Personal Protective Equipment: Selection, Use and Maintenance for Pesticide Applicators

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Pesticide Coordinator
Oregon OSHA
Personal Protective Equipment

Respirators
Gloves
Eye Protection
Aprons
Footwear

Personal Protective Equipment: Selecting the Right PPE for Pesticide Use

Environmental Protection Agency chemical resistance categories for selected personal protective materials:
# PPE Violations

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Pesticide Related Violations</th>
<th>PPE Total</th>
<th>Respirator related</th>
<th>All other PPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>238</td>
<td>66</td>
<td>42</td>
<td>24</td>
</tr>
<tr>
<td>2017</td>
<td>232</td>
<td>68</td>
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<td>2016</td>
<td>240</td>
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<td>2015</td>
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<td>2014</td>
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<tr>
<td>2013</td>
<td>307</td>
<td>71</td>
<td>37</td>
<td>34</td>
</tr>
</tbody>
</table>
Topics to be Covered

• Personal Protective Equipment Decisions
• Purchasing
• PPE Hazard Assessment
• Types
• Use
• Maintenance
• Lessons learned
PPE - So Many Decisions

• How do you determine what PPE should be worn?
  • Who selects?
• Who purchases?
• When is it purchased?
• Who uses it?
• Who supervises it is worn?
• Who trains on how to use PPE?
• Who cleans & stores?
• Where is PPE kept?
Who does the Purchasing

- Do they understand what is needed?
- Are they going for the best deal?
- Ordering frequency/determination?
PPE Hazard Assessment

• Job hazard analysis – think routes of exposure
  – Splash to the eyes
  – Absorption through the skin
  – Contamination on clothing/shoes
• Determine correct type
• Train employees on proper use of PPE
• Sign & Date the Assessment

*(also covers hazards beyond pesticides)
Job Analysis – Pesticide Activities

- Mixing
- Applying
- Cleaning up spills
- Working on equipment

What will the employee be doing? All of the above, or only some?
PPE Selection Varies by Task

- Mixing/Loading/Applying
- Spill Cleanup
PPE Requirements

• The Label is the Law
• Can wear more than required- as long as it does not create a hazard
• CANNOT wear less than the label requires.
How Do You Know What PPE to Use for Pesticides?

Precautionary statements
Hazard to humans and domestic animals. CAUTION. Avoid contact with skin, eyes, or clothing. Avoid breathing dust or spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

Personal Protective Equipment (PPE):
Applicators and other handlers must wear:
- Long-sleeved shirt and long pants,
- Shoes plus socks

Mixer/loaders must wear a dust/mist-filtering respirator meeting NIOSH standards of at least N-95, R-95, or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.
Eye Protection
Signal Words Mean Something

- **Caution** - irritation, stinging, burning; no permanent damage
- **Warning** - Temporary, but substantial eye injury; no permanent damage
- **Danger** – Corrosive, irreversible eye damage; permanent
- **Danger/Poison** – Can be corrosive, can absorb through eye tissue to produce systemic poisoning; can be permanent
Eye Protection

Caution

Warning

Danger

Danger/Poison
2,4-D AMINE 4 HERBICIDE

DANGER
Corrosive. Causes irreversible eye damage. Harmful if swallowed. Do not get in eyes or on clothing. Avoid contact with skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

PERSONAL PROTECTIVE EQUIPMENT
Some materials that are chemical-resistant to this product are butyl rubber, natural rubber, neoprene or nitrile rubber.

All mixers, loaders, applicators, flaggers, and other handlers must wear:
1. Long-sleeved shirt and long pants.
2. Shoes and socks.
3. Chemical resistant gloves when applying with any handheld nozzle or equipment, mixing or loading, cleaning up spills or equipment, or otherwise exposed to the concentrate.
4. Chemical resistant apron when, mixing or loading, cleaning up spills or equipment, or otherwise exposed to the concentrate.
5. Wear protective eyewear (goggles or face shield).

See engineering controls for additional requirements.
Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product’s concentrate. Do not reuse them. Follow manufacturer’s instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. After each day of use, clothing or PPE must not be reused until it has been cleaned.
When the LABEL says: “DANGER! Causes Irreversible Eye Damage”
Emergency Eyewash AT MIX SITE

ACCEPTABLE
## Emergency Eyewash Violations

<table>
<thead>
<tr>
<th>Year</th>
<th>Times Cited</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>9</td>
</tr>
<tr>
<td>2016</td>
<td>12</td>
</tr>
<tr>
<td>2015</td>
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</tr>
<tr>
<td>2014</td>
<td>7</td>
</tr>
<tr>
<td>2013</td>
<td>10</td>
</tr>
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</table>
Hand Protection

Rubber, Nitrile, PVC, Barrier Laminate
Gloves reduce dermal exposure by 99% when mixing, loading, and applying.
PERSONAL PROTECTIVE EQUIPMENT (PPE)
Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category G on an EPA chemical-resistance category selection chart.
Mixers and loaders using a mechanical transfer loading system and applicators using aerial application equipment must wear:
• Long-sleeved shirt and long pants
• Shoes and socks
In addition to the above, mixers and loaders using a mechanical transfer loading system must wear:
• Chemical-resistant gloves
• Chemical-resistant apron
A NIOSH-approved dust mist filtering respirator with MSHA/NIOSH approval number prefix TC-21C or a NIOSH-approved respirator with any R, P or HE filter
See “ENGINEERING CONTROLS” for additional requirements.
All other mixers, loaders, applicators and other handlers must wear:
• Coveralls over long-sleeved shirt and long pants
• Chemical-resistant gloves made of waterproof material such as Barrier laminate and Viton ≥ 14 mils.
• Chemical-resistant apron when mixing or loading or exposed to the concentrate
• Chemical-resistant footwear plus socks
• Protective eyewear (goggles, face shield or safety glasses)
• Chemical-resistant headgear for overhead exposure
• A NIOSH approved respirator with any R, P or HE filter
**DANGER**

Corrosive • Causes Irreversible Eye Damage • Harmful If Swallowed Or Absorbed Through Skin • Prolonged Or Frequently Repeated Skin Contact May Cause Allergic Reaction In Some Individuals

Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove and wash contaminated clothing before reuse.

**Personal Protective Equipment (PPE)**

Applicators and other handlers must wear:
- Long-sleeved shirt and long pants
- Shoes plus socks
- Protective eyewear
- Chemical resistant gloves (≥14 mils) such as butyl rubber, natural rubber, neoprene rubber or nitrile rubber

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product’s concentrate. Follow manufacturer’s instructions for cleaning. If no such instructions for washables exist, use detergent. Keep and wash PPE separately from other laundry.

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Environmental Protection Agency chemical resistance categories for selected personal protective materials

<table>
<thead>
<tr>
<th>Selection category listed on pesticide label</th>
<th>Barrier laminate</th>
<th>Butyl rubber ≥14 mils</th>
<th>Nitrile rubber ≥14 mils</th>
<th>Neoprene rubber ≥14 mils</th>
<th>Natural rubber ≥14 mils</th>
<th>Polyethylene</th>
<th>Polyvinyl chloride (PVC) ≥14 mils</th>
<th>Viton ≥14 mils</th>
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<tr>
<td>A (dry and water-based)</td>
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<td>High</td>
<td>High</td>
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<td>Slight</td>
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<td>Moderate</td>
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<td>F</td>
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<td>High</td>
<td>Moderate</td>
<td>None</td>
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<td>None</td>
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<tr>
<td>G</td>
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</tr>
</tbody>
</table>
Glove Thickness – Too Thin
**PRECAUTIONARY STATEMENTS**

**HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**CAUTION**

Harmful if swallowed or absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals.

**PERSONAL PROTECTIVE EQUIPMENT (PPE)**

Some materials that are chemical-resistant to this product are neoprene or nitrile rubber. If you want more options, follow the instructions for Category E on an EPA chemical-resistance category selection chart.

All mixers, loaders, applicators, flaggers, and other handlers must wear:

1. Long-sleeved shirt and long pants
2. Shoes and socks
3. Chemical-resistant gloves

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**Environmental Protection Agency chemical resistance categories for selected personal protective materials**

<table>
<thead>
<tr>
<th>Selection category listed on pesticide label</th>
<th>Barrier laminate</th>
<th>Butyl rubber (\geq 14 \text{ mils})</th>
<th>Nitrile rubber (\geq 14 \text{ mils})</th>
<th>Neoprene rubber* (\geq 14 \text{ mils})</th>
<th>Natural rubber (\geq 14 \text{ mils})</th>
<th>Polyethylene</th>
<th>Polyvinyl chloride (PVC) (\geq 14 \text{ mils})</th>
<th>Viton (\geq 14 \text{ mils})</th>
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</thead>
<tbody>
<tr>
<td>A (dry and water-based)</td>
<td>High</td>
<td>High</td>
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<td>High</td>
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<tr>
<td>B</td>
<td>High</td>
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<td>Slight</td>
<td>Slight</td>
<td>None</td>
<td>Slight</td>
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<td>High</td>
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<td>High</td>
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<td>Moderate</td>
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<td>None</td>
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<tr>
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<tr>
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<td>Slight</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
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</tbody>
</table>

* includes natural rubber blends and laminates.

**Key:**

- **High:** Highly chemical resistant. Clean or replace PPE at end of each day's work period. Rinse off pesticides at rest breaks.
- **Moderate:** Moderately chemical resistant. Clean or replace PPE within an hour of contact.
- **Slight:** Slightly chemical resistant. Clean or replace PPE within 10 minutes of contact.
- **None:** Not chemical resistant. Do not wear this type of material as PPE when contact is possible.
All mixers, loaders, applicators, flaggers, and other handlers must wear:

1. Long-sleeved shirt and long pants
2. Shoes and socks
3. Chemical-resistant gloves
4. **Chemical-resistant apron** when applying with any handheld nozzle or equipment, mixing or loading, cleaning up spills or equipment, or otherwise exposed to the concentrate.
PPE: What is “Chemical Resistant?”

Chemical Resistant: In Oregon:
Made of a material that the manufacturer of that garment has declared, in writing, to be chemical resistant.
The Written Respirator Program Elements

• Designates a knowledgeable person to oversee the program
• Hazard evaluations
• Selection of Respirators
• Medical evaluations
• Annual Fit testing
• Annual Training
• Storage, maintenance and inspections
• Program evaluation
Purpose

The purpose of this program is to ensure that employees of [name of your company] are protected from respiratory hazards during their work. We understand that accepted engineering controls — such as enclosing the source of contamination, removing contaminated air with general or local exhaust ventilation, and eliminating sources of air contaminants by substituting less toxic materials — are the preferred methods of protection and must be used to the extent feasible. However, for some types of tasks, during an emergency situation, and while engineering controls are being established, respirators are necessary to protect the health of our employees.

[name of your company] will comply with the following requirements:

- Maintain an effective, written respiratory protection program that is managed by a program administrator.
- Keep our program updated to reflect procedures specific to our worksite and changes in conditions that require the use of respirators.
- Include each employee required to use a respirator in this program.
Voluntary Use

- Optional Use
- Medical Evaluations
- Appendix D
Medical Evaluations

• What it is/what it’s not
• When do you have to do it
• Who can do it
• Confidential (HIPPA)
• Frequency
Fit testing

- Types
- Who can do it
- When is it required
- After medical evaluation
- Prior to initial use
- At least every 12 months
Fit Checks

Negative

Positive
Respirators & Pesticides: Here’s the Issue

NIOSH

OSHA  Pesticides  EPA
Before **1995**: The NIOSH Approval Prefix Was: TC-21C
After 1995 this is:
NIOSH Approval Prefix: TC - 21C
Old TC-21C

NEW: TC-84A.
All But ONE is a TC-84A
Filters

• N $\rightarrow$ is **Not** resistant to oils
• R $\rightarrow$ is **Resistant** to oils, but has a time limit
• P $\rightarrow$ means oil-**Proof**

➤ **Efficiency**: 95 to 100%
Filters
Particulate Respirators

• Protects against particulates: dusts & mists
• Can be an entire particulate filter, or used in combination with another type of cartridge for dual protection
<table>
<thead>
<tr>
<th>Color Code</th>
<th>Color</th>
<th>Protects Against</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Black</td>
<td>Organic vapors and paint spraying (except isocyanate containing paint)</td>
</tr>
<tr>
<td></td>
<td>Green</td>
<td>Ammonia: anhydrous or from livestock confinement</td>
</tr>
<tr>
<td></td>
<td>Yellow</td>
<td>Combination acid gases and organic vapor</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>Acid gases</td>
</tr>
<tr>
<td></td>
<td>Olive</td>
<td>Organic vapors, ammonia, acid gases and multiple gases</td>
</tr>
<tr>
<td></td>
<td>Magenta</td>
<td>Dust and welding fumes</td>
</tr>
</tbody>
</table>

Cartridges

- **7100 Organic Vapor Cartridge**
- **7200 Acid Gas Cartridge**
- **7300 Organic Vapor/Acid Gas Cartridge**
- **7400 Ammonia/Methylamine Cartridge**

*7600 Multi-Gas/Vapor Smart Cartridge*
Organic Vapors/Ammonia/Methylamine/Chlorine/Hydrogen Chloride/Sulfur Dioxide/Chlorine Dioxide/Or Hydrogen Fluoride/Or Formaldehyde/Or Hydrogen Sulfide.

*7990 P100 Filter Cartridge*
Chemical Cartridge: Sulfur Dioxide

Acid Gas Cartridge
PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER

Acute Hazards: May be fatal if swallowed. Harmful if inhaled. Corrosive. Causes irreversible eye damage.

Hazard avoidance: Do not breathe dust or fumes. Do not get in eyes, on skin, or on clothing. Wear protective clothing, eyewear, and respiratory protection as listed under “Personal Protective Equipment.” Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

PERSONAL PROTECTIVE EQUIPMENT:
 Handlers and applicators who apply product by the Solution Method must wear:
 - Long-sleeved shirt and long pants
 - Socks and shoes
 - Protective gloves
 - Protective eyewear such as goggles
 - Half-face respirator with cartridge and/or particulate filter

Use Safety Requirements:
Follow manufacturer’s instructions for cleaning/maintaining PPE. If no such instructions are provided, wash PPE with detergent solution. Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Wash hands after handling this product. As soon as possible, wash thoroughly and change into clean clothing.

Oxalic Acid Dihydrate

Active Ingredient:
Oxalic Acid Dihydrate ......................... 67.3%  
Inert Ingredients ... ................. 3.3%  
TOTAL ......................... 100.3%

KEEP OUT OF REACH OF CHILDREN

DANGER—PELIGRO

FIRST AID

If swallowed:
- Call a poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do NOT induce vomiting unless told to do so by the poison control center or doctor.
- Do not give anything to an unconscious person.

If inhaled:
- Move person to fresh air.
- If person is not breathing, call 911 or an ambulance, then give artificial respiration, if possible. DO NOT use mouth-to-mouth method if victim ingested or inhaled the substance, use respiratory medical device.
- Call a poison control center or doctor for advice.

If on skin or clothing:
- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15-20 minutes.
- Call a poison control center or doctor for advice.

If in eyes:
- Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes. Continue rinsing eye.
- Call a poison control center or doctor for advice.

Have the product container or label with you when calling a poison control center, doctor, or going for treatment.

For non-emergency information concerning this product, call the National Pesticides Information Center (NPIC) at 1-800-858-7378 seven days a week, 8am to 4pm Pacific Time (NPIC Website: www.npic.orst.edu).

NOTE TO PHYSICIAN: Probable minimal damage may contraindicate the use of gastric lavage. Provide general supportive measures and treat symptomatically. Treatment should be rapidly initiated by giving a dilute solution of calcium bicarbonate, lime water, finely pulverized chalk, plaster, and/or milk to supply large amounts of calcium to the body. Calcium should be given by forming an insoluble calcium salt in the stomach. Oxalic laveage is controversial, since this may compound an already severe corrosive lesion in the esophagus or stomach. However, if used, gastric lavage should be done with lime water (calcium hydroxide); intravenous glauconate or calcium chloride solutions should be given to prevent hypocalcemia or tetany; in severe cases paraffin oil also is given. Additionally, acute renal failure should be anticipated, and careful fluid management is necessary. Metabolically, its toxicity is believed to be due to the capacity of oxalic acid to mobilize calcium and thus the calcium-potassium ratio in renal tissue. Effective therapy against burns from oxalic acid involves replacement of calcium.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

READ THIS LABEL: Read the entire label. This product must be used strictly in accordance with this label’s precautionary statements and use directions, as well as with all applicable State and Federal laws and regulations.

USE RESTRICTIONS:

Oxalic Acid Dihydrate applications are for outdoor use only.

DO NOT use in areas exposed to children.

Use only in late fall or early spring when little or no brood is present. Oxalic Acid Dihydrate might damage bee brood. Oxalic Acid Dihydrate will not control Varroa mites in capped brood.

Do not use when honey supers are in place to prevent contamination of marketable honey.

Apply only when monitoring indicates treatment is required. Consult state guidelines and local extension experts for monitoring protocols and thresholds for treatment.

(See next page for additional DIRECTIONS FOR USE)
1. What kind of cartridge should you use?
   a. OV
   b. Ammonia
   c. Formaldehyde
   d. Acid Gas
Terminology Decipher

2,500 + Labels With Inaccurate/Outdated Language
No oil in Application Mix:
“For handling activities, use a dust/mist filtering respirator MSHA/NIOSH approval prefix TC-21C; OR a NIOSHA approved respirator with any N, R, P or HE filter.”

Outdated Language in RED

No oil in Application Mix:
“For handling activities, use a dust/mist filtering respirator MSHA/NIOSH approval prefix TC-21C; OR a NIOSHA approved respirator with any N, R, P or HE filter.”
For Chemical Vapors

**No Oil in Application Mix:**
“...respirator with an organic-vapor removing cartridge with a pre-filter approved for pesticides (MSHA/NIOSH approval prefix TC-23C), OR a canister approved for pesticides MMSHA/NIOSH approval number prefix TC-14G OR a NIOSH approved respirator with an organic vapor (OV) cartridge or canister with any N, R, P or HE filter.

**Outdated Language in RED**

**No Oil in Application Mix:**
“...respirator with an organic-vapor removing cartridge with a pre-filter approved for pesticides (MSHA/NIOSH approval prefix TC-23C), OR a canister approved for pesticides MMSHA/NIOSH approval number prefix TC-14G OR a NIOSH approved respirator with an organic vapor (OV) cartridge or canister with any N, R, P or HE filter.
<table>
<thead>
<tr>
<th>Outdated EPA (NIOSH) language</th>
<th>Current NIOSH language</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIOSH/MSHA</td>
<td>NIOSH</td>
</tr>
<tr>
<td>Dust/Mist</td>
<td>Particulate</td>
</tr>
<tr>
<td>Pre-filter approved for pesticides</td>
<td>Combination filter N, R or P</td>
</tr>
<tr>
<td>Canister approved for pesticides</td>
<td>Canister</td>
</tr>
<tr>
<td>N, R, P or HE filters</td>
<td>N, R or P (HE filters can only go on PAPRs.)</td>
</tr>
</tbody>
</table>
HE Filters can only go on a Powered Air Purifying Respirator (PAPR)

TC-21 C

TC-23C
No oil in Application Mix:
A NIOSH approved particulate respirator with any N, R or P filter with NIOSH approval number prefix TC-84A; or a NIOSH approved powered air purifying respirator with HE filter with NIOSH approval number prefix TC-21C.
Chemical Cartridge: Organic Vapor

No Oil in Application Mix:
A NIOSH-approved respirator with an organic vapor (OV) cartridge with a combination N, R, or P filter with NIOSH approval number prefix TC-84A; OR NIOSH approved gas mask with an organic vapor canister with NIOSH approval number prefix TC-14G; OR a NIOSH approved powered air purifying respirator with organic vapor (OV) cartridge and combination HE filter with NIOSH approval number prefix TC-23C.

½ face OV + N = TC-84A

Full face OV + P = TC-84A

Gas mask + OV Canister = TC-14G

PAPR + OV + HE = TC-23C
Subtilex® NG
Biological Fungicide

For use as a foliar, soil or growing media treatment of greenhouse crops

Active Ingredients:
Bacillus subtilis strain MB1 600*.......................................................... 9.9%
Other Ingredients: ........................................................................... 90.1%
Total: ............................................................................................ 100.0%
*Contains a minimum of 5.5 x 10^5 viable spore per gram.

EPA Reg. No. 71840-8
EPA Est. No.

KEEP OUT OF REACH OF CHILDREN
CAUTION/PRECAUCION

Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION. Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks

Mixers/loaders and applicators must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95, or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

Follow the manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.
Actinovate® SP

For greenhouse, nursery and turf

**ACTIVE INGREDIENT**
Streptomyces fulvus WPEC 108* 60.9371%
OTHER INGREDIENTS 39.0629%
Total 100.00%

*This product contains no less than 1 x 10^6
G/U Streptomyces fulvus WPEC 108

**KEEP OUT OF REACH OF CHILDREN**

CAUTION

Biological fungicide

Suppresses and controls soil-borne plant diseases such as Pythium, Rhizoctonia, Phytophthora, Fusarium when applied according to label directions

Suppresses and controls foliar diseases such as powdery mildew and scab

When applied according to label directions 100% soluble – will not clog machinery

See attached booklet for important Precautionary Statements, Complete Directions for Use and Warranty

### Net contents

### Precautionary statements

**Hazard to humans and domestic animals. CAUTION.** Avoid contact with skin, eyes, or clothing. Avoid breathing dust or spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

**Personal Protective Equipment (PPE):**
Applicators and other handlers must wear:

- Long-sleeved shirt and long pants, 
- Shoes plus socks

Mixer/loaders must wear a dust/mist-filtering respirator meeting NIOSH standards of at least N-95, R-95, or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

Follow manufacturer’s instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides (40CFR 170.240(d)(46)), the handler PPE requirements may be reduced or modified as specified in the WPS.
Specimen Label

Dow AgroSciences

Dithane®

M45

Fungicide

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<table>
<thead>
<tr>
<th>Group</th>
<th>M3</th>
<th>FUNGICIDE</th>
</tr>
</thead>
</table>

Active Ingredients
mancosan: A coordination product of zinc ion and

Engineering Controls
Handlers mixing and loading wettable powder for seed treatment must use a dust collection system during the treatment of the seed that prevents dust from contacting handlers or other persons.

Handlers using the dust collection system must wear:
- Long-sleeved shirt
- Long pants
- Shoes and socks, and
- Chemical-resistant gloves (except pilots, groundboom applicators, and airblast applicators); and
- Must be provided with, have immediately available, and wear in an emergency, such as a broken package, spill, or equipment breakdown: a NIOSH-approved respirator with a dust/mist filter with MSHA/NIOSH approval number prefix TC-21C or any N, R, P or HE filter.

Enclosed Cockpits: Pilots must use an enclosed cockpit that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d) (4-6)].

Mechanical Flagging Engineering Controls: Human flagging is prohibited. Flagging to support aerial application is limited to use of the Global Positioning System (GPS) or mechanical flaggers.

User Safety Recommendations
Users should:
- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside, then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the
Dithane M 45 Options
Particulate: Varieties

- N-95
- P-100
- PAPR
- HE
- TC-21C
Chemical Cartridge: Organic Vapor +

½ face OV + N = TC-84A

Gas mask + OV Canister = TC-14G

PAPR + OV + HE = TC-23C

Full face OV + P = TC-84A
Chemical Cartridge: Sulfur Dioxide

Acid Gas Cartridge
Levels of Protection – decreasing from top to bottom

- SCBA Air supplied, NIOSH Approval: TC-13F
  Most protective

- Supplied Air Respirator, NIOSH Approval: TC-18C

- Air Purifying Full-face respirator with Canister, NIOSH Approval: TC-14C

- Air Purifying Full-face respirator with OV cartridge – combination N filter, NIOSH Approval: TC-54A

- Powered Air Purifying Respirator (PAPR), OV – HE filters, NIOSH Approval: TC-23C

- Powered Air Purifying Respirator (PAPR), Particulate HE filters, NIOSH Approval: TC-21C

- Air purifying half-face elastomeric respirator with OV cartridge – combination N filter, NIOSH Approval: TC-64A

- Air purifying half-face elastomeric respirator with particulate P-100 (magenta) or N filter (white), NIOSH Approval: TC-64A

- Particulate filtering face-piece respirator P-100, NIOSH Approval: TC-64A
Manufacturer’s Specifications
P100 particulate respirator NIOSH Approval No. TC-84A-2561

A Disposable P100 particulate protects against:
- Solids such as those from minerals, coal, iron ore, cotton, flour
- Metal fumes
- Radioactive particulates such as uranium and plutonium
- Asbestos
- Sold individually.

N95 approved filtering face piece particulate respirator TC-84A

Suggested applications: Grinding, Sanding, Sweeping, Bagging and other dusty operations
3M™ Particulate Respirator 8577, P95 with Nuisance Level Organic Vapor Relief

Suggested applications: foundry operations, lab settings, agriculture, petrochemical manufacturing and undercoating where particles and nuisance levels* of organic vapors such as solvents, degreasers and resins may be present. Also, grinding, sanding, sweeping, bagging and other dusty/oily operations.
Changing Filters & Cartridges

• Particulate filters or filtering face pieces:
  – Breathing difficult
  – Filter damaged or torn
  – When the respirator or label requires it
  – In lieu of above, after 8 hours of use.

• Vapor Removing Cartridges or Canisters:
  – Taste, odor or irritation
  – When manufacturer or label requires it
  – When difficult to breathe (resistance)
  – In lieu of above, after 8 hours of use.
REMEMBER

Only use NIOSH Approved Respirators!
Equipment Malfunction

• Hoses break
• Nozzles clog
• Spills: Barricade-absorb-neutralize
• Containers fail
• Tanks fail
• Be Prepared!
Leaking Equipment
PPE for Spills: See SDS

- Safety Data Sheet
  - PPE for spill cleanup
  - Emergency procedures for spill cleanup
SECTION 6 - ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILLS OR LEAKS: Clean up spills immediately, observing precautions in Section 8 of this document. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

SMALL SPILL: Absorb small spills on sand, vermiculite or other inert absorbent. Place contaminated material in appropriate container for disposal.

LARGE SPILL: Dike large spills using absorbent or impervious material such as clay or sand. Recover and contain as much free liquid as possible for reuse. Allow absorbed material to solidify, and scrape up for disposal. After removal, clean contaminated area thoroughly with water. Pick up wash liquid with additional absorbent and place in a disposable container. Minimize use of water to prevent environmental contamination.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS (8 hour TWA, ppm):

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triclopyr BEE ester</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>10 ppm</td>
<td>10 ppm</td>
</tr>
</tbody>
</table>

ENGINEERING CONTROLS: Proper ventilation is required when handling or using this product to minimize exposure to airborne contaminants. Local mechanical exhaust ventilation may be required. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

PERSONAL PROTECTIVE EQUIPMENT:
EYE PROTECTION - Safety goggles, face shield or full face respirator if vapors cause eye discomfort.
CLOTHING - Long-sleeved shirt and long pants, Shoes plus socks.
GLOVES - Chemical resistant gloves such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride (PVC) or viton.
RESPIRATOR - When handling in enclosed areas use a respirator approved for pesticides.
Inspection & Storage
Use & Care
What to do with Contaminated PPE

Make Unwearable,
or
Make Unavailable
PPE Storage

✓ Accessible, sufficient quantities and proper sizes
Cleaning and Maintenance

Personal Protective Equipment (PPE)
Applicators and other handlers must wear: long-sleeved shirt and long pants, shoes plus socks. Follow manufacturer’s instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.
USE: Routes

- **Work Practices**
  - Cell phones
  - Eating in the field
  - Handling containers you think are clean
  - Secondary contamination
- Vehicle cabs
Don’t take work HOME

- Don’t wear your work shoes in your home.
- Shower and change into clean clothes upon arriving home.
- Wash your clothes separate from your families.
An emergency eyewash is only good if the water can flow...
Problems with PPE?
Garnet Cooke
Pesticide Coordinator
Oregon OSHA
(503)378-4730
garnet.r.cooke@oregon.gov