Crop Production Clinics

Applying Pesticides Safely

Pesticide Laws, Health & Environmental Protection

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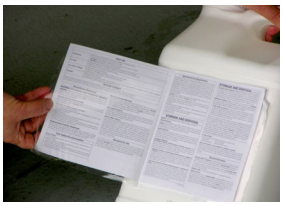
Agronomy & Horticulture



Session Goals

- Refresh your memory of core pesticide safety concepts
- Update you on pesticide laws, regulations, and label requirements

RUP Dicamba Label-required Training

- ❖Recertifying today?
  - ✓Also dicamba trained
- ❖Not recertifying today?
  - ✓Still want dicamba training:
    - ❑Attend all required sessions
    - ❑Complete and sign form
    - ❑Your name will be added to NDA qualified list

Dicamba Specific Label-required Training Sign-in Sheet

Date: _____ Training Location: _____

By signing your name, you are confirming that you attended the required sessions during today's program.

Printed Name	Pesticide Applicator License #	Completion Sign-out Signature

Laws & Regulations

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FIFRA and Nebraska Pesticide Act

- **Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) classifies pesticides**
- **General Use Pesticide (GUP)**
  - **General public can purchase & use**
  - **NE law requires comm/noncomm license for:**
    - **O & T, Structural, Public Health**
- **Restricted Use Pesticide (RUP)**
  - **NE law requires license to buy, apply, or supervise their use**

Federal Law: Federal Insecticide Fungicide and Rodenticide Act; governs everything we do in pesticide area. Also NE Pesticide Act…works together with FIFRA.
Broad classifications…most available to anyone, these are GUP; exceptions are for licenses in certain categories even if using GUPs (O and T and Structural—for hire, PH is for controlling outdoor disease vectors)

RUPs Require Records – Comm/Noncomm

See NebGuide, Pesticide Laws & Regulations, G479

- Customer name, address
- Applicator name, address, license number
- Location of application
- Target pest(s) – be specific
- Application site (crop)
- Application date & start time
- Product trade name and EPA Reg. Number
- Rate applied
- Total amount of pesticide applied
- Treated area size
- Method of disposal
  - If none, state so

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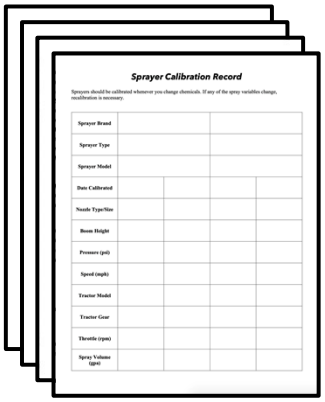
- ~~Method of disposal~~
  - ~~If none, state so~~

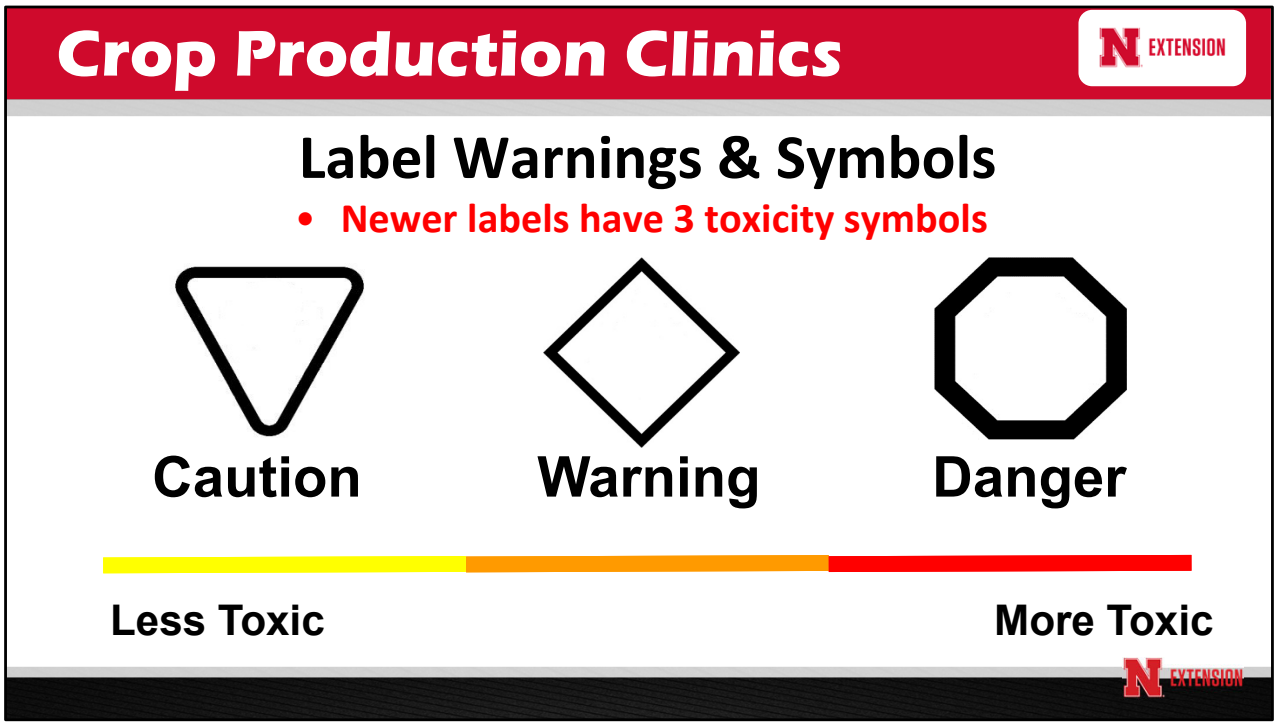
This slide shows what commercial/noncommercial recordkeeping requirements will be under the new regulations.

RUPs Require Records – Private

See NebGuide, Pesticide Laws & Regulations, G479

- No changes coming for private recordkeeping
- UNL PSEP has new collection of private recordkeeping resources!
- Find resources at http://pested.unl.edu
- Field records, WPS, calibration, etc.





Three signal words for four risk classifications, explain the basic risk associated with each.

The more edges/corners per symbol, the more toxic/risk.

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Label Warnings & Symbols

- Newer labels have 4 risk symbols

Poison

Flammable

Corrosive

Explosive

Three signal words for four risk classifications, explain the basic risk associated with each.

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Label Warnings & Symbols

Caution Poison

Warning Flammable

Danger Corrosive

Some labels have graphic symbols that are meant to grab your attention and communicate an important message visually, such as the skull and crossed bones.

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RUP Dicamba

http://www.nda.nebraska.gov/pesticide/dicamba.html

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Worker Protection Standard (WPS)

See Extension Circular, Worker Protection Standard for Agricultural Establishments, EC3006

- **Protects pesticide applicators and Agricultural workers**
  - **Update released in 2015**
  - **All changes enforced beginning in 2018**

- **Look for AGRICULTURAL USE REQUIREMENTS box on labels**

(REF NEBGUIDE) This law comes into play whenever there is a reference on the label about the WPS. Protecting workers and applicators, accomplished through REI and PPE.
One example is employer has to supply the PPE. Really need to take the time to read and understand the different aspects of it!

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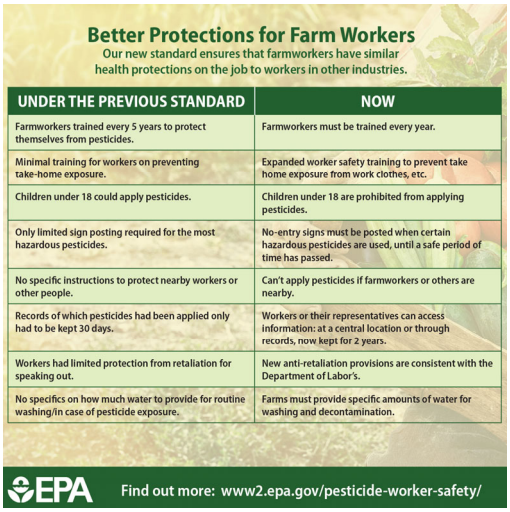
WPS

- **Annual WPS training required for workers & handlers**
- **Requires application-specific display of safety info**
- **Restricted-Entry Interval (REI)**
- **Employers must provide certain decontamination supplies, emergency assistance**
- **Application Exclusion Zone (AEZ)**



Better Protections for Farm Workers

Our new standard ensures that farmworkers have similar health protections on the job to workers in other industries.

UNDER THE PREVIOUS STANDARD	NOW
Farmworkers trained every 5 years to protect themselves from pesticides.	Farmworkers must be trained every year.
Minimal training for workers on preventing take-home exposure.	Expanded worker safety training to prevent take home exposure from work clothes, etc.
Children under 18 could apply pesticides.	Children under 18 are prohibited from applying pesticides.
Only limited sign posting required for the most hazardous pesticides.	No-entry signs must be posted when certain hazardous pesticides are used, until a safe period of time has passed.
No specific instructions to protect nearby workers or other people.	Can't apply pesticides if farmworkers or others are nearby.
Records of which pesticides had been applied only had to be kept 30 days.	Workers or their representatives can access information: at a central location or through records, now kept for 2 years.
Workers had limited protection from retaliation for speaking out.	New anti-retaliation provisions are consistent with the Department of Labor's.
No specifics on how much water to provide for routine washing/in case of pesticide exposure.	Farms must provide specific amounts of water for washing and decontamination.

EPA Find out more: www2.epa.gov/pesticide-worker-safety/

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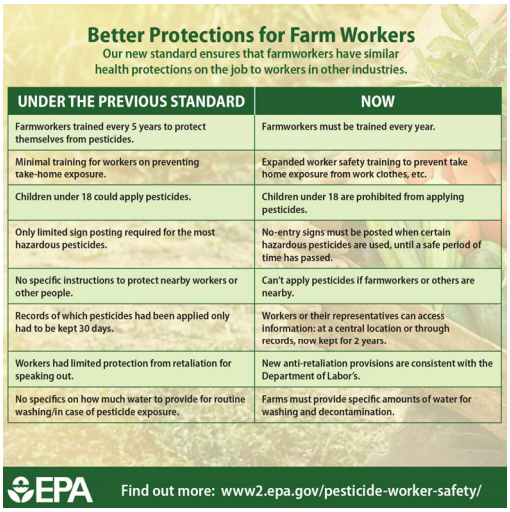
WPS

- PPE requirements on labels
- Employer must provide all PPE except shirt, pants
- If product requires respirator, handler must be:
  - Medically evaluated
  - Fit tested annually
  - Trained on respirators annually



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AEZ Video

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AEZ Proposal

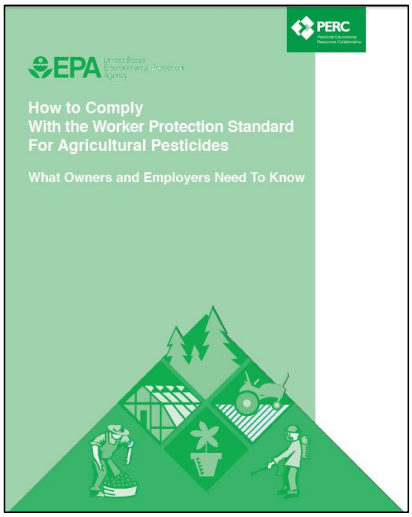
- **EPA proposal would:**
- Stop an AEZ from going past property lines
  - Must still follow "do not contact" requirement
- Exempt immediate family members AEZ requirement (private applicators)
- Clarify when suspended applications can resume
- Simplify when the 25- or 100-foot AEZ is required

- **This may come into effect this spring!**

1. Where a farm owner can lawfully exercise control over employees and bystanders who could fall within the AEZ. As currently written, the off-farm aspect of this provision has proven very difficult for state regulators to enforce.
2. This will allow farm owners and their immediate family members to decide whether to stay in their homes or other enclosed structures on their property during certain pesticide applications, rather than compelling them to leave even when they feel safe remaining.

WPS Reference

- "How to Comply" manual
- Available online: pested.unl.edu
  - "In the News" box



Emphasize how complex WPS is…have entire manual devoted to this!

RUP Dicamba

- XtendiMax®, Engenia®, and Tavium® are registered until 2025
- New labels require:
  - Dicamba-specific training
  - June 30 cutoff date
  - Updated drift management practices

Paraquat

- New labeling:
  - Includes dealer-provided literature
  - Requires closed-system use
  - Requires paraquat-specific training

Atrazine

- New labels will:
  - Have lower maximum application rates
  - Require more PPE
  - Require spray drift control measures

Glyphosate

- New labels will add protections for:
  - Non-targets
  - Pollinators
  - Weed resistance

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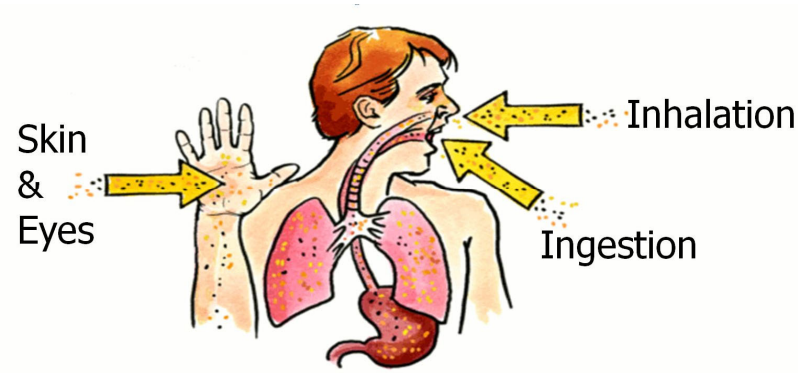
Pesticides and Human Health

Routes of Exposure

See Extension Circular, Managing the Risk of Pesticide Poisoning and Signs and Symptoms, EC2505



(REF EC)
Ask for possible routes of exposure and wait for dermal before clicking.

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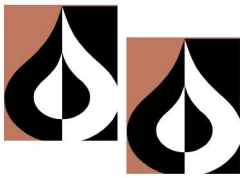
Pesticide Exposures

- Acute



- Chronic

Let's think about possible health effects; thought of as either acute or chronic.

Acute=short term, immediate effects (headache, nausea, vomiting, dizziness)

Chronic = long term, repeated exposure over time, health effects (cancer, etc.)

Symptoms of acute exposure

- Symptoms of pesticide exposure vary widely
- Quick recognition and action are essential

Symptoms of acute exposure

- Organophosphate/carbamate insecticides
  - Act on the nervous system
  - Mild: dizziness, headache, blurred vision, nausea/vomiting
  - Severe: unconsciousness, muscle twitching, coma/death
- Anticoagulant rodenticides
  - Reduces blood's ability to clot
  - Bloody noses, bleeding gums, new injuries may not clot readily

Symptoms of acute exposure

- Common herbicides (2,4-D, dicamba, MCPA, MCPP)
  - Irritate the skin and mucous membranes
  - Confusion, headaches, diarrhea, nausea/vomiting
- Fungicides
  - Some irritate the skin, eyes, and respiratory mucous membranes

First aid and emergencies

- Better safe than sorry—don't wait until it's too late!
- First aid
  - Protect yourself (PPE) while giving first aid
  - Rinse exposed areas (dermal/ocular exposure)
  - Move person to fresh air (inhalation exposure)
  - Look for label-specified first aid measures
    - Do NOT induce vomiting unless label says so

First aid and emergencies

- Better safe than sorry—don't wait until it's too late!
- Seeking medical attention
  - Get professional help ASAP
  - Follow the instructions of the medical professionals
  - Provide a copy of label and SDS to help doctors treat the victim

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PPE: Personal Protective Equipment

See NebGuides - Protective Clothing and Equipment for Pesticide Applicators, G758; Gloves for Handling Pesticides, G1961

Risk = Toxicity x Exposure

(REF NEBGUIDES) Tell them reason for the gloves nebguide—importance of selecting the correct glove and cost for your situation

In general, when we are thinking about risk, use the risk formula. Expresses what components you have some management over. Toxicity of the product, not just the selection of the product. If you have a choice, use a less toxic product. For example, if you are comparing products and they are equally effective in controlling pests, choose the less toxic product.

One way you can control the amount of your exposure is through use of PPE.

The longer you are in the field, the more you are exposed to the product, and the more important PPE becomes.

Using the correct PPE minimizes exposure. Check the product label for PPE requirements for the product you're using.

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Label

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION

Harmful if swallowed. Do not breathe dust or spray mist. Avoid contact with eyes, skin, or clothing.

Personal Protective Equipment (PPE)

Some materials that are chemical-resistant to this product are listed below.

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Chemical-resistant materials

- **Prevents most chemicals from reaching skin**
  - **PVC plastic**
  - **Butyl, nitrile, neoprene, or natural rubber**
  - **Barrier laminate**
  - **Viton**
  - **Non-woven coated fabrics**

Chemical-resistant PPE material prevents most chemicals from reaching the skin. You must protect from dermal exposure. There are many different types of chemical-resistant materials including butyl and nitrile rubber, PVC plastic, and non-woven coated fabrics. Due to the different toxicities and formulations of products on the market, different labels require different levels of protection.
The label may require chemical-resistant gloves, hat, boots, and coveralls or rainsuit.

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Avoid

- Leather
- Denim
- Cotton*
- Lined gloves

Cotton, denim and leather gloves, hats, and boots are not chemical resistant; they absorb pesticides. Although work clothing made from these materials is much more comfortable it shouldn't be worn when making applications. Save your leather work boots and cotton ball cap for when you're not working around pesticides.

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Label

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CAUTION

Harmful if swallowed. Do not breathe dust or spray mist. Avoid contact with eyes, skin, or clothing.

Personal Protective Equipment (PPE)

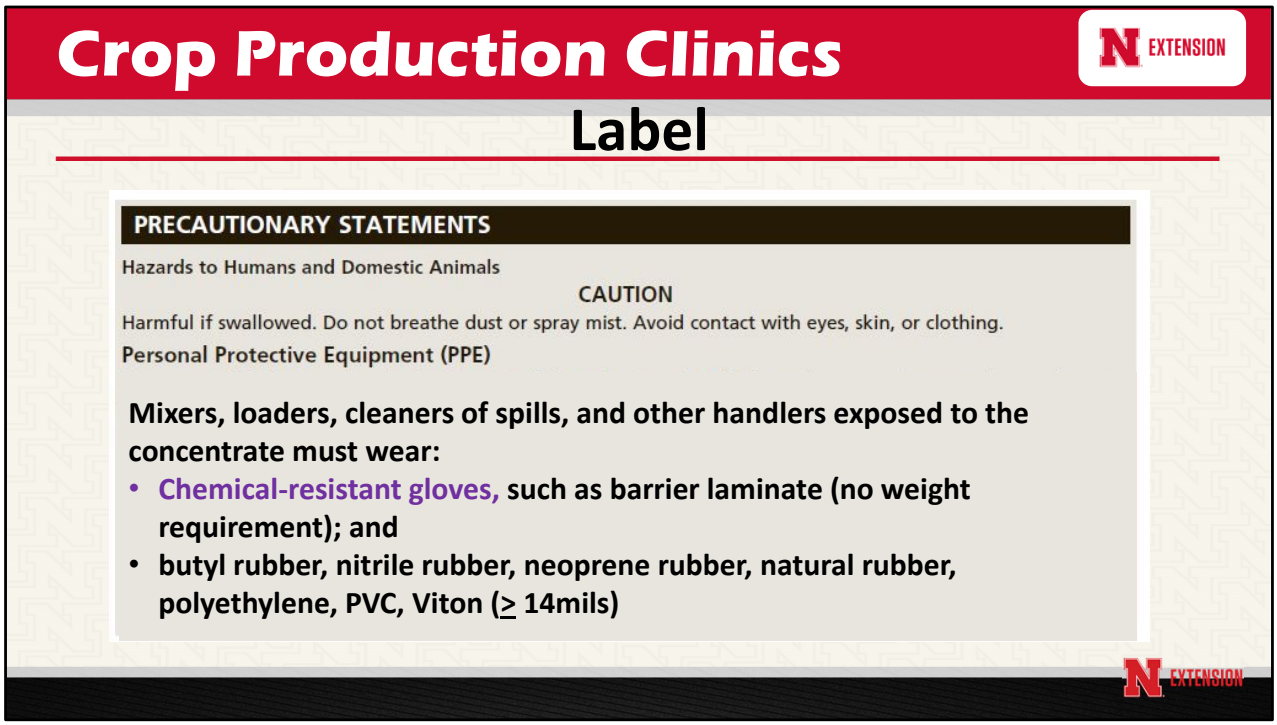
Some materials that are chemical-resistant to this product are listed below.

Mixers, loaders, cleaners of spills, and other handlers exposed to the concentrate must wear:

- **Coverall over long-sleeved shirt and long pants.**

What are coveralls?

- Loose-fitting one-or two-piece garments that cover, at a minimum, the entire body except the head, neck, hands and feet.
- Garments = cloth!
  - Not Tyvek or other chemical-resistant material
  - Can use chemical-resistant materials if you wish!



Thickness ranges from 4 to 22 mils. Gloves less than 14 mils are often referred to as disposable. You can find 4, 8, and 12 mil thicknesses or weights.

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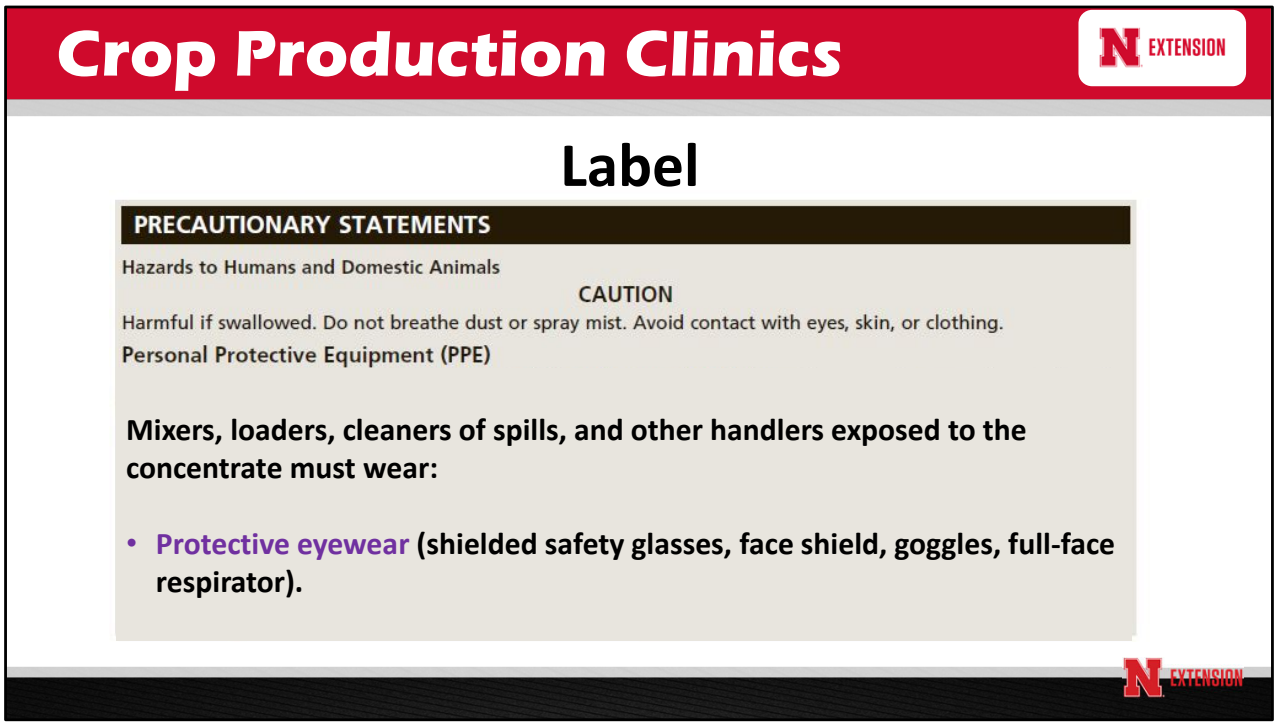
Ag Health Study results 2010-2014:

Farmers who wore chemically-resistant gloves when mixing and applying 2,4-D had 70% less pesticide in their urine than those not wearing gloves. Orchard farmers wearing gloves when applying captan had 80% less pesticide on their hands.

Ag Health Study results 2015- Present

Protective glove use and hygiene practices were associated with a reduced rate of Parkinson's Disease among farmers using paraquat, permethrin, and trifluralin.



The point being made with this slide is that there are different PPE requirements when working with concentrated product.

Goggles (can wear with a half-mask respirator), full face-mask, shielded safety glasses (brow and side shields)

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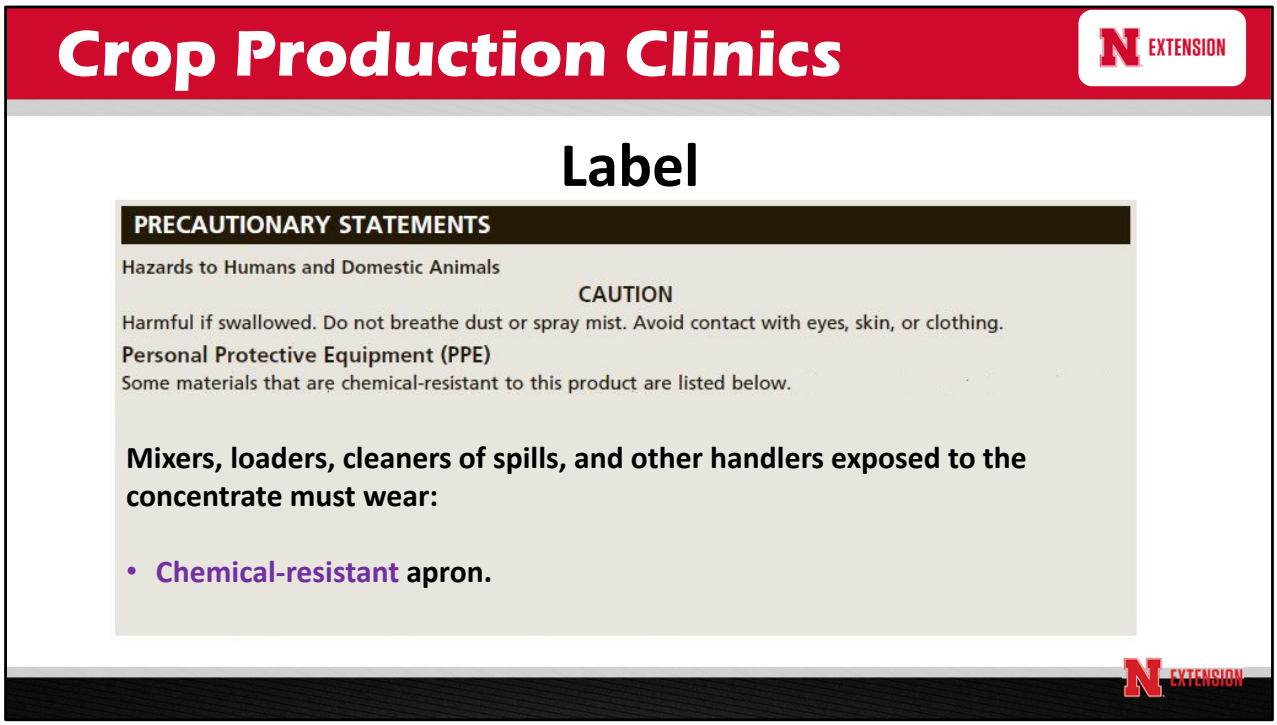
Protective eyewear

The point being made with this slide is that there are different PPE requirements when working with concentrated product.



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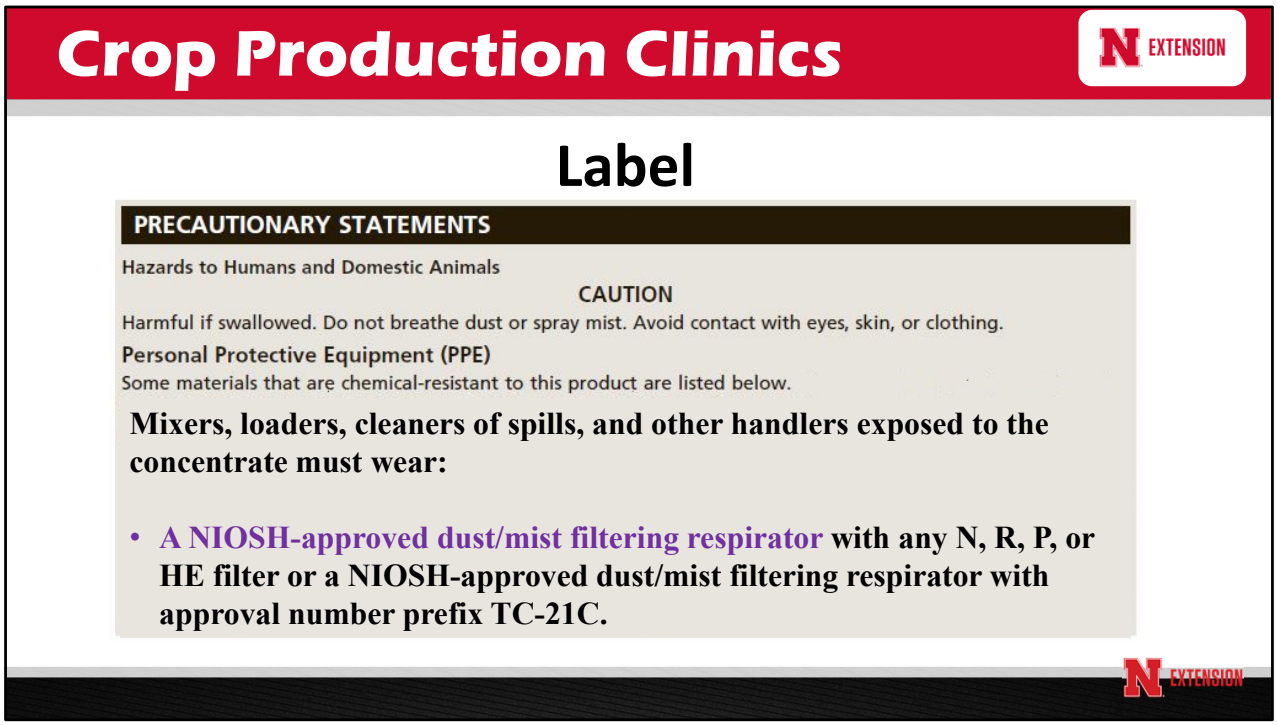

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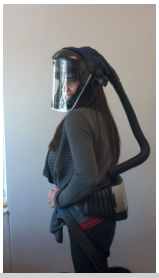
EXTENSION

Types of respirators

- **Air Purifying**
  - **Filtering face (dust) mask (TC-84A)**
  - **Half-mask or full face-piece cartridge respirator**
    - **TC-23C when it has a chemical cartridge**
    - **TC-84 A when it has a particulate filter**
  - **Powered Air Purifying Respirators (PAPR) (TC-21C)**







EXTENSION

Air purifying takes outside air and filters it, then you breathe it. Won't work for structural fumigation!

Supplied air is in a tank.

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N EXTENSION

Particulate Filters (TC-84A)

Oil: Mineral, vegetable, and synthetic substances and animal and vegetable fats that are generally slippery, combustible, viscous, liquid at room temperatures, and soluble in various organic solvents (ether) but not in water.

- **N (Not resistant to oil)**
- **R (Resistant for up to 8 hours)**
- **P (Oil-proof)**

- **95 Removes 95% of particulates 0.3 microns or larger**
- **99 Removes 99% of particulates 0.3 microns or larger**
- **100 Removes 99.97% of particulates 0.3 microns or larger.**
- **Note: HE or high efficiency offer same protection as P100**

N EXTENSION

The categories of particulate filters are based on how they effective they are with oil. First, what do they mean by oil?

N

R

P

Particulate filters are also categorized on how effective they are at moving particulates 0.3 microns or larger. What's a micron?

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NIOSH codes

- Particulate Filters (TC-84A)

$1.50

$3.00 - $9.00

$125.00

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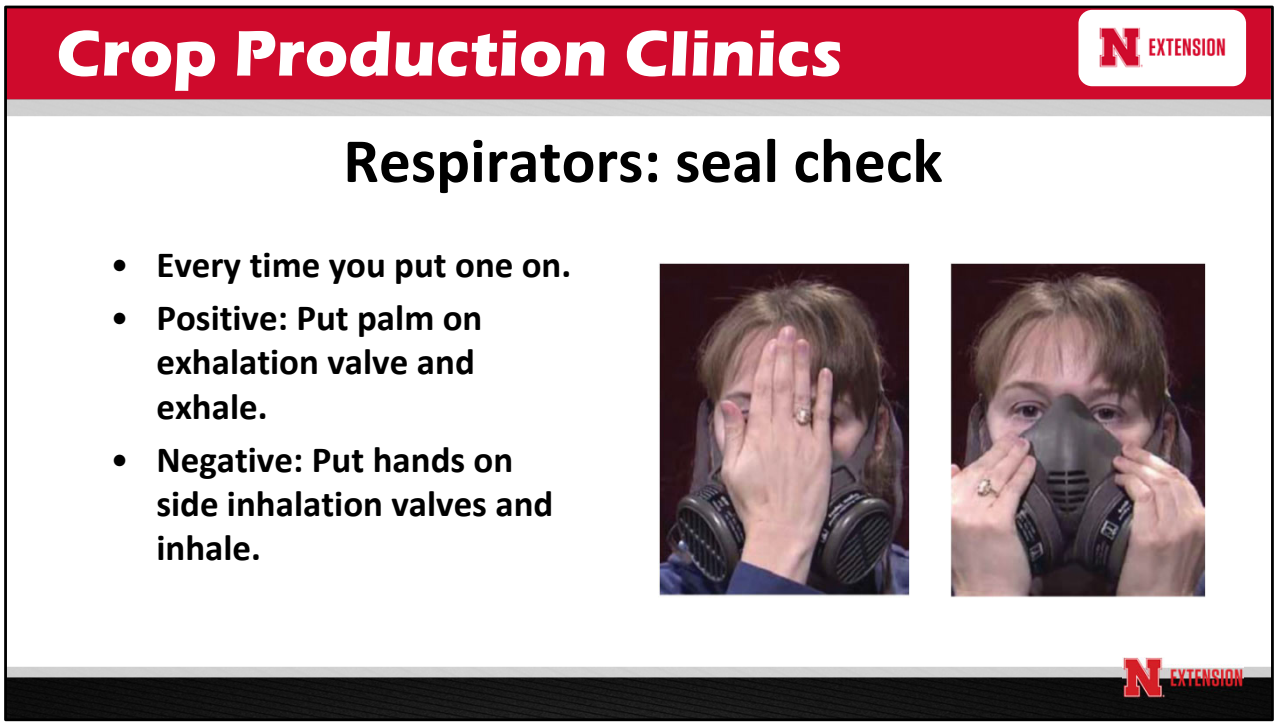
NIOSH codes

- Particulate Filters (TC-84A)
- Chemical cartridges (TC-23C)

$25.00 - $45.00

Respirators

- Must be provided by employer when required by label
- But first:
  - Medical evaluation
  - Fit test
  - Training



Two common ways to check the seal are the positive seal check and the negative seal check. For a half-mask cartridge respirator, place the respirator on your face, then pull the top (halo-shaped in some models) plastic strap and adjust it over and on top of your head. Next, connect the straps that go behind your neck, and pull the loose ends of the straps to adjust for comfort and fit. When the seal seems tight, perform the seal check.

Positive Seal Check *(Figure 10, left)*

Cover the exhalation valve on the front of the respirator and gently exhale. If you can do this without feeling a rush of air around the faceplate, the seal is good. If you feel air leaking under the facepiece, reposition and repeat the check until the seal is effective.

Negative Seal Check *(Figure 10, right)*

Cover the inlet opening of each of the cartridges with your hands and inhale gently so the facepiece collapses. Hold your breath for about 10 seconds; if the facepiece stays collapsed, the seal is effective. If you can do this without feeling a rush of air around the faceplate, the seal is good. If the facepiece expands or air leaks under the facepiece, reposition and repeat the check until the seal is effective.

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Respirators: seal check

- **Negative: Put both hands over the respirator completely and inhale sharply.**
- **You should feel the mask tighten against your face.**

For a disposable particulate filter mask, put on (don) the mask. Some have a piece of metal along the nose bridge. With both hands, press your fingertips on the metal band at the nosepiece. Press down while moving your fingers along the mask from your nose outward. This will mold the mask to fit your face. To check the seal *(Figure 11),* put both hands over the respirator completely and inhale sharply. You should feel the mask tighten against your face (negative pressure). If air leaks under the mask, adjust the nosepiece or straps. If you can't get a proper seal after repositioning the mask, try another style of respirator.

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Label: Cleaning and Maintaining PPE

PRECAUTIONARY STATEMENTS *(continued)*

Applicators using spray equipment mounted on their backs must wear:

Follow manufacturer's instruction for cleaning and maintaining PPE. If none exist for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

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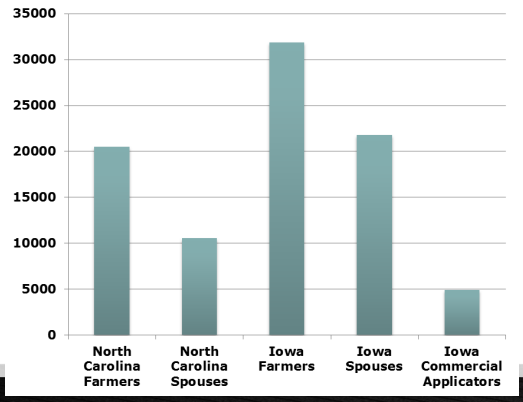
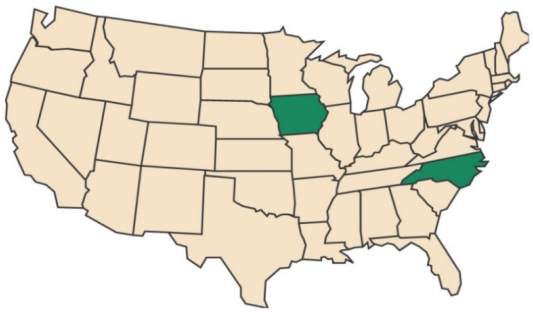
Ag Health Study

89,658 participants - certified pesticide applicators and farmers' spouses (Enrolled participants 1993 – 1997)





Ag Health Study

Overview of AHS Participants and Cancer

- Participants had lower rates of cancer compared to general population.
- Some cancers more common: lip, thyroid, prostate, and multiple myeloma.
- Death rates for most cancers lower in AHS participants

Ag Health Study

Protective Gloves and Workplace Hygiene Reduce Exposure to Pesticides

- Farmers wearing chemically resistant gloves had 70% less herbicide in their urine.
- Orchard farmers wearing gloves had 80% less fungicide on their hands.

Ag Health Study

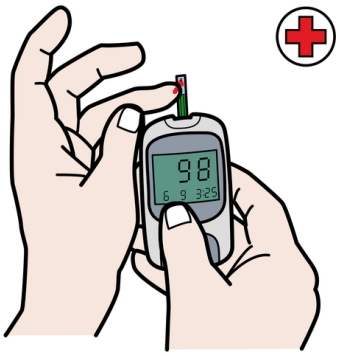
Protective Gloves and Workplace Hygiene Reduce Risk of Parkinson's Disease

- Parkinson's disease more common in applicators with more lifetime pesticide use or "high exposure event"
- Not common in applicators who wore gloves and practiced good workplace hygiene

A chemical called "MPTP" causes Parkinson's like symptoms
MPTP is chemically similar to Paraquat

Ag Health Study

Diabetes Linked to Pesticides



- Diabetes more common with greater use of organochlorine insecticides.
- Diabetes during pregnancy more common with pesticide exposure during early pregnancy.

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Ag Health Study

Glyphosate, Atrazine, & 2,4-D found in homes

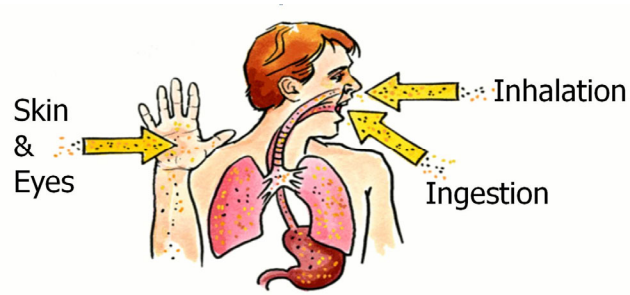
Glyphosate, Atrazine & 2,4-D residues found in farm homes

Residues transfer into homes on clothes and shoes of applicators

Ag Health Study

Sense of smell: High pesticide exposure events may cause long-lasting olfactory deficit

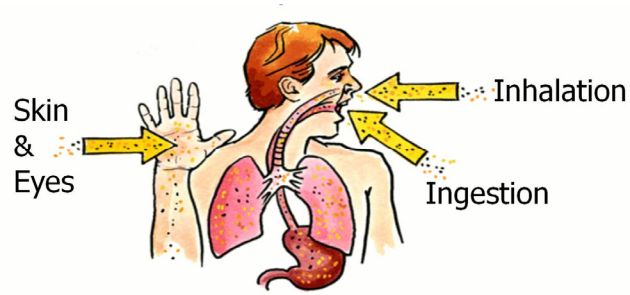
- **"…the association appears to be stronger when there was a delay between [the exposure] and washing with soap and water."**
- **"…significant associations were observed both for [exposure events] involving the respiratory or digestive tract and dermal contact."**



Ag Health Study

Sense of smell: Self-reported impairment

- Found broad *association* between pesticides and olfactory impairment
- Specific pesticides associated: organochlorine insecticides, organophosphate insecticides, permethrin, captan, glyphosate, 2,4-D, 2,4,5-T
- More research is needed



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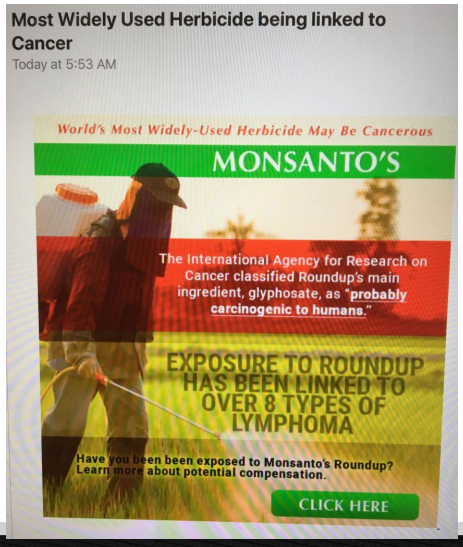
Ag Health Study

aghealth.nci.nih.gov

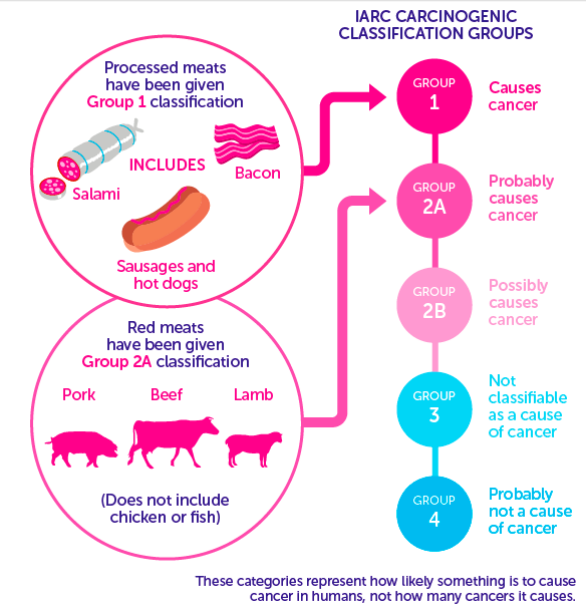
Roundup Lawsuit



Health Update

IARC Releases Classification for Glyphosate

- The International Agency for Research on Cancer (IARC) classified glyphosate as **probably** carcinogenic to humans.
- This determination assessed the ***hazard*** of glyphosate without considering ***exposure*** levels.
- IARC asks, **"Can it cause cancer, ever?"**
- IARC also concluded that cigarette smoke, arsenic, salami, bacon, and hot dogs cause cancer.



IARC Classification

Glyphosate

2,4-D

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IARC Classification

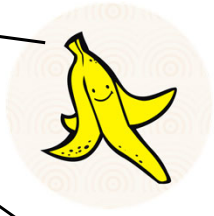
GROUP 1 — Causes Accidents

GROUP 2A — Probably Causes Accidents

GROUP 2B — Possibly Causes Accidents

GROUP 3 — Not Classifiable

GROUP 4 — Probably Doesn't Cause Accidents



Health Update

EPA Releases Draft Risk Assessment for Glyphosate

- The human health risk assessment concludes that glyphosate is not likely to be carcinogenic to humans.
- The assessment found no other meaningful risks to human health when the product is used according to the pesticide label.
- EPA asks, "Can it cause cancer?" and "What level of exposure is expected?" to get the answer, "Is that exposure level likely to result in cancer?"

Health Update

- **Press release: "EPA Takes Action to Provide Accurate Risk Information to Consumers, Stop False Labeling on Products" (8/8/19)**
- IARC's "probably carcinogenic" classification led to Prop 65 info on glyphosate labels
- California's Proposition 65
  - "…known to the State of California to cause cancer…"
- **Bottom line:** EPA will not approve glyphosate labels that say it "is known to cause cancer" going forward

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Pesticides and the Environment

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EXTENSION

Pesticide Movement in the Environment

- Air
- Water

EXTENSION

To understand how pesticides might impact the environment, we have to look at how they move from the application site to other sensitive areas.
The major pathways are through air as vapors (volitility), dust particles (adsorption), or spray droplets; through surface water or soil water; or through plant or animal tissues removed from the application area. The characteristics of pesticides that affect their movement in the environment are listed in parenthesis on this page.

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Pesticide Movement in the Environment

- **Water**
  - **Infiltration into and movement through soil**
    - **Possible groundwater contamination**
  - **Surface runoff**

To understand how pesticides might impact the environment, we have to look at how they move from the application site to other sensitive areas.
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N EXTENSION

The amount of runoff depends on:

- Grade or slope of the area
- Soil texture
- Vegetation
- Soil moisture
- Amount and timing of irrigation/rainfall
- Pesticide characteristics

N EXTENSION

The factors that contribute to whether a runoff event occurs include the grade or slope of the area, as well as soil texture and the amount of vegetation. Soil moisture is a factor, because soil that's saturated can't take in the water, so it runs off. The amount and timing of irrigation or rainfall is critical. The characteristics of a pesticide, especially water solubility, also play a role.

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EXTENSION

Reducing pesticide runoff

- Plant buffer strips and on the contour
- Avoid using highly mobile herbicides
- Avoid applying under wet field conditions or if rain is expected
- Store pesticides in facility away from water resources
- Do not apply more than the label rate or more times than needed

EXTENSION

Address buffer strips, avoiding use of highly mobile herbicides on steeply sloped ground, and planting on the contour.

Pesticide Characteristics

- National Pesticide Information Center (NPIC) has great resources
- Herbicide Properties Tool (http://npic.orst.edu/HPT/index.html)

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Pesticide Characteristics

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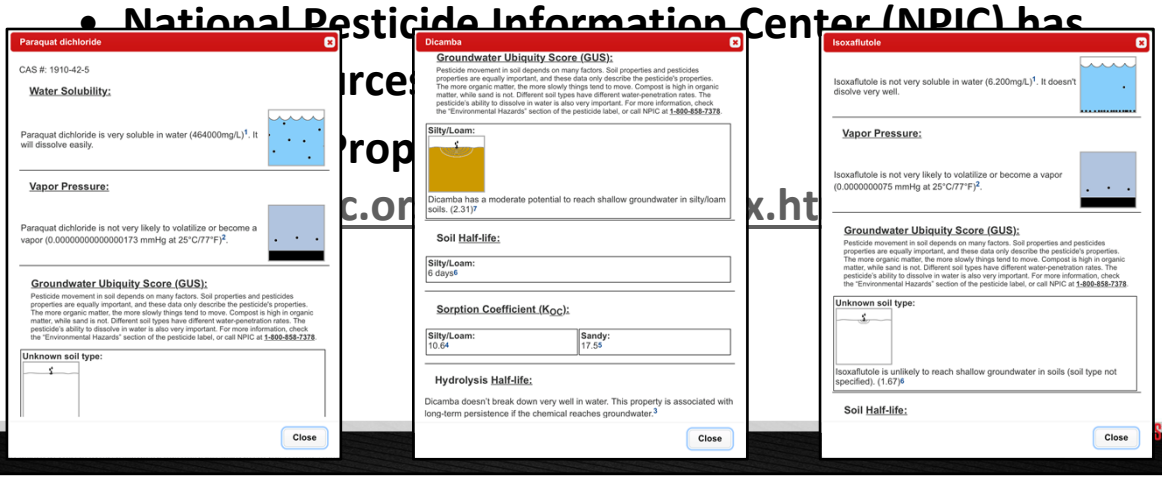

Pesticide Characteristics

- National Pesticide Information Center (NPIC) has great resources
- Pesticide Properties Database (http://npic.orst.edu/ingred/ppdmove.htm)

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EXTENSION

Pesticide Characteristics

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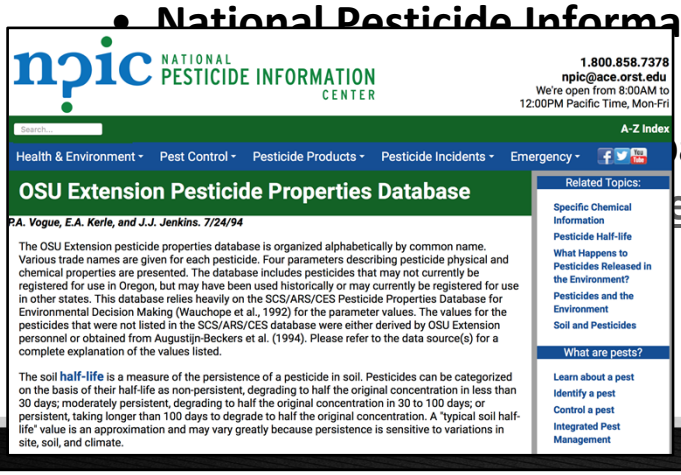

npic NATIONAL PESTICIDE INFORMATION CENTER

1.800.858.7378
npic@ace.orst.edu
We're open from 8:00AM to 12:00PM Pacific Time, Mon-Fri

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Health & Environment | Pest Control | Pesticide Products | Pesticide Incidents | Emergency

OSU Extension Pesticide Properties Database

P.A. Vogue, E.A. Kerle, and J.J. Jenkins. 7/24/94

The OSU Extension pesticide properties database is organized alphabetically by common name. Various trade names are given for each pesticide. Four parameters describing pesticide physical and chemical properties are presented. The database includes pesticides that may not currently be registered for use in Oregon, but may have been used historically or may currently be registered for use in other states. This database relies heavily on the SCS/ARS/CES Pesticide Properties Database for Environmental Decision Making (Wauchope et al., 1992) for the parameter values. The values for the pesticides that were not listed in the SCS/ARS/CES database were either derived by OSU Extension personnel or obtained from Augustijn-Beckers et al. (1994). Please refer to the data source(s) for a complete explanation of the values listed.

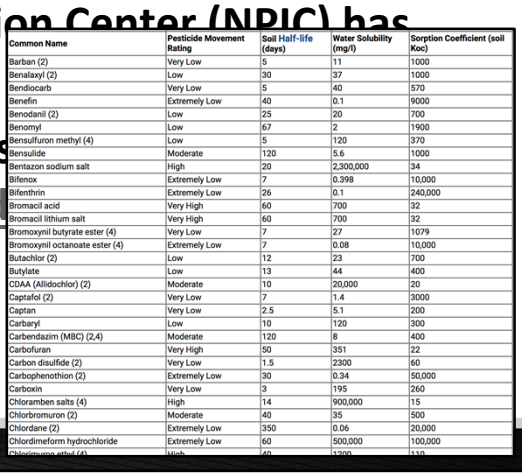
The soil **half-life** is a measure of the persistence of a pesticide in soil. Pesticides can be categorized on the basis of their half-life as non-persistent, degrading to half the original concentration in less than 30 days; moderately persistent, degrading to half the original concentration in 30 to 100 days; or persistent, taking longer than 100 days to degrade to half the original concentration. A "typical soil half-life" value is an approximation and may vary greatly because persistence is sensitive to variations in site, soil, and climate.

Related Topics:

- Specific Chemical Information
- Pesticide Half-life
- What Happens to Pesticides Released in the Environment?
- Pesticides and the Environment
- Soil and Pesticides

What are pests?

- Learn about a pest
- Identify a pest
- Control a pest
- Integrated Pest Management



Common Name	Pesticide Movement Rating	Soil Half-life (days)	Water Solubility (mg/l)	Sorption Coefficient (soil Koc)
Barban (2)	Very Low	5	11	1000
Benalaxyl (2)	Low	30	37	1000
Bendiocarb	Very Low	5	40	570
Benefin	Extremely Low	40	0.1	9000
Benodanil (2)	Low	25	20	700
Benomyl	Low	67	2	1900
Bensulfuron methyl (4)	Low	5	120	370
Bensulide	Moderate	120	5.6	1000
Bentazon sodium salt	High	20	2,300,000	34
Bifenox	Extremely Low	7	0.398	10,000
Bifenthrin	Extremely Low	26	0.1	240,000
Bromacil acid	Very High	60	700	32
Bromacil lithium salt	Very High	60	700	32
Bromoxynil butyrate ester (4)	Very Low	7	27	1079
Bromoxynil octanoate ester (4)	Extremely Low	7	0.08	10,000
Butachlor (2)	Low	12	23	700
Butylate	Low	13	44	400
CDAA (Allidochlor) (2)	Moderate	10	20,000	20
Captafol (2)	Very Low	7	1.4	3000
Captan	Very Low	2.5	5.1	200
Carbaryl	Low	10	120	300
Carbendazim (MBC) (2,4)	Moderate	120	8	400
Carbofuran	Very High	50	351	22
Carbon disulfide (2)	Very Low	1.5	2300	60
Carbophenothion (2)	Extremely Low	30	0.34	50,000
Carboxin	Very Low	3	195	260
Chloramben salts (4)	High	14	900,000	15
Chlorbromuron (2)	Moderate	40	35	500
Chlordane (2)	Extremely Low	350	0.06	20,000
Chlordimeform hydrochloride	Extremely Low	60	500,000	100,000

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N EXTENSION

Spill Management

See Extension Circular, Safe Transport, Storage, and Disposal of Pesticides, EC2507; and NebGuide, Managing Pesticide Spills, G2038

✓ **If there is a spill, consider:**

1. **Personal health and safety**
2. **Environmental protection**

✓ **Control, Contain, Cleanup**

N EXTENSION

(REF NEBGUIDE) Additional way of protecting water is properly managing a spill if it should occur.

The Three Cs

Control (such as uprighting a tipped container to prevent it from spilling more)
Contain (using kitty litter to absorb and prevent from spreading)
Clean up (using shovel and plastic drums/bags)

Mention what all should be included in a spill kit: bucket, gloves, boots, any relevant PPE, trash bags, kitty litter, shovel, absorbent snake tubes.

The key points to make for emergency response during a spill are basic: take care of personal health first, environmental health second.

If you are working with pesticides and there is a spill, don't panic! Follow the 3 C's…Control, Contain, and Cleanup. To protect yourself from exposure, wear proper PPE such as chemical-resistant gloves, a long sleeved shirt, long pants, and chemical-resistant footwear before handling the spill. You should have a spill kit available with PPE, a shovel, a plastic drum or heavy duty bag, and absorbent

material.

If, for example, you have a tank that has toppled off the truck into a ditch, stop the truck, put on your PPE, and control the spill by upturning the tank so that it doesn't continue to pool. Contain the spill by using absorbent material or soil and building a mound to prevent the spill from spreading. Cleanup the spill by digging the saturated soil into a plastic drum using a shovel. You should call 911 to report a spill, who can direct you to the proper authorities, such as the sheriff's office or State Patrol. These responders can then contact Nebraska Department of Environmental Quality, who may need to send out a backhoe to help clean up larger spills that could potentially runoff to groundwater or other water resources.

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Accident procedures

- **Always have these things on-hand:**
  - **Emergency contact information**
    - **Poison Control Number**
    - **National Response Center (for reportable quantities)**
    - **Nebraska State Patrol (for rights-of-way spills)**
  - **Safety Data Sheets (SDS)**
  - **A Copy of the Pesticide label**
- **If the spill is on a person remove all contaminated clothes immediately!**

Poison Center in Omaha : (800-222-1222)
National Response Center: (800-424-8802)
Nebraska State Patrol: (800-525-555)

Cleaning Pesticide Equipment

See NebGuide, Cleaning Pesticide Application Equipment, G1770

Always wear appropriate PPE when cleaning application equipment!

Take Home Points

- The label is the law—and your guide!
- Risk = Toxicity x Exposure
- Every site is different; consider each site's unique characteristics when planning applications.

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Questions?

- ????
- Jan Hygnstrom
- Frank Bright
- Greg Puckett

402-472-1632

800-627-7216

pested.unl.edu