

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. Some changes take effect Jan. 2, 2017, with the remainder effective as of Jan. 2, 2018.

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), WPS was put in place to provide employees with a safe workplace; the obligation for safety falls on the employer. WPS requires employers to protect two types of agricultural employees: agricultural workers and pesticide handlers (see definitions below), as well as others who may be in the vicinity of a pesticide application. WPS is part of the pesticide label; it is enforceable when a pesticide with a label referencing WPS is used to produce an agricultural crop or commodity. 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 WPS.

The EPA manual *How to Comply with the Worker Protection Standard for Agricultural Pesticides—What Employers Need to Know* provides detailed information about WPS. Employers will find this manual to be a valuable resource for compliance. Access information is listed in the Resources section at the end of this publication.

Key Terms

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

General terms

Agricultural employer: any person who is an owner of, or is responsible for the management or condition of, an agricultural establishment, and who 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.) and 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 after the restricted entry interval (REI).

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

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: 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 application

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.

WPS Labeling

All pesticide products affected by the WPS carry a statement in the Agricultural Use Requirements section on the label (Figure 1). This statement informs users that they must comply with all WPS provisions. If you are using a pesticide product with WPS labeling to produce an agricultural plant, you must follow WPS requirements. WPS requirements are not in effect if an agricultural pesticide is used for a nonagricultural use as allowed by the label.

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

WPS requirements (refer to the EPA manual *How to Comply*). The owners of agricultural establishments still must provide all of the applicable protections for any employees or other persons on the establishment who are not members of their immediate family.

Exceptions

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

- on pastures or rangeland unless forage is harvested for hay;
- on livestock;
- 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

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.

Who Is Affected by WPS?

Examples of employers who may be required to follow WPS are listed below.

- 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 being performed will determine whether or not an employee is a worker or handler, and will determine the amount of protection the employer must provide. Owners of agricultural establishments and their immediate families are exempt from many, but not all, of the

- a whole agricultural plant is separated from its growth media (soil, water, or other media).

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

- 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;
- 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.

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 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 for each pesticide are listed on the pesticide label for the tasks being performed. The required equipment for a specific pesticide is listed under the Hazards to Humans section on the label (Figure 2). These requirements may be different for applicators and mixer/handlers. 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. Required equipment must be within the enclosed cab, howev-

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.

er, to protect the person if the rig were to break down. 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 and the Application Exclusion Zone (AEZ) that is 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. Agricultural employers must keep workers and other people out of the treated area and the Application Exclusion Zone (AEZ) that are 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, the AEZ still applies beyond the boundary.

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



Figure 3. The AEZ is the white area around the application equipment shown above; it moves with the equipment. The AEZ generally is within the treated area, except when the application equipment is near the edges of the treated area.

The size of an AEZ depends on the type of application and other factors, including droplet size and height of nozzles above the planting medium. The AEZ is 100 feet for aerial, air blast, fumigant, smoke, mist, and fog applications. It also is 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 plants. An application that does not fall into one of these categories does not require an AEZ.

After Jan. 1, 2018, the handler must suspend the application if a person is in the AEZ for farms, forests, and nurseries. 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 measures to ensure that people are not contacted by the pesticides by:

- 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.

The above 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.

3. Restrictions during restricted-entry intervals (REIs)

WPS has established 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 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 the pesticide formulation or application is a mixture of active ingredients, base the REI on the active ingredient that has the longest REI.

During the REI, do not enter or allow workers, including members of the 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, short-term activities, an agricultural emergency, 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. This minimum age does not apply to an adolescent working on an establishment owned by an immediate family member.

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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

selers, for example. Some information must be displayed and accessible after Jan. 1, 2018. The time delay allows for development of revised posters and displays. The current pesticide safety poster should be displayed in 2017. The following information is required after Jan. 1, 2018.

- Seven concepts about preventing pesticides from entering a person's body:
 1. Follow directions/signs about keeping out of the AEZ and treated areas
 2. Avoid getting on skin or body
 3. Wash before eating, drinking, chewing gum or tobacco, or using the toilet
 4. Wear protective clothing
 5. Wash/shower with soap, water, shampoo
 6. Wash work clothes separately
 7. Wash immediately if spilled/sprayed on body
- Name, address, and telephone number of the Nebraska Department of Agriculture (NDA) or Tribal pesticide regulatory agency
- Name, address, and telephone number of a nearby emergency medical facility
- Instructions for employees to seek medical attention as soon as possible if they are poisoned, injured, or made ill by pesticides

The following information must be displayed and accessible by Jan. 2, 2017. The agricultural employer already knows or has access to this information.

- Facts about each pesticide application, displayed within 24 hours of the end of the application and before workers enter that treated area, including:
 1. product name;
 2. EPA registration number and active ingredients;
 3. Safety Data Sheet (SDS);
 4. crop or site treated, and location and description of the treated areas;
 5. date and times the application started and ended; and
 6. REI for the pesticide.

Employers must tell workers and handlers where the information is displayed and allow them access. Safety information must be kept legible and current. Information about an application and the associated SDS must remain displayed for 30 days after the REI expires. This information must be kept for two years after the REI expires.

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

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 requirements.

Safety Information. For the benefit and safety of their employees, employers must provide basic safety information plus current and specific information about the pesticides being applied. All of the information must be displayed and made accessible at a central location on the agricultural establishment where it can be seen and read easily. The pesticide safety information (poster) also must be displayed and accessible at any permanent site with decontamination supplies, and at any location when 11 or more workers are present. The latter may be a bus or gathering area for detas-

Pesticide safety training. Prior to Jan. 2, 2017, workers and handlers had to receive training every five years. After that date, the employer must provide WPS safety training each year before employees begin work, unless handlers and workers are owners/immediate family members; state-certified pesticide applicators; or crop advisors certified or licensed as a crop advisor by a program acknowledged in writing by EPA, NDA, or a Tribal agency. After Jan. 2, 2017, handlers must be trained before they perform any handling task on the establishment unless they have been trained within the past 12 months. After Jan. 2, 2017, workers will have to be trained before they perform any worker task in an area that has been treated with a pesticide or an REI has been in effect within the last 30 days, unless they have been trained as a worker or handler within the last 12 months. Training may be conducted by a certified pesticide applicator or by someone who has 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 also must be on hand and able to answer questions after the training, especially if a video or other media is used.

A list of content required for worker and handler training as of Jan. 2, 2018 is in the EPA *How to Comply* manual. Until Jan. 2, 2018, WPS safety training content remains the same as under the existing rule and will not change **although all training materials used after Jan. 2, 2017, must be approved by EPA.** By using EPA-approved training materials, the employer is assured that all required content is covered.

Training records must be kept for two years, and a copy provided to the worker or handler upon request. The records must include the trained worker or handler'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.

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 $\frac{1}{4}$ mile of all workers and handlers. One exception is that if worker or handler activity is more than $\frac{1}{4}$ mile from the nearest place of vehicular access or more than $\frac{1}{4}$ mile from any non-treated area, the decontamination supplies may be 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, eyeflush water (Figure 5) must be immediately available at the mix/load site for handler eye flushing; the system must be capable of delivering 0.4 gallons per minute for 15 minutes, or 6 gallons of water at a gentle flow for about 15 minutes at a mix/load site;
- if a handler is applying a product that requires eye protection, 1 pint of water must be immediately available to each applicator;
- 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 also is 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



Figure 5. Water for eye flushing must be available for handlers when using a pesticide that requires eye protection. Haws Corporation photo.

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 ingredients;
- 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

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 on or within a quarter mile of the treated area. In most cases, employers may choose between oral warnings or posted warning signs (Figure 6) concerning the REI. In either case, employers must tell workers which warning method is being used. Some pesticide labels may require both oral and posted sign warnings. Notification must be provided before the application begins or at the start of the workers' work period if they will be coming on to the establishment when applications are ongoing or an REI is already in effect. For outdoor production, notifications must be posted for applications of a pesticide with an REI of more than 48 hours. All notifications regarding enclosed space applications of a pesticide with an REI of more than four hours must be posted. The exception is that if no worker will enter the enclosed space area from the start of the application until the end of any REI.

Restrictions during application. Employers must prohibit entry by workers or other persons into areas being treated. Only handlers who have had the appropriate training, are wearing the required equipment, and are involved in the application may enter the area during application. See the EPA *How to Comply* manual for special restrictions for employees who work in enclosed spaces.

Restrictions after applications. See information previously given in **Restrictions during restricted-entry intervals (REIs)**.

Warning signs. The warning sign must have a white background with the words "DANGER" and "PELIGRO," plus "PESTICIDES" and "PESTICIDAS," at the top of the sign, and the words "KEEP OUT" and "NO ENTRE" at the bottom of the sign (Figure 6). The sign may have a language other than Spanish if that language is read by the majority of workers who do not read English. A circle containing an upraised hand on the left and a stern face on the right must be near the center of the sign. The inside of the circle must be red, except that the hand and a large portion of the face must be in white. The length of the hand must be at least twice the height of the smallest letters. The length of the face must be only slightly smaller than the hand. Additional information, such as the name of the pesticide and the date of application, may appear on the warning sign if it does not detract from the size and appearance of the sign or change the meaning of the required information.



Figure 6. The EPA has specifications for warning signs. EPA photo.

Warning signs must be posted:

- if the REI is greater than 48 hours for an outdoor application or four hours for an enclosed space (e.g., greenhouse) or the label requires oral and posted notification;
- no more than 24 hours before the application and removed within three days after the end of the REI;
- where they can be seen at all normal entrances, paths, and trails to treated areas;

- at borders where worker housing areas are within 100 feet of the treated area; or
- if employees will come within ¼ mile of the treated site.

Oral warnings. Oral warnings must be delivered in a manner understood by workers, using an interpreter if necessary. For outdoor production, the agricultural employer must notify workers either orally or by posting signs if a product is used with an REI of 48 hours or less. For enclosed spaces, such as a greenhouse, the agricultural employer must notify workers either orally or by posting signs if a product is used with an REI of four hours or less. Oral warnings must contain the following information:

- 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.

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 7). 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.

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 medical evaluation that conforms to OSHA standards.

Employers must keep records of the completion of the fit test, training, and medical evaluation.

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

- PPE to 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.

Replacing respirator purifying elements. Particulate filtering facepiece respirators (known as dust/mist filters) must be replaced when breathing becomes difficult, if the filter is damaged or torn, when 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; when the respirator label or pesticide label requires it; when breathing becomes difficult; 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.



Figure 7. Because handlers have more risk of exposure, including working with concentrated pesticides, their training has additional topics. UNL photo.

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 8) is used. The 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. Another exception to PPE requirements is allowed when loading intact, sealed, water-soluble packaging into a mixing tank or system. 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.

In addition, the handler employer must satisfy *all* of the following:

- Each closed system must have clearly 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 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.



Figure 8. Because an enclosed system reduces the risk of pesticide exposure, the PPE requirements may be reduced. GoatThroat Pumps photo.

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

- 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 9) may substitute a long-sleeved shirt, long pants, shoes, and socks for PPE for skin and eye protection specified by the labeling under certain conditions. These are:

- All of the PPE required by the pesticide product labeling

for applicators must be immediately available to handlers in an enclosed cab, and stored in a sealed container to prevent contamination.

- Handlers must wear the applicator PPE specified by the labeling if they exit the cab within a treated area during application or when an REI is in effect.
- Once PPE has been worn in a treated area, the handler must remove 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.



Figure 9. In some situations, PPE requirements may be reduced when a handler is in an enclosed cab. UNL photo.

- 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 Applicator

To ensure the agricultural owner/operator has the information to protect employees and comply with WPS, a commercial applicator must inform an agricultural owner/operator before a pesticide is applied on the agricultural establishment. The commercial applicator must provide the owner/operator 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 ingredients, and 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 commercial applicator isn't required to provide a copy of the SDS to the agricultural employer, the EPA encourages this since the commercial applicator should have received copies of the SDS from the distributor.

If the owner of an agricultural establishment hires people to perform handler activities, such as commercial applicators, the agricultural owner/operator must inform the employer of the commercial handler of any treated areas under an REI if they will be at or walk within a quarter mile of that area. The employer of the commercial handler must pass that information along to the commercial handler. The agricultural owner/operator is responsible for providing all WPS protections for his/her employees. If the operator of an agricultural establishment hires a commercial handler, that commercial handler employer 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 of the WPS requirements 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: training and instructions and decontamination sites
- Inspecting, cleaning, and maintaining PPE

Owners of agricultural establishments and their immediate family members are required to 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
- Beginning Jan. 2, 2018, a handler must suspend a pesticide application if a worker or other person is in the AEZ during the application.

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 this description may determine the appropriate PPE to wear and do not have to comply with the requirements for emergency assistance, understanding the label, and decontamination for themselves. 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 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 or 877-800-4080 (toll free).

Ogg, C.L., Bauer, E.C., Hygnstrom, J.R., Hansen, P.J. (2012) 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 http://www.ecfr.gov/cgi-bin/text-idx?SID=e3b0693d1b8ccd5e04ed42ced2a268c8&mc=true&tpl=/ecfrbrowse/Title40/40cfr170_main_02.tpl.

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/>.

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