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STATE OF MICHIGAN
DEPARTMENT OF AGRICULTURE
AND RURAL DEVELOPMENT

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Guidance for Personal Protective Equipment Requirements for Commercial Applicators

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This and other guidance, including laws and regulations, are available online at www.michigan.gov/mdardpest

Background

The Michigan Department of Agriculture and Rural Development (MDARD) is providing this guidance document to clarify Personal Protection Equipment (PPE) requirements for commercial pesticide applicators operating in Michigan. Such applicators who must be certified or registered according to [Act 451 Part 83](#) include individuals applying pesticides for hire or in the course of their employment in a wide range of industries.

Applicators who are employed by an agricultural commercial pesticide handler employer (i.e. custom applicators) as defined by the federal Worker Protection Standard (WPS)¹ are additionally subject to those federal requirements.

Utilizing appropriate minimum levels of PPE is essential to protect applicators from pesticide exposure. An applicator's risk to a pesticide is determined by how likely the applicator is to contact the pesticide and the toxicity of the pesticide. Using proper PPE can reduce risk when using a pesticide by limiting contact with skin and eyes and preventing ingestion and inhalation.

PPE regulatory requirements for commercial pesticide applicators in Michigan are found in [Regulation 637, Pesticide Use](#). While Regulation 637 Rule 9(2) sets a minimum for commercial applicator PPE, labels often have additional requirements that must be followed per Rule 9(1).

Guidance on Michigan Commercial Applicator Minimum PPE

MDARD requires commercial applicators to wear a minimum level of PPE when using a pesticide even if the label does not specifically require them: long pants, appropriate footwear, long sleeves (with exceptions), and appropriate gloves. The appropriateness of the footwear, gloves, or whether short sleeves are allowable depends on factors specific to the pesticide in use.

¹ <https://www.pesticideresources.org/wps/definitions/commercial-pesticide-handler-employer-establishment/>

Use includes transferring product between containers, mixing, loading, and applying.

Long Pants

MDARD requires that commercial applicators wear long pants. To provide adequate protection, pants should fully cover the applicator's legs, with no noticeable holes, and should be worn outside of the applicator's footwear to prevent liquid from dripping into the applicator's footwear.

Footwear

MDARD requires that footwear worn provides protection from the pesticide in use. This will vary by the product being applied. For any liquid pesticide formulation, footwear comprised of absorbent materials such as canvas, suede, foam, leather, or a knit material would not be appropriate.

Examples of appropriate footwear include:

- An applicator applying a liquid formulation may choose to wear rubber boots.
- An applicator applying a liquid formulation may choose to wear chemical resistant shoe covers (booties).
- An applicator applying only a granular or dust formulation may choose to wear footwear that prevents the pesticide from contacting the applicator's feet.

Does waterproof footwear meet this requirement?

Waterproof does not necessarily mean chemical-resistant or impervious to pesticides. Many waterproof or water-resistant materials, such as leather, nylon, polyester, and others may absorb pesticides over time, allowing for long-term pesticide exposure for the applicator.

Long-Sleeve Clothing

MDARD requires commercial applicators wear long-sleeves unless an adequate supply of soap and water for rinsing are available, and the label does not otherwise prohibit short-sleeves. Long-sleeve clothing may include coveralls.

Can "soap and water in a can" products meet these requirements?

MDARD is aware of products that claim to be a combination of soap and water in one packaged container. The department maintains such a product does not meet the requirements of this part without additional water available for rinsing off pesticide-containing soap residue.

Gloves

MDARD requires gloves worn are impervious to the pesticide in use. The use of chemical resistant PPE not only reduces the risk of dermal pesticide exposure, but also makes it easier (and possible) to wash reusable PPE.

As with footwear, the type of protection will vary depending on the product. The type of glove material may also be specified by the label. The label may reference a category (A-H) on the Environmental Protection Agency (EPA) chemical-resistance category chart. One material is not protective against all types of chemicals for all lengths of time, so it is important to consult the

product label and the EPA's chemical resistance categories² prior to selecting glove materials. Consider materials the American Society for Testing Materials (ASTM) has tested for chemical resistance using methods such as test method F739-91.

Gloves made of impervious materials are only impervious when they are kept in good, working condition and free of rips, tears, cracks, and worn spots.

For any liquid pesticide formulation, wearing gloves comprised of absorbent materials such as cotton, leather, or a knit material would be acceptable.

Acceptable examples include:

- An applicator applying a liquid formulation from handheld equipment (backpack sprayers, hand cans) wearing gloves made of a material such as barrier laminate, butyl rubber, natural rubber, nitrile, neoprene, PVC, and Viton.
 - Gloves must be comprised of a non-absorbent material at all potential points of exposure, including the front, back, and seams.
- An applicator applying a granular or dust formulation wearing gloves that prevent the dust/granules from contacting the applicator's hands.

Labels often have specific requirements on the material and thickness of gloves to be worn. In such case, these specific label requirements must be met.

When are hands likely to come into contact with a pesticide?

MDARD requires impervious gloves be used in situations where the applicator's hands are likely to come into contact with a pesticide. For most pesticide applications, the applicator's hands are likely to come into contact with the pesticide at some point during use. If an application does not involve the applicator's hands being likely to come into contact with the pesticide due to the equipment in use, gloves would still be required for mixing and loading products prior to the application.

Situations in which hands may possibly be unlikely to contact a pesticide, including residues on equipment, include the following:

- Mixing using a closed transfer system in which the product container is not opened.
- Applications made from within an enclosed cab (vehicle, tractor, plane, helicopter) or operating the remote control for an uncrewed aerial vehicle (UAV, i.e. drone).
- Lawn applications made from a ride-on sprayer, in which the applicator is certain that controls (knobs, levers, switches, etc.) are not contaminated with pesticide residue.
 - Because this area of the equipment may have previously been contaminated with residue, an applicator may need to wear gloves. If allowed by the label, the applicator may choose to wear something like disposable nitrile gloves, which allow the dexterity to operate controls while protecting the applicator's skin.

In such a scenario where the applicator's hands are unlikely to contact a pesticide, it is advised that the applicator keep gloves immediately available on their person in the case that equipment needs maintenance, adjustment, or repair, or a spill occurs.

² [*Personal Protective Equipment Guide: Choosing Chemical Resistant PPE \(2012\)*](#) available through the National Service Center for Environmental Publications

Note if a label requires gloves to be worn for all application types, gloves must be worn as required by the label.

What if a label has requirements about what type of gloves to wear?

Labels require a range of glove materials. These materials are decided according to the contents of the product and the labeled directions and must be followed.

Example statements found on labels include:

- Chemical resistant gloves
- Chemical resistant gloves made of any waterproof material
- Chemical resistant gloves such as butyl or rubber

Guidance on Label-Specific PPE

Pesticide labels are enforceable documents that contain requirements for the use of the product by any applicator. Some types of additional PPE that are frequently required by pesticide labels include eyewear, respirator, chemical resistant aprons, coveralls, and chemical resistant headgear.

Protective Eyewear

When a label requires protective eyewear, the user must wear safety glasses, goggles, or a face shield. A full-face respirator can also meet this requirement.

Safety glasses must have brow and side shield protection to be considered protective eyewear, as eye injury may occur when chemical runs off of the forehead or temple.

Some labels may specifically require goggles. Chemical goggles that fit snugly around the nose, brow, and temple provide unique protection from pesticides, as liquid-carried formulations may drip and run inside of poorly-fitting goggles.

Respirators

The product label will specify the type of National Institute for Occupational Safety and Health-approved respirator, filters, and/or cartridges required to be worn. Like other PPE, respirator requirements are decided based on risk assessments involving the ingredients, use sites, label directions, and other factors. Always consult the product label regarding respirator requirements.

Most commonly, pesticide labels will require a particulate-filtering respirator (N, R, or P classification) and/or an Organic Vapor (OV)-filtering respirator. An OV-filtering cartridge will not sufficiently protect against particulates and a particulate-filtering cartridge/facepiece will not sufficiently protect against certain gases and vapors; labels may therefore require both.

- **N, R, or P classification** includes particulate-filtering facepieces (such as N-95 respirators), or N, R, and P filters that can be used with half-face/full-face respirators.

- **Chemical cartridges** such as **OV** canisters protect against certain gases and vapors and are used with half-face/full-face respirators.
- **Chemical cartridges in combination with N, R, or P filters** provide protection against certain gases and vapors as well as particulates and are used with half-face/full-face respirators.

Ensure respirators, filters, and cartridges are changed out, cleaned, and maintained according to regulatory and manufacturer requirements and are kept in working condition.

Note the Occupational Safety and Health Administration (OSHA) has respirator fit test, medical evaluation, and training requirements that must be met before an employee can wear a respirator in the course of their employment.³ If you have questions about respirators and are not subject to the Worker Protection Standard (WPS), contact the Michigan OSHA⁴ for any assistance.

The WPS also has respirator fit test, medical evaluation, and training requirements for agricultural pesticide handlers, including those making commercial agricultural applications (i.e. custom applications). More information is available through the Pesticide Education Resources Collaborative (PERC)⁵ or you may contact MDARD if you have questions regarding WPS requirements.

Chemical Resistant Aprons

Such aprons are designed to cover the front of the body from mid-chest to the knees to prevent contact by splashes or small spills.

Can coveralls substitute for a chemical resistant apron?

Chemical resistant coveralls can substitute for a chemical resistant apron. Standard, woven coveralls that are not chemical resistant to the pesticide do not meet this requirement.

Coveralls

Coveralls are loose-fitting garments covering, at a minimum, the entire body except for the head, hands, and feet. If a pesticide label requires coveralls to be worn, it means cloth garments unless chemical-resistant coveralls are specifically mentioned.

Chemical Resistant Headgear

Some product labels will require chemical resistant headgear for specific applications, such as when applying overhead. Examples meeting this requirement include:

- Chemical resistant coverall or rainsuit hood
- Chemical resistant (rubber, plastic-coated) wide-brimmed hats

PPE for Mixing and Loading

³ <https://www.osha.gov/respiratory-protection>

⁴ <https://www.michigan.gov/leo/bureaus-agencies/miosha/about-miosha>

⁵ <https://www.pesticideresources.org/wps-resources/what-are-my-responsibilities-as-a-cpbe/> specifically for commercial pesticide handler employers

When a commercial applicator is mixing and loading, all commercial minimum PPE must be worn in addition to label-required PPE. For some products, this will be the same as the PPE for making applications. For other labels, additional PPE will need to be worn under certain conditions, such as mixing and loading, being exposed to the concentrated material, or using certain equipment.

Note that mixing and loading includes the transfer of a pre-mixed container (such as a tote or mini-bulk) into application equipment.

Common examples of PPE that labels may require only for mixing and loading would include chemical resistant apron, protective eyewear, coveralls, and respirator.

Guidance on Storing, Using, Maintaining, and Replacing PPE

Clothing worn during pesticide activities should be washed separately from the family laundry.⁶

PPE should be stored away from pesticides and other hazards to avoid contamination. Avoiding exposure to sunlight, extreme temperatures, and excessive humidity will help keep the PPE in working condition.

After you finish a pesticide-related task, take off PPE as soon as possible. When removing PPE, wash gloves (disposable or reusable) with soap and water first. Then, while still wearing the gloves, remove remaining PPE. Then wash the gloves again with soap and water before taking them off.

PPE should be discarded when it no longer provides adequate protection. Never reuse disposable PPE. Signs that PPE is no longer protective include rips, tears, and cracks; changes in material color, texture, and shape; and manufacturer usage limits or other issued recommendations.

Applicable Regulations

Regulation 637, Pesticide Use, Rule 9

(1) A pesticide applicator shall follow label directions regarding personal protective equipment.

(2) Commercial applicators who use a pesticide shall comply with all of the following minimum protective equipment requirements, unless otherwise directed by the pesticide product label:

(a) Long pants shall be worn.

(b) Footwear that provides protection from exposure to the pesticide being used shall be worn.

(c) Long-sleeve clothing shall be worn. Short-sleeve clothing may be worn if water and soap or other protection is in place that provides comparable or greater protection is immediately available and short-sleeve clothing is not prohibited by the pesticide label.

⁶ National Pesticide Information Center (NPIC) <http://www.npic.orst.edu/faq/dirtyclothes.html>

(d) Gloves that are impervious to the pesticide in use shall be worn in any situation where the individual's hands are likely to come into contact with a pesticide, unless other protection is in place that provides comparable or greater protection.