

Worker Protection Standard: Personal Protective Equipment (PPE) 2016¹

Frederick M. Fishel²

Background

In 1992, the US Environmental Protection Agency (EPA) issued a comprehensive regulation called the Worker Protection Standard for Agricultural Pesticides (WPS). The WPS covers pesticides used in the outdoor and enclosed-space production of plants on farms, forests, and nurseries, as well as in greenhouses. The WPS requires agricultural employers to take steps to reduce pesticide-related risks when agricultural workers and pesticide handlers are exposed to these pesticides. The EPA has made several changes to the WPS since it was fully implemented in 1995. On November 2, 2015, the EPA revised the WPS, making significant changes to the rule's requirements. In late 2016, EPA released the revised "How to Comply" manual to provide an updated resource. The entire document is posted on their website at <https://www.epa.gov/pesticide-worker-safety/pesticide-worker-protection-standard-how-comply-manual>

How does the WPS define articles of PPE and related terminology?

There are several definitions employers should be knowledgeable of, including:

- **Personal protective equipment:** apparel and devices worn to protect the body from contact with pesticides or pesticide residues, including coveralls, chemical-resistant suits, gloves, footwear, aprons, headgear, protective eyewear, and respirators. For additional information on PPE, see UF/IFAS EDIS Document PI-28, *Personal*

Protective Equipment for Handling Pesticides, at <http://edis.ifas.ufl.edu/pi061>.

- **Chemical-resistant:** allows no measurable amount of the pesticide being used to move through the material during use.
- **Waterproof:** allows no measurable movement of water (or water-based solutions) through the material during use.
- **Chemical-resistant footwear:** chemical-resistant shoes; chemical-resistant boots; or chemical-resistant shoe coverings worn over shoes or boots. Leather boots may be worn in rough terrain, if a chemical-resistant option with sufficient durability and a tread appropriate for wear in such terrain is not obtainable.
- **Protective eyewear:** goggles, a face shield, or safety glasses with front, brow, and temple protection. A full respirator may be worn instead of protective eyewear.
- **Chemical-resistant suit:** a loose-fitting, one- or two-piece garment that covers, at a minimum, the entire body except head, hands, and feet.
- **Coverall:** a loose-fitting one- or two-piece garment that covers, at a minimum, the entire body except head, hands, and feet. Coveralls are made of fabric such as cotton or a cotton-polyester blend and are not chemical-resistant. The pesticide labeling may specify that the coveralls be worn over a layer of clothing. A

1. This document is PI267, one of a series of the Agronomy Department, UF/IFAS Extension. Original publication date November 2016. Revised September 2019. Visit the EDIS website at <https://edis.ifas.ufl.edu> for the currently supported version of this publication.

2. Frederick M. Fishel, professor, Agronomy Department; UF/IFAS Extension, Gainesville, FL 32611.

chemical-resistant suit may be worn instead of coveralls and any required inner layer of clothing.

- **Chemical-resistant apron:** an apron that is made of chemical-resistant material and that covers the front of the body from mid-chest to the knees. If a chemical-resistant suit is worn, no apron is required.
- **Respirator:** a device that protects the respiratory system. It must be the type listed on the pesticide label (or one that is more protective) and must be appropriate for the pesticide product being used and for the activity being performed. A respirator with a canister approved for pesticides or with an organic-vapor cartridge equipped with a pesticide prefilter may be worn instead of a dust/mist-filtering respirator. For more information regarding respirators, see UF/IFAS EDIS Document PI-77, *Respirators for Pesticide Applications*, at <http://edis.ifas.ufl.edu/pi114>.
- **Chemical-resistant headgear:** a chemical-resistant hood or a chemical-resistant hat with a wide brim.
- **Gloves:** hand-coverings that are the type listed on the pesticide label. For detailed information on suitable gloves available for handling pesticides, refer to UF/IFAS EDIS Document PI-120, *Glove Selection for Working with Pesticides*, at <http://edis.ifas.ufl.edu/pi157>.
 - Gloves made of leather, cotton, or other absorbent materials must not be worn for handling or early-entry activities unless these materials are listed on the pesticide labeling as acceptable for such use.
 - Chemical-resistant gloves with nonseparable absorbent lining materials must not be worn for handling or early-entry activities. Absorbent materials hold pesticides and may cause dermal exposure. A chemical-resistance chart is provided in UF/IFAS EDIS Document PI-28, *Personal Protective Equipment for Handling Pesticides*, at <http://edis.ifas.ufl.edu/PI061>. The document provides reference to materials that are approved for working with pesticides.
 - Leather gloves may be worn over chemical-resistant liners, if chemical-resistant gloves with sufficient durability and suppleness are not obtainable. However, after leather gloves have been worn for protection from pesticide exposure, they may only be worn with chemical-resistant liners and may not be worn for any other use.
- **Separable glove liners:** separable glove liners are separate glove-like hand coverings, made of lightweight material, with or without fingers.

- Work gloves made from lightweight cotton on poly-type material are considered to be glove liners, if worn beneath chemical-resistant gloves.
- Unless the pesticide product labeling specifically prohibits their use, separable glove liners may be worn beneath chemical-resistant gloves, provided the liners do not extend outside the chemical-resistant gloves that are worn over them.
- Once used for handling or early-entry activities, separable glove liners must be discarded immediately after a total of 10 hours of use or within 24 hours of first use, whichever occurs first. The liners must be replaced immediately if they come into direct contact with pesticides. Pesticide-contaminated liners must be disposed of in accordance with any federal, state, or local regulations.

What are the basic responsibilities required of agricultural employers regarding PPE?

Employers must make sure that pesticide handlers:

- Are provided with the Personal Protective Equipment (PPE) the pesticide labeling requires for the task.
- Wear the PPE for the entire handling task.
- Use the PPE correctly.

What are the other responsibilities required of agricultural employers regarding PPE?

Employers must also:

- Provide handlers with the appropriate PPE in clean and operating condition.
- Make sure that the handlers wear the PPE correctly and use it according to the manufacturer's instructions. If a handler wears a respirator, make sure that it fits the wearer correctly.
- Inspect all PPE before each day of use for leaks, holes, tears, or worn places, and repair or discard any damaged equipment.
- Provide handlers with clean places away from pesticide storage and pesticide use areas to:
 - Store personal clothing not in use.
 - Put on PPE at the start of any exposure period.
 - Take off PPE at the end of any exposure period.
 - Take any necessary steps to prevent heat illness (too much heat stress) while PPE is being worn.
- Not allow any handler to wear home or take home PPE contaminated with pesticides.

For what duration of time must handlers wear all of the required PPE?

Employers must ensure that each pesticide handler is wearing the required PPE during the entire handling task.

What are an employer's responsibilities regarding cleaning and maintaining PPE?

Employers must:

- Keep pesticide-contaminated PPE away from other clothing or laundry, and wash it separately.
- If PPE will be reused, clean it before each day of reuse according to the instructions from the PPE manufacturer unless the pesticide labeling specifies other requirements. If there are no such instructions or requirements, wash PPE thoroughly in detergent and hot water.
- Thoroughly dry the clean PPE before it is stored, or put it in a well-ventilated place to dry.
- Store clean PPE separately from personal clothing and away from pesticide-contaminated areas.

What instructions should employers provide to those who clean or launder PPE?

Employers must inform people who clean or launder PPE:

- that the PPE may be contaminated with pesticides;
- of the potentially harmful effects of exposure to pesticides;
- how to protect themselves when handling contaminated PPE; and
- that PPE should be cleaned according to label directions. If there are no specific directions, then PPE should be cleaned in hot water with detergent.

How should employers handle materials that are heavily contaminated with pesticides?

Materials and soil contaminated in a spill can be collected and placed in a suitable container (such as a plastic or metal bucket) and then applied as a pesticide to a site upon which that pesticide can be applied as directed on the pesticide label. Clothing contaminated by pesticides regulated as solid waste (most pesticides) can be disposed of as solid waste (trash). Clothing contaminated by pesticides regulated as hazardous waste must be disposed of as hazardous waste if it was contaminated as a result of a spill or leak. If the clothing was contaminated as a result of a normal, legal application of the pesticide, then the clothing can be handled as normal solid waste.

Based on the revisions made to the WPS in 2015, how will the requirements for PPE be affected?

There are 3 primary changes related to PPE requirements, including:

- Respirator training, fit-testing, and medical evaluation
- Noncertified crop advisors and PPE selection during crop-advising tasks
- Closed systems for mixing/loading and/or application of pesticides

If a potential handler employee has already gone through the annual respirator training, fit-testing procedure, and medical evaluation process required by the new WPS respirator-related requirements at a previous employer (e.g., through their military duty), does the employee need to do it again through their new potential employer or can they provide their employer with the previous paperwork documenting completion of these requirements?

It is probable that the employee would need to complete the respirator fit-testing and the medical evaluation again because much of it is location-specific, activity-specific, and respirator-specific. However, it is possible that the annual respirator training would not have to be repeated. Additional explanation is provided below.

- The medical evaluation is based on the conditions under which the respirator is worn. The handler's employer has to provide the physician or licensed health care professional with information like the type and weight of the respirator, the duration and frequency of respirator use, the expected physical work effort, additional protective clothing and equipment that must be worn, and temperature and humidity extremes that may be encountered. If the employee is going to be performing the same types of work and tasks (i.e., applying pesticides or very similar activity) under the same general conditions and situations and using the same respirator(s), then it could be possible that no new medical evaluation would be needed.
- Fit testing must be done using the exact same respirator (i.e., type, size, make, and model) the person will use to conduct the range of handler activities they will be involved in. If the person uses the exact same respirator for the pesticide application work as he or she was

fit-tested for previously, and within the last year, it would be valid for the new employer.

- Training is probably the most transferrable. The Occupational Safety and Health Administration's (OSHA) regulations state: "An employer who is able to demonstrate that a new employee has received training within the last 12 months is not required to repeat such training provided that ... the employee can demonstrate knowledge of the elements covered in respirator training. Previous training not repeated initially by the employer must be provided no later than 12 months from the date of the previous training." Therefore, if an employer can show that the employee has received training in the previous 12 months and ensures that the employee can demonstrate knowledge of the points covered in respirator training, the employer can rely on the previous training until it expires after a year.

What options do noncertified crop advisors have for selection of PPE when conducting crop-advising tasks during a restricted-entry interval (REI)?

The WPS provides an exception to the label-required PPE that is applicable to all crop advisors performing crop-advising tasks during the REI, but not during an application. Noncertified crop advisors must wear PPE when performing crop advising tasks during the REI, but they may choose between any of the following options and select the least restrictive:

- The labeling-required PPE for handlers;
- The labeling-required PPE for early-entry workers; *or*
- A "universal set" of PPE that is good for conducting any crop-advising task during the REI, but *not* during application, which consists of coveralls, shoes plus socks, waterproof gloves, and protective eyewear (eyewear only required if label requires protective eyewear for handlers).

Does the revised WPS include new requirements mandating the use of closed systems for certain pesticide products or active ingredients? Please clarify the WPS requirements related to closed systems.

No. The revised WPS itself does not require or mandate the use of closed systems for any agricultural pesticides or active ingredients. Any requirements that closed systems must be used for mixing/loading and/or application are product-specific requirements that appear in the pesticide product labeling. The current WPS includes an exception from certain PPE requirements for pesticide mixer/loaders

who are using closed systems. This general approach is continued in the revised rule, although the revised rule includes more detail about the characteristics that a closed system must have in order to be eligible for this exemption. Specifically, the rule includes the following language:

"(2) The exceptions of paragraph (d)(1) of this section apply only in the following situations:

(i) Where the closed system removes the pesticide from its original container and transfers the pesticide product through connecting hoses, pipes and couplings that are sufficiently tight to prevent exposure of handlers to the pesticide product, except for the negligible escape associated with normal operation of the system.

(ii) When loading intact, sealed, water soluble packaging into a mixing tank or system. If the integrity of a water soluble packaging is compromised (for example, if the packaging is dissolved, broken, punctured, torn, or in any way allows its contents to escape), it is no longer a closed system and the labeling-specified PPE must be worn."

Additional Information

Fishel, Frederick M. 2005. *Respirators for Pesticide Applications*. PI77. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <https://edis.ifas.ufl.edu/pi114>

Fishel, Frederick M. 2006. *Glove Selection for Working with Pesticides*. PI120. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <http://edis.ifas.ufl.edu/pi157>

Fishel, Frederick M. 2006. *Pesticide Labeling: Signal Words*. PI100. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <http://edis.ifas.ufl.edu/pi137>

Fishel, Frederick M. 2009. *Personal Protective Equipment for Handling Pesticides*. PI28. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <http://edis.ifas.ufl.edu/pi061>

Fishel, Frederick M. 2015. *A Summary of Revisions to the Worker Protection Standard—2015*. PI261. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <http://edis.ifas.ufl.edu/pi261>

US EPA. 2016. *How to Comply with the 2015 Revised Worker Protection Standard for Agricultural Pesticides: What Owners and Employers Need to Know*. EPA 735-B-16-001. United States Environmental Protection Agency. <https://www.epa.gov/pesticide-worker-safety/pesticide-worker-protection-standard-how-comply-manual>