

# Review of Field and Pesticide Safety Issues

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# Fundamental Concepts

- Be proactive
- The Buddy System
- Err on the side of caution
- Communicate health issues
- Know where to get help

# Quick To Do List

- Wear your seat belt
- Don't talk on the phone or text while driving
- Wear protective gear
- If transporting chemicals – keep in secondary container and separate from food and water
- If working in cold be sure to stay dry
- If working in heat be sure to stay hydrated

# Chemical Exposure



Photo – NRCS



Photo – John Deere



Photo – UW Extension



Photo – NRCS

# Effects of Selected Fertilizers and Soil Conditioners

- Fertilizers – organic (manure) and inorganic (anhydrous ammonia)
  - Manure: minor - sanitary issues
  - Anhydrous ammonia: depends on exposure – ranges from minor irritation nose and throat to freeze burns on contact
- Soil conditioners such as Lime and gypsum
  - Lime: can cause eye damage, burns on skin, irritating to inhale – dusk masks
  - Gypsum: minor irritant, drying

# What Are Pesticides?

- Abbreviated FAO definition: “*Any substance or mixture of substances intended for preventing, destroying or controlling any pest.....*”
- Typically targeted towards a specific type of pest
  - Herbicides, Insecticides, Rodenticide, Fungicides, etc
- Pesticides occur in different forms – dust, pellets, liquid sprays, gases
  - Agriculture – liquid spray – applied tractor or airplane
  - Potentially be incorporated into soil
- Application methods means that exposure to pesticides can occur via
  - contact with crops and noncrop plants adjacent to fields
  - Contact with soil and water
  - Air

# What Types of Pesticides Occur?

- Upper Big Walnut Creek
  - Documented all 15 within sampling sites within Upper Big Walnut Creek
  - Herbicides – acetochlor, alachlor, atrazine, atrazine desethyl, dithiopyr, metolachlor, simazine, 2,4-D, (glyphosate – previous years)
  - Fungicides – azoxystrobin, chlorothalonil, metalaxyl, myclobutanil, triademefon, vinclozolin
  - Insecticides – Malathion
- WRSIS wetlands and reservoirs
  - Documented six pesticides – limited sampling 2008 and 2009
  - Herbicides – atrazine, atrazine desethyl, metolachlor, simazine
  - Fungicides – chlorothalonil, metalaxyl
- Most likely partial list as this is only those that we measure from water samples



# Relative hazards of different pesticides

**CAUTION**

**WARNING**

**DANGER**

- Pesticide labels contain keyword that conveys relative degree of hazards of the pesticides for people
  - Labels also contains information on first aid, restricted entry interval, and protective equipment needed

## CAUTION

Atrazine  
(Aatrex 4L)

Glyphosate  
(Traxion)

Simazine  
(Princep Caliber 90)

S-metolachlor  
(Medal II EC)

Atrazine-metolachlor-  
glyphosate  
(Expert)

Azoxystrobin  
(Quadris)

Tefluthrin  
(Force 3G)

Vinclozin  
(Ronilan EG)

## WARNING

Acetochlor  
(Acetochlor EC)

Metalaxyl  
(Dyna-shield)

Malathion  
(Gowan malathion 8)

## DANGER

Chlorothalonil  
(Bravo Ultrex)

12 pesticides – most  
measured SDRU lab  
except Tefluthrin and  
glyphosate

**CAUTION**

Atrazine  
(Aatrex 4L)

**Restricted Entry  
Interval – 12 hours**

**WARNING**

Acetochlor  
(Acetochlor EC)

**Restricted Entry  
Interval – 12 hours**

**DANGER**

Chlorothalonil  
(Bravo Ultrex)

**Restricted Entry  
Interval – 12 hours**

After application – different pesticides have different REI times – this is time that workers are allowed back in treated areas after application

# Effects of Pesticides

- Death as result occupation exposure is rare
  - Nearly all pesticide deaths caused by eating or drinking pesticides
- Short term – immediate effects
  - Herbicides and fungicides
    - skin irritation - redness, itching, rashes, burns, blisters
    - stinging, swelling eyes
    - nose, mouth throat irritation
  - Insecticides
    - nausea, vomiting, diarrhea, headache, dizziness, weakness, excessive sweating, tearing, chills, thirst, chest pain, breathing difficulty, body aches, cramps
- Potential long term effects low exposure
  - Birth defects, tumors, genetic changes, blood disorders, nerve disorders, reproductive effects, damage to immune system

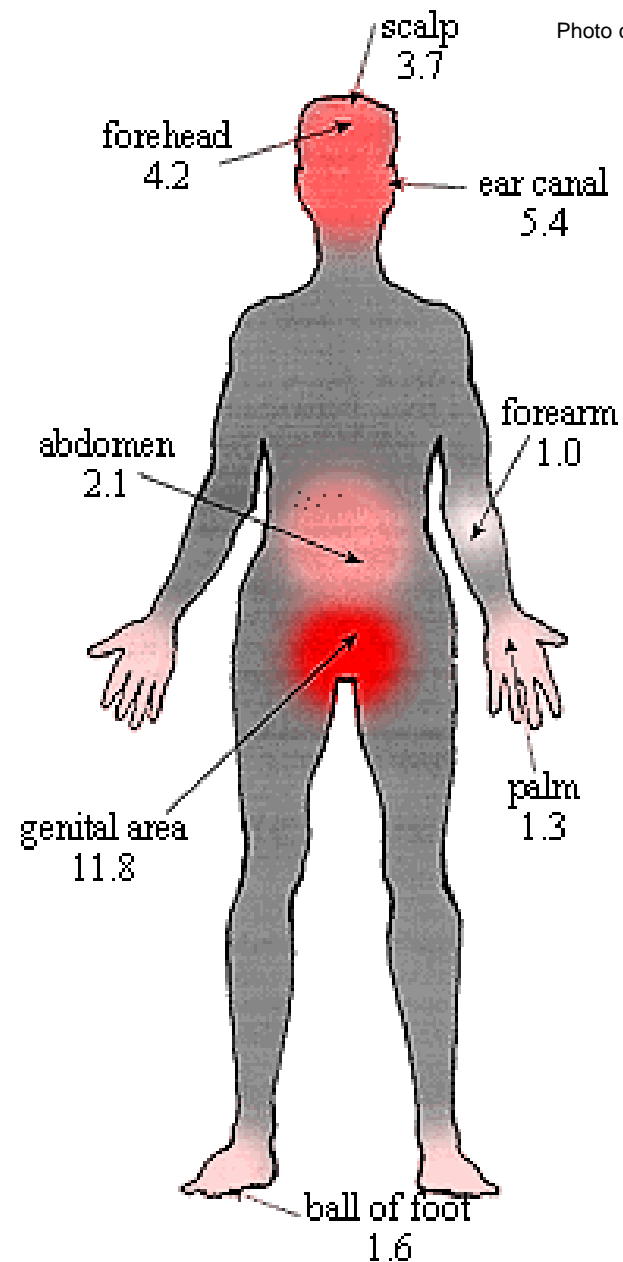
# Pesticide Sensitization

- Repeated exposure can cause sensitization in some
  - Similar to poison ivy exposure
  - First few times exposed – little or no reaction
  - Continued exposure results in reactions increasing in severity

# Routes of Pesticide Entry into Body

- Skin
  - 90% of exposures **users** receive is dermal
  - majority of pesticide poisoning and injuries occur via skin exposure
- Eyes
- Nose and Mouth
  - Drift and exposure to vapors prior to restricted entry interval
  - transfer residues to mouth if eat, drink, smoke, or chew gum without washing hands

# Pesticide Absorption Rates



**Relative absorption rates, as compared to the forearm (1.0)**

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# How Reduce Pesticide Entry in Body

- Avoid exposure
  - If spraying in field working – leave
  - If spraying in field adjacent to working – leave
  - Avoid entering fields that have been treated
  - Wear clothing that covers your skin
  - Wash hands before drinking, eating, smoking, chewing gum, or using toilet
  - After work shower with soap and water
  - Wash work clothes separately from other clothes

# Signs and Symptoms of Common Types of Pesticide Poisonings

- Common injuries
  - Skin and eye irritation
  - Nose and throat pain
  - Skin rashes
- Common poisoning symptoms:
  - Dizziness, headache, muscle aches, cramps, tiredness, nausea, diarrhea
- More serious poisoning can cause
  - Chest pain, breathing difficulties, excessive salivation, very small pupils, lack muscle control, convulsions, unconsciousness, death
- Not all pesticides cause same symptoms and not all people will have all symptoms
  - Some symptoms are similar to that associated with cold, flu, heat stress, etc.

# Emergency First Aid

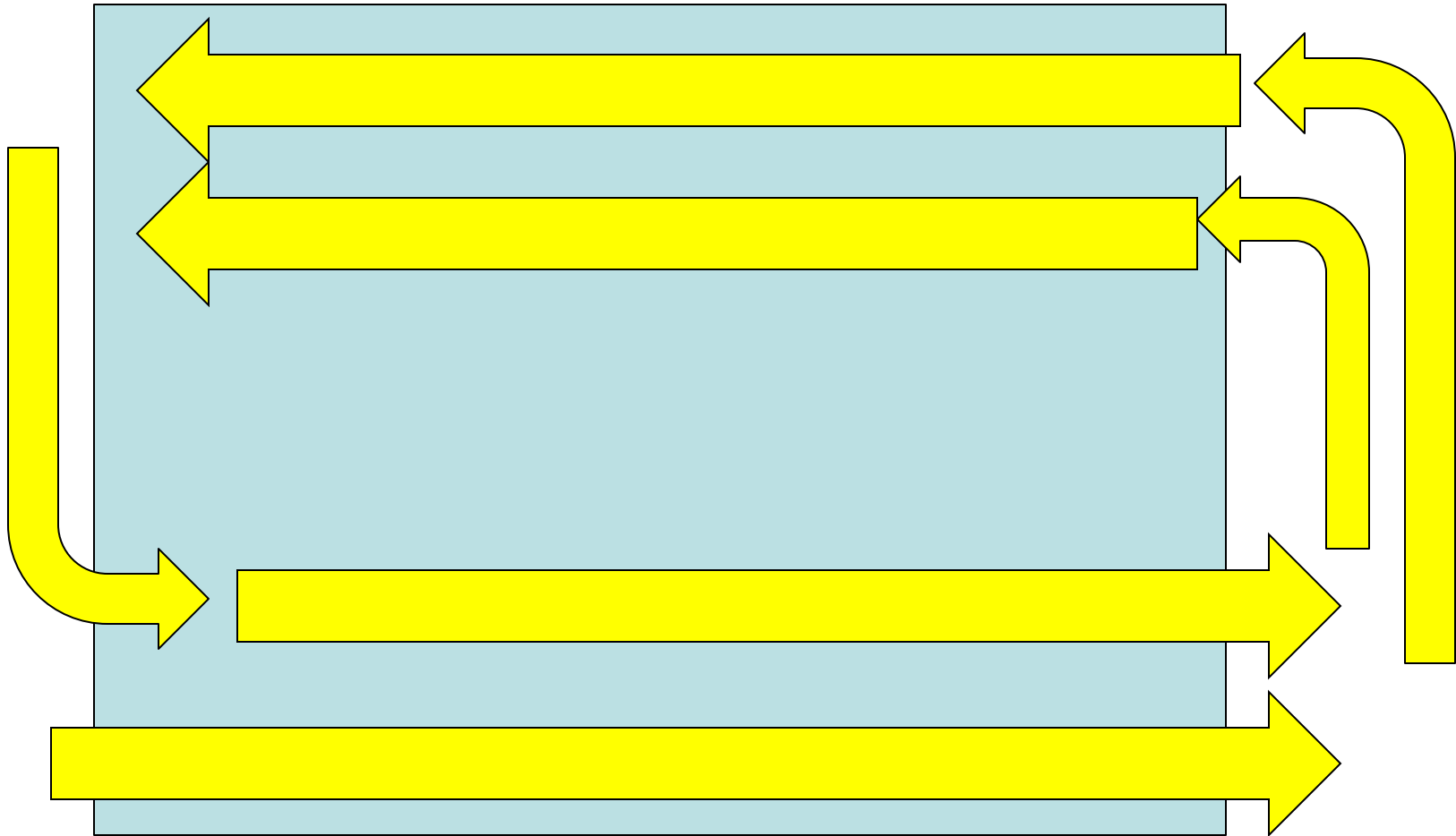
- Skin exposure
  - Remove pest contaminated clothing immediately
  - Wash skin clean water and soap
- Eye exposure
  - Rinse with eye flush kit
- Oral exposure
  - get to medical facility as soon as possible
    - Need to know where nearest medical facilities are
  - follow first aid instructions on pesticide label
- Respiratory exposure
  - wear proper respiratory protection
  - remove to fresh air, loosen clothing to help breath
  - Perform CPR if trained and needed

# Special Considerations – Crop Dusters



- Fast moving
- Can appear quickly
- Be vigilant – if look for signs of potential activity
- Listen for airplanes and watch
- Pilots will not stop spraying to let you leave

# Special Considerations – Crop Dusters #2



- Potential Pattern of Application

# Additional Information....

- Additional training needs for those who handle, apply, load, or work with pesticides
- Under no conditions is anyone to take pesticides from work home with them
- Pesticide containers are never safe for alternative uses even after empty
  - Do not reuse containers, but instead dispose of them properly
- Illegal to pour pesticides into any other type of container

# Summary

- Be PRO-ACTIVE with respect to your safety.
- The BUDDY SYSTEM is the BEST! Work together and watch out for each other.
- Err on the side of caution. Your safety is more important than the data.

Questions???