	Post warning signs OR Provide oral notification
Enclosed space production area	REI > 4 hours	Post warning signs
	REI ≤ 4 hours	Post warning signs OR Provide oral notification

handlers involved in a pesticide application may enter treated areas during the application and the REI that follows it.

Notification regarding application. The employer must notify all workers on the establishment of any areas being treated with pesticides or that may be under an REI if workers will be within a quarter mile of any treated areas. The required method of notification depends on the circumstances of the pesticide application and the pesticide's label requirements (Table 1). In most cases, employers may choose to notify workers with either oral warnings or posted warning signs (Figure 7). Some pesticide labels may specifically require both oral and posted sign warnings.

Oral warnings. When oral warnings will be used, they must be delivered in a manner understood by workers, using an interpreter if necessary. Oral warnings must include:

- The location and description of the treated area,
- The date and time that the REI is in effect, and
- Specific directions indicating that workers must not enter the treated area or AEZ during the application and must stay out of the treated area during the REI.

Warning signs. When warning signs will be used, they must be posted (1) where they can be seen at all normal entrances, paths, and trails to treated areas, and (2) at borders where worker housing areas are within 100 feet of treated areas. They must be posted no earlier than 24 hours before the application and removed or covered within 3 days after the REI ends.

The WPS includes specific requirements for the appearance and content of these warning signs. Employers may substitute the required Spanish-language portions of the signs with another non-English language if it is readable to the largest group of non-English-reading workers on the establishment. PERC offers compliant warning signs, including several language options.



Figure 7. The EPA has specifications for warning signs. EPA photo.

Additional Duties for Employers of Handlers

Specific training for handlers. Before handlers perform any handling tasks, employers must inform them of all instructions on the pesticide labeling about safe use (Figure 8). In addition, employers must keep pesticide labels accessible to each handler during the entire handling task and inform handlers of how to use any assigned handling equipment safely before they use it.



Figure 8. Because handlers have more risk of exposure, including working with concentrated pesticides, their training has additional topics. UNL photo.

Safeguarding handlers. Before commercial handlers come to an agricultural establishment, inform them of areas on the establishment where pesticides will be applied or where an REI will be in effect, and the restrictions for entering those areas.

Equipment safety. Employers of handlers must make sure that equipment used for mixing, loading, transferring, or applying pesticides is inspected, and repaired or replaced as needed. Only appropriately trained and equipped handlers may repair, clean, or adjust pesticide-handling equipment that contains pesticides or pesticide residues.

Personal protective equipment. Employers must provide handlers with the PPE required by the pesticide labeling for each task. They also must provide handlers with a pesticide-free work area for storing personal clothing, as well as for changing into and out of PPE for each task. Employers must not allow any handler to wear or take home any used PPE. They must make sure PPE is worn and used correctly. If the labeling requires any handler to wear a respirator, the employer must provide respirator fit testing, training, and a medical evaluation that conform to OSHA standards. Employers must keep records of the completion of the fit test, training, and medical evaluation. The Nebraska PSEP Office offers forms online to help employers meet these recordkeeping requirements, as well as information on respirator use and fit testing.

Cleaning and maintenance of PPE. The employer must make sure that:

- PPE that will be reused is cleaned, inspected, and repaired before each use, or replaced as needed;
- PPE that is not reusable or cannot be cleaned is disposed of properly; and
- PPE should be washed, hung to dry, and stored separately from personal clothing and away from pesticide storage, treatment, or application areas. See G758, *Protective Clothing and Equipment for Pesticide Applicators*, for more information.

Replacing respirator purifying elements. Particulate filtering facepiece respirators (known as dust/mist filters) must be replaced when:

- breathing becomes difficult;
- the filter is damaged or torn;
- the respirator label or pesticide label requires it; or
- at the end of eight hours of cumulative use in the absence of any other instructions.

Cartridges or canisters designed to remove vapors must be replaced when:

- odor, taste, or irritation is noticed;
- breathing becomes difficult;
- the respirator label or pesticide label requires it; or
- at the end of eight hours of cumulative use in the absence of any other instructions.

Disposal of PPE. Discard coveralls and other clothing that are heavily contaminated with an undiluted pesticide having a DANGER or WARNING signal word according to directions on the pesticide label. If PPE cannot or will not be cleaned properly, make it unusable as apparel or unavailable for further use. Federal, state, and local laws must be followed when disposing of PPE that cannot be cleaned correctly.

Instructions for those who clean PPE. Employers must inform people who clean or launder PPE that it may be contaminated with pesticides. Employers must inform them of the potentially harmful effects of exposure to pesticides, how to protect themselves, how to clean the equipment correctly, and proper decontamination procedures after handling contaminated PPE. More information is available in EPA's *How to Comply* manual.

PPE regarding closed systems. The WPS has some exceptions to PPE requirements when a closed system (Figure 9) is used. A closed system is one that removes the pesticide from its original container and transfers the pesticide product through connecting hoses, pipes, and couplings that are tight enough to prevent exposure of handlers to the pesticide product, except for the negligible escape associated with normal operation of the system. Pesticides formulated in intact, sealed, water-soluble packaging also meet the definition of a closed system for the purposes of loading. However, if the integrity of a water soluble packaging is compromised (dissolved, broken, punctured, torn, or allows its contents to escape), it is no longer a closed system and the labeling-specified PPE must be worn when loading it.

In addition, to meet requirements for closed system PPE exceptions, the handler employer must satisfy *all* of the following:

- Each closed system must have written, legible operating instructions. These must include operating procedures for use, including the safe removal of a probe; maintenance, cleaning and repair; known restrictions or limitations relating to the system, such as incompatible pesticides, sizes (or types) of containers or closures that



Figure 9. Because a closed system reduces the risk of pesticide exposure, the PPE requirements may be reduced. GoatThroat Pumps photo.

cannot be handled by the system; any limits on the ability to measure a pesticide; and special procedures or limitations regarding partially filled containers.

- The written operating instructions for the closed system must be available at the mixing or loading site to any handlers who use the system.
- Any handler operating the closed system must be trained in its use and operate the closed system according to its written operating instructions.
- The closed system must be cleaned and maintained as specified in the written operating instructions and as needed to ensure the system works properly.
- All PPE specified in the pesticide product labeling must be immediately available to the handler in case of an emergency.
- Protective eyewear must be worn when using closed systems operating under pressure.

Once all of the above are met, the exceptions to wearing the PPE as required by labeling are:



Figure 10. In some situations, PPE requirements may be reduced when a handler is in an enclosed cab. UNL photo.

- Handlers using a closed system to mix or load pesticides with a signal word of “DANGER” or “WARNING” may substitute a long-sleeved shirt, long pants, shoes and socks, chemical-resistant apron, protective eyewear, and any protective gloves specified on the labeling for handlers for the labeling-specified PPE.
- Handlers using a closed system to mix or load pesticides other than those with a signal word of “DANGER” or “WARNING” may substitute protective eyewear, long-sleeved shirt, long pants, and shoes and socks for the labeling-specified PPE. Although the mixer/loader does not have to wear label-required gloves, those gloves must be available in case there is a problem with the closed system.

PPE regarding enclosed cabs. Handlers in enclosed cabs (Figure 10) may substitute a long-sleeved shirt, long pants, shoes, and socks for labeling-specified skin- and eye-protective PPE if:

- All of the PPE required by the pesticide product labeling for applicators is immediately available to handlers in an enclosed cab, and stored in a sealed container to prevent contamination;
- Handlers that exit the cab during the application or when an REI is in effect put on the PPE specified on the labeling for applicators; and
- Once PPE has been worn in a treated area, the handler removes it before reentering the cab to prevent contaminating the cab.

If the enclosed cab has a properly functioning air ventilation system that is used and maintained according to the manufacturer's written operating instructions, a handler in an enclosed cab does not have to wear a filtering facepiece respirator (NIOSH approval number prefix TC-84A, formerly called dust/mist respirator) if one is required by the labeling. A handler in an enclosed cab must wear any other type of respirator required by the labeling.

PPE regarding aerial application. Wearing chemical-resistant gloves when entering or leaving an aircraft used to apply pesticides is optional, unless those gloves are required on the pesticide product labeling. Gloves that have been used to apply pesticides must be kept in an enclosed container if brought into the cockpit, to prevent contaminating the inside of the cockpit.

Open cockpit. Handlers applying pesticides from an open-cockpit aircraft must use the PPE specified in the pesticide product labeling for use during application, except that chemical-resistant footwear need not be worn. A helmet may be substituted for chemical-resistant headgear, and a helmet with a face shield lowered to cover the face may be substituted for protective eyewear.

Enclosed cockpit. A person in an enclosed cockpit may substitute a long-sleeved shirt, long pants, shoes, and socks for labeling-specified PPE.

Heat illness. Employers must take necessary steps to help employees prevent heat illness, especially while wearing PPE. Train handlers to recognize, prevent, and treat heat illness. A number of key elements to keep in mind are listed.

- Make sure that employees drink enough water to replace fluids lost through sweating. Thirst is not a good indicator of how much water a person needs to drink; usually a person needs water more often.
- Monitor temperature and humidity, and workers' responses at least hourly in hot temperatures.
- Schedule heavy work and tasks that require PPE for the cooler hours of the day.
- Help workers gradually adjust to hot temperatures.
- Shorten the length of work periods and increase the length of rest periods.
- Provide workers shade or cooling during breaks.
- Stop work altogether under extreme conditions.

OSHA has relevant resources at <https://www.osha.gov/SLTC/heatstress/>.

Information Exchange between Employer and Commercial Pesticide Handling Establishment

To ensure the agricultural owner/employer has the information to protect employees and comply with WPS, a commercial pesticide handler employer (CPHE) must inform the agricultural owner/employer before a pesticide is applied on the agricultural establishment. The CPHE must provide the owner/employer with the following information:

- location and description of area to be treated;
- date, and start and estimated end times of the application;
- product name, EPA registration number, active ingredient(s), and applicable REI;
- whether postings at the treated area and/or oral warnings are required; and
- any restrictions or use directions on the pesticide product labeling that must be followed to protect workers, handlers, or other persons during or after application.

In addition, the agricultural employer must obtain and display the SDS for any WPS-covered pesticides used on the establishment if the agricultural establishment employs workers or handlers. Although the CPHE isn't required to provide a copy of the SDS to the agricultural employer, the EPA encourages this since the CPHE should have received copies of the SDS from the pesticide distributor.

If the owner of an agricultural establishment hires people to perform handler activities, such as commercial applicators, the agricultural owner/employer must inform the employer of the commercial handler (i.e., the CPHE) of any treated areas under an REI if they will be at or walk within a quarter mile of that area. The CPHE must pass that information along to their employee, the commercial handler. The agricultural owner/employer is responsible for providing all WPS protections for his/her employees. If the owner of an agricultural establishment hires a commercial handler, the commercial handler's employer (the CPHE) is responsible for providing all WPS protections to his/her employees.

Exemptions for Agricultural Owners and Immediate Family

On any agricultural establishment where a majority of the establishment is owned by one or more members of the same immediate family, the owner(s) of the establishment are not required to provide some WPS protections to themselves

or members of their immediate family while performing handling activities and tasks related to the production of agricultural plants on their own establishment. The following WPS requirements do not need to be met by owners or members of their immediate family, but must be provided to any worker or handler they hire.

- Minimum age of 18 years for handlers and early-entry workers
- Information at a central location and certain decontamination sites
- Pesticide safety training for workers and handlers
- Decontamination and eyeflush supplies
- Emergency medical assistance
- Notification of pesticide applications
- Monitoring of handler's actions and health
- Specific handling instructions
- Duties related to early entry: instructions, training, and decontamination sites
- Inspecting, cleaning, and maintaining PPE

Owners of agricultural establishments and their immediate family members must comply with all of the following WPS requirements when using WPS-labeled products:

- Wear the PPE and any other work attire required by the pesticide labeling;
- Keep out of the treated area until the REI expires;
- Ensure the pesticide is applied so it does not contact any persons, including members of the immediate family;
- Ensure that all persons, including immediate family members, are kept out of the treated area and the AEZ during the application of the pesticide;
- Ensure that the pesticide applied is used in a manner consistent with the product's labeling;
- Provide a medical evaluation, fit test, and respirator training to any handler, including an immediate family member, before the handler uses a pesticide whose labeling requires a respirator;
- Suspend a pesticide application if a worker or other person is in the AEZ during the application.

Though owners and their immediate families are exempt from certain WPS requirements, it is prudent for them to adhere to these requirements nonetheless. The WPS is intended

to protect humans from pesticide exposure. Following all requirements, regardless of exemptions, provides improved safety for owners and their families.

Exemptions for Crop Advisors

Certified crop advisors are exempt from some WPS provisions in Nebraska if they have met pesticide safety training requirements. To meet the training requirement, the crop advisor must be certified or licensed as a crop advisor by a program acknowledged as appropriate in writing by EPA, the NDA, or Tribal agency responsible for pesticide enforcement.

When performing crop advisor tasks in a treated area during the REI, certified crop advisors who meet the above description may themselves determine the appropriate PPE to wear, and do not have to comply with the requirements for emergency assistance, understanding the label, and decontamination for their own safety. However, certified crop advisors must provide these protections for their employees.

As pesticide handlers under the WPS, a crop advisor (i.e., anyone who does a crop advisor task) other than a certified crop advisor may enter outdoor treated areas during the REI if the application has been complete for at least four hours, they only perform crop-advising tasks, and they:

- wear the PPE required for handling activities as required by the label, OR
- follow the PPE requirements on the product label for early-entry activities, OR
- wear a standard set of PPE (coveralls, shoes, socks, waterproof gloves, and eye protection if the product labeling requires protective eyewear for handlers).

Resources

- Nebraska Department of Agriculture. For WPS regulatory interpretation and compliance guidance, call 402-471-2351.
- Ogg, C.L., Bauer, E.C., Hygnstrom, J.R., Bright, F.J., Puckett, G.J., Alberts, C.A. (2018) Protective Clothing and Equipment for Pesticide Applicators, NebGuide G758.
- US Code of Federal Regulations. 2016. Title 40, Chapter I, Subchapter E Part 170 Worker Protection Standard available online at <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-E/part-170>
- How to Comply with the 2015 Revised Worker Protection Standard For Agricultural Pesticides: What Owners and Employers Need To Know*, US Environmental Protection Agency, <https://www.epa.gov/pesticide-worker-safety/pesticide-worker-protection-standard-how-comply-manual>.

“Safety and Health Topics: Occupational Heat Exposure,” US Occupational Health and Safety Administration, <https://www.osha.gov/SLTC/heat-stress/>.

Pesticide Education Resources Collaborative (PERC). For pesticide safety posters, WPS training materials, and compliance information, visit <https://www.pesticideresources.org>.

Nebraska PSEP Office. For free WPS recordkeeping forms, visit <https://pest-ed.unl.edu/recordkeeping>.

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