EPA’s Worker Protection Standard

Revisions to EPA’s WPS
Worker and Handler Training
Presenter: John H. Gamble
For: College of Agriculture
Faculty, Staff and Student Workers
Presentation: Spring Semester 2016

Learning Objectives
This training is intended to assist you to:
• Identify key revisions to WPS
• Know where WPS applies
• Identify worker responsibilities
• Identify controls for minimizing exposure to pesticides
• Understand central posting and early entry

Program Elements

Background
Regulatory Changes
Worker
Handler

What is a Pesticide?
FIFRA (40 CFR 162.3)
“(1) any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest [insect, rodent, nematode, fungus, weed, other forms of terrestrial or aquatic plant or animal life or viruses, bacteria, or other microorganisms, except viruses, bacteria, or other microorganisms on or in living man or other animals, which the Administrator declares to be a pest], and (2) any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant.”

WPS Purpose and Scope

• To reduce the risks of illness or injury resulting from workers’ and handlers’ occupational exposures to pesticides.

• Requires employers implement workplace practices designed to reduce or eliminate exposure to pesticides and establish procedures for responding to emergencies.

Requirements and Responsibilities

Employee

• Read and follow labels and SDSs
• Follow employer instructions and warnings
• Identify hazards before starting a job
• Take training

Safety is YOUR responsibility!
Agricultural Worker:
- Hand labor, such as weeding, planting, cultivating and harvesting.
- Related tasks, such as moving or operating irrigation equipment.

Pesticide Handler:
- Mix, load or apply pesticides.
- Any tasks involving direct contact with pesticides.

Any pesticide product is used on an agricultural establishment in the production of agricultural plants

Agricultural establishment = farm, forest, nursery or greenhouse

Agricultural plants = food, feed and fiber plants, trees, turf grass, flowers, shrubs, ornamentals and seedlings

WPS applies when...

WPS applies if...

- You apply or employ others to apply pesticides for production of agricultural plants on a farm, forest nursery, or greenhouse.
  - That you own or manage
  - Where you hire a contractor for services, including labor contractors
  - You operate a business in which you or people you employ perform tasks as a crop advisor on any farm, forest, nursery, or greenhouse.

Knowledge Check

Match up the primary duties of the Worker and Handler to the definition of that category.

A. Agricultural Worker
B. Pesticide Handler
C. Tasks, such as moving or operating irrigation equipment
D. Mix, load or apply pesticides
E. Hand labor, such as weeding, planting, cultivating and harvesting
F. Any tasks involving direct contact with pesticides

Answer: A/C; A/E; B/D; B/F

Program Elements

Key Revisions to WPS

Inform workers and handlers about potential exposure to pesticides
- Annual training - no grace period for workers
- Display and provide application information and safety data sheets
  - Can be requested by worker/handler, treating medical personnel or designated representative
- Post signs if Restricted Entry Interval (REI) > 48 hours (outdoor applications)
Key Revisions to WPS

Protect workers, handlers and other people from exposure to pesticide

- If labeling requires respirator for handler, provide medical evaluation, fit testing, and respirator training
- Application exclusion zone during applications
- Handlers and early-entry workers must be 18 years old

Mitigate any pesticide exposures that workers or handlers receive

- Provide routine decontamination supplies for workers, handlers, and early-entry workers
- Provide eyewash system for mixers/loaders if labeling requires protective eyewear

Knowledge Check

What are the three key revisions to the Worker Protection Standard that goes into effect in 2017? Choose all that apply.

A. Orient, Decontaminate, and Abate
B. Inform, Protect, and Mitigate
C. Educate, Label, and Isolate
D. Train, Post, and Mitigate

Answer: B

Implementation Timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>Milestone</th>
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<tbody>
<tr>
<td>September 28, 2015</td>
<td>Revised WPS final rule signed and announced.</td>
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<tr>
<td>November 2, 2015</td>
<td>Revised WPS final rule published in the Federal Register.</td>
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<tr>
<td>January 1, 2016</td>
<td>Revised WPS final rule becomes effective. [Compliance is required with existing WPS during 2016.]</td>
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<tr>
<td>January 2, 2017</td>
<td>Compliance is required with most of the revised WPS requirements.</td>
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| January 1, 2018   | Compliance is required with all of the revised WPS requirements. Last three requirements:  
                      - Cover new content in worker and handler training.  
                      - Include new content on pesticide safety information display.  
                      - Handlers suspend applications if anyone is in the application exclusion zone. |

Program Elements

Worker Training

1. Descriptions of where and in what form pesticides may be encountered during work activities.
2. Hazards of pesticides from toxicity & exposure:
   - Acute effects
   - Chronic effects
   - Delayed effects
   - Sensitization
Worker Training Elements (cont.)

7. Routine and emergency decontamination procedures (including eye flush techniques)
8. Hazards from chemigation (application of chemicals in irrigation waters) and drift
9. Hazards from residues on clothing
10. Warnings on taking pesticides or pesticide containers home.

Knowledge Check

Which of the following is not a worker training component as specified by the WPS?

A. Hazards of pesticides from toxicity and exposure
B. Calibration of application equipment
C. Signs and symptoms of pesticide exposure
D. Hazards from residues on clothing

ANSWER: B

SENSOR Pesticide Surveillance Program

1,009 Cases, Acute Occupational Pesticide Illness (6 States)

How Workers were Exposed:

25% = During application process (applying, mixing, loading, transport, disposal, or equipment maintenance)
67% = During routine work activities, such as weeding, planting, cultivating, and harvesting that did not involve handling pesticides
8% = Unknown


37% = Residues
24% = Applications
14% = Drift
10% = Mixing or loading
7% = Cleaning/fixing equipment
7% = Other


Protective Gloves and Malathion Metabolite Concentration in Urine of Farm Workers


Worker Training

Cancer in Children of Pesticide Applicators: Parent’s Use of Chemically-Resistant Gloves


Hand Washing Practices and Urine Concentration of 2,4-D in Turf Pesticide Applicators


Effect of Wash Delay on Carbaryl Residue in Polyester/Cotton Fabric


Wear Hands Before Eating


Pesticide Residue in House Dust of Agricultural Families

When people are accidentally poisoned by pesticides, it is usually because they...

A. Got pesticides in their eyes, and mucous membranes
B. Got pesticides on their skin
C. Swallowed pesticides
D. Breathed in pesticides

**Answer:** B

**Knowledge Check**

Acute effects happen suddenly, normally from a single exposure. Acute health effects are often reversible.

Chronic effects occur when repeated exposures over long periods of time or when the body takes a long time to develop a response after a brief exposure. Chronic health effects are often irreversible.

Two children in Florida, a brother and sister, died after playing on a swing made from a burlap sack that was heavily contaminated with parathion.

**Take-Home Contamination**

It depends on several factors, such as:

- How the chemical enters the body - inhaled, absorbed or ingested
- The physical form of the chemical - solid, liquid, or gas
- The amount of chemical that actually enters the body - the dose
- How toxic or poisonous the chemical is

**Knowledge Check**

What is an acutely toxic chemical?

A. An inert chemical
B. The chemical is toxic only if you drink it
C. The chemical will harm you only after years of exposure
D. The chemical can harm you in a single dose over a short period of time

**Answer:** D

**Biological Effects of Common Pesticides**

- Organophosphates and Carbamates
  - Widely used insecticides
  - Cholinesterase inhibition:
    - Interferes with nervous system
    - Causes contraction of smooth muscles; secretion of glands; twitching/weakness/paralysis of skeletal muscles; sensory and behavioral disturbances; respiratory failure
  - Victim may die of respiratory failure and excessive fluid in the lungs
Allergic Sensitizations

Skin Symptoms
• May include swelling, redness, itching, pain, and blistering

Respiratory Symptoms
• May include wheezing, difficulty in breathing, chest tightness, coughing and shortness of breath, and in some cases, respiratory sensitization can produce severe asthma attacks.

Routes of Exposure

If the material is inhaled, the particles or mist settles in the respiratory tract. Some chemicals settle in the nose and throat, some go deeper into the lungs. The chemicals that go deeper in the lungs have the potential for more damage. Fine dust usually goes deep into the lungs.

If the chemical contacts the skin, some chemicals are absorbed through the skin more easily than others. Also, some chemicals will have a direct effect on the skin without being absorbed through the skin. This is another good reason to wash your hands before eating or drinking.

If the chemical is ingested, some chemicals can be very readily absorbed.

If the chemical is injected, either with a needle or some other sharp object—broken glass, sharp tool, or similar—chemicals can be easily introduced to the body.

Knowledge Check

What are the four routes of entry of chemicals into the body? Choose all that apply.
A. Ears, eyes, contact lens, and mouth
B. Nose, mouth, skin, and lungs
C. Ingestion, swallowing, inhaling, and exhaling
D. Ingestion, inhalation, injection, and absorption

ANSWER: D

Decontamination Area

Application Records
Emergency Medical Care

**EMERGENCY**
Call 911
Via Christi Hospital Emergency Room
Corner of Kimball & College Ave.

**NON-EMERGENCY**
Occupational Health - Via Christi Therapy Center/Via Christi Hospital
315 Seth Child Road/Kimball & College Ave.

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**Summary: Protect Yourself**

- Keep out of treated or restricted areas.
- Wash before eating, drinking, using chewing gum or tobacco, or using the toilet.
- Wear work clothing that protects your body from pesticide residues.
- Wash/shower with soap and water, shampoo hair, and put on clean clothes after work.
- Wash work clothes separately from other clothes before wearing them again.
- If pesticides are spilled or sprayed on your body:
  - Wash immediately using the nearest clean water.
  - As soon as possible, shower, shampoo, and change into clean clothes.

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**Conclusion**

- This concludes the worker presentation.
- To receive your Certificate of Completion, you must complete the 10-question WPS Worker quiz. Your worker verification card will be sent to you via campus mail.
- Please contact John H. Gamble at jhgamble@ksu.edu if you have questions or need additional information.
- Other sources of information include: [http://www.epa.gov/pesticide-worker-safety](http://www.epa.gov/pesticide-worker-safety)

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**Learning Objectives**

This training is intended to assist you to:

- Identify handler responsibilities
- Follow safe procedures when handling pesticides
- Select PPE for handling pesticides
- Understand application record reporting
- Define describe some signs and symptoms of heat stress

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**Handler Training Elements**

1. Description of information on pesticide labeling including safety information
2. Hazards of pesticides from toxicity and exposure:
   - Acute effects
   - Chronic effects
   - Delayed effects
   - Sensitization
3. Routes through which pesticides can enter the body
4. Signs and symptoms of pesticide poisoning
5. Emergency first aid for pesticide injuries & poisonings
6. How to obtain emergency medical care

7. Routine and emergency decontamination procedures
8. Use of Personal Protective Equipment (PPE)
9. Prevention, recognition, and treatment of heat-related illness

10. Safe handling, transporting, storing and proper disposal of pesticides, including spill cleanup procedures
11. Environmental concerns – drift, runoff, and wildlife hazards
12. Warnings about taking pesticides and their containers home

Knowledge Check

Which of the following is not a handler training component as specified by the WPS? Check all that apply.
A. Drift, runoff, and wildlife concerns
B. Signs and symptoms of pesticide poisoning
C. Warnings about taking pesticides home
D. Learning pesticide modes of action

ANSWER: D
Chemical Label Pictograms

Chemical Labeling and Other Warnings

Safety Data Sheet: Roundup

SDSs – What information is in them?

SDS Sections | Example Information
---|---
Identification of the Substance, Preparation and the Company | Name: Roundup PowerMax, Supplier Contact Information
Information on Ingredients | CAS No. 70901-12-1
Hazard Identification | Irritating to Eyes
First Aid Measures | Language Specific to Inhalation, Ingestion, Skin and Eyes Exposures
Fire Fighting Measures | Language Specific to Extinguishment, Explosion Hazards, Protective Measures

Example Information

- NOAEL Toxicity: >20,000 mg/kg Diet
- LC₅₀ = 5.2 mg/l (Bluegill Sunfish)
- Keep out of Drains, Sewers, Ditches and Water Ways; Triple Rinse Container
- Non-Hazardous under DOT
- Labels: Surfactant(s)
- NFPA: Health 1; Flammability 1; Instability 1

Accidental Release Measures

- Use PPE as directed, Avoid Direct Contact, Prevent Soil Contamination

Handling and Storage

- Avoid Eye, Skin and Clothing Contact, Wash Hands, Keep only in Original Container

Exposure Control and Personal Protection

- None Established; Ventilation; PPE

Physical and Chemical Properties

- Liquid, Amber-Brown Color, Odorless

Stability and Reactivity

- Stable under Normal Conditions

PPE to Consider

- Boots or shoe covers
- Coveralls
- Hood or wide brimmed hat
- Apron
- Protective eyewear
- Respirator - Medical exam - Fit tested
- Protective clothing - Long sleeve shirt - Long pants
Gloves

- No single glove will protect against every chemical exposure - check label
- Each manufacturer’s gloves will have different breakthrough times, so always check the label
- What about leather gloves?
- Demonstration
  - Remove jewelry
  - Check for leaks
  - Proper removal
- Should I reuse a pair of gloves?

Knowledge Check

Which of the following gloves will protect me if I am handling Roundup?

A. Neoprene
B. PVC
C. Thick nitrile
D. Thin nitrile exam gloves
E. Any waterproof glove is okay

Answer: C & D

Knowledge Check

Which of the following gloves will protect me if I am handling a pesticide containing acetone?

A. Neoprene
B. PVC
C. Thick nitrile
D. Thin nitrile exam gloves
E. Any waterproof glove is okay

Answer: A
Pesticide handlers are often exposed when they mix and load pesticides. Can you think of any reasons why you need to take extra precautions when during mixing and loading operations?

- Back flow prevention
- Protect the environment
- Follow label directions
- Open containers
- Wear PPE

If you have to move pesticides from one place to another in a pickup or car, what are some precautions you need to take?

- Make sure you have spill clean-up materials with you.
- While it may be tempting to put pesticides inside your car or truck, put them in the back of the pickup or in the trunk of the car.
- Don't put pesticides with people or animals, nor near feed.
- Secure the containers, so they don't fall over or roll around.

When you are finished with a pesticide handling job, what are some safe practices for taking off your equipment, cleaning up, and putting things away?

- Open containers
- Wear PPE
- Keep up-to-date spill supplies on hand
- Don't put pesticides in with people, animals, food, or clothing
- Put them in the back of a truck or in a trunk and secure containers

If you have to move pesticides from one place to another in a pickup or car, what are some precautions you need to take? Check all that apply.

A. Make sure you have spill clean-up materials with you.
B. While it may be tempting to put pesticides inside your car or truck, put them in the back of the pickup or in the trunk of the car.
C. Don't put pesticides with people or animals, nor near feed.
D. Secure the containers, so they don't fall over or roll around.

ANSWER: A, B, C & D

An agricultural worker became ill in the cab of a tractor while applying pesticides. He had placed the pesticide containers in the enclosed cap of the tractor, where they leaked from the container.
Pesticide Storage

When storing pesticides keep them:
• In a locked cabinet or locked room
• In their original labeled containers
• With the lids on tight
• On shelves with lips or other means to keep the containers from tipping and spilling.

Inform supervisor of leaks or spill immediately!

Spills and Clean-up

Some basic procedures for cleaning up spills:
• Read the label
• Make sure you have the right PPE and clean-up materials
• If you don’t know what to do, call for help
• If it is a large spill, send someone for help
• Control the spill by stopping it
• Stop the spill from spreading
• Clean-up the spill
• Dispose of pesticide container(s)
• Dispose of waste

People, Animals and Water Supplies

What precautions can you take to make sure your pesticides don’t get on people, animals, or water supplies?

Knowledge Check

If you are responsible for cleaning up a pesticide spill, what should you not do?
A. Read the label
B. Contain, then control the spill
C. If you don’t know what to do, call for help
D. Make sure you have the right PPE and clean-up materials
E. Dispose of pesticide container(s)
F. Dispose of waste

Answer: B

Heat-Related Illnesses

• HEAT CRAMPS
• HEAT EXHAUSTION
• HEAT STROKE

Heat Cramps

• Caused by excessive loss of electrolytes
• Early warning sign of heat stress
• Painful cramps usually in legs or abdomen
• Stop activity, hydrate, rest in cool place
• Get medical attention if condition continues
Heat Exhaustion

- The body’s response to excessive water and electrolyte loss
- Stop activity and seek treatment immediately

Heat Stroke

- The body’s cooling mechanism shuts down
- 50% that reach the heat stroke stage die even with medical attention
- Seek immediate medical attention

Worker Responsibility

- Follow instructions of the Industrial Hygienist and health care professionals
- Be watchful for symptoms (self and others)
- Properly hydrate (before, during and after)
- Get adequate rest
- Avoid alcohol, unnecessary medication, and caffeine

Knowledge Check

Match up risk factors for heat-related illnesses.

A. Job
B. Human
C. Environment
D. Work intensity
E. Humidity
F. Lack of acclimatization

Answer: A/D; B/C; B/F; C/E

Conclusion

- This concludes the handler presentation.
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