Rural Emergency Preparedness- Hazmat

Playbook of Strategies & Resources for Farm and Ranch Families

Linda Emanuel RN, BSN, Community Health Director
AgriSafe Network

AgriSafe® Network
Protecting the People Who Feed the World

Protecting the People Who Feed the World

AgriSafe protects the people who feed the world by:

- Performing ongoing needs assessments of agricultural producers and workers (following the Total Farmer Health® model).
- Training rural health professionals across the United States.
- Establishing partnerships with NIOSH ag. centers, rural research centers, and other non-government-based organizations.
- Maintaining a culture of readiness and organizational expectation to protect and respond.


Glory
HONDA

Objectives

01

Identify hazardous material exposures in farm shops, buildings, and barns.

02

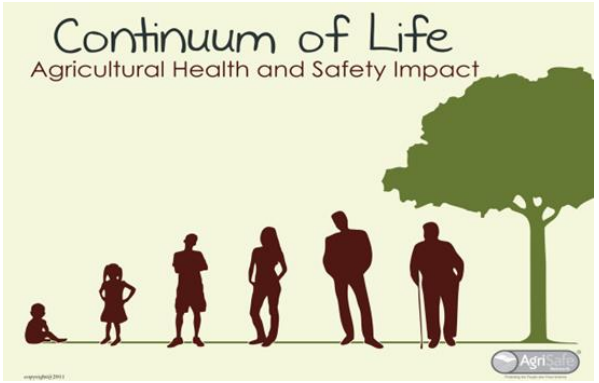
Understand the implications of common agriculture hazardous exposures.

03

Select the correct PPE (Personal Protective Equipment) to use when working with hazardous materials.

Hazardous Materials: simple definition & why it matters

OSHA definition: A hazardous substance is any biological and disease-ridden agent that can cause harm to the environment and human life with exposure (via inhalation, ingestion, or assimilation).



At Risk Farm Population:

- Older Farm workers
- Youth
- Women in childbearing years
- Workers with pre-existing medical conditions
- Workers exposed to extreme weather or temperature changes
- Workers performing a specific job for an extended period of time

AgriSafe Network
Protecting the People Who Feed the World

What are carbamates and organophosphates?

Carbamates

Compounds are esters of carbamic acid that are commonly used as insecticides

- Carbaryl (SEVIN)
- Oxamyl (VYDATE)
- Carbofuran (FURADAN)
- Thiodicarb (LARVIN)
- Methomyl (LANNATE)

Organophosphates

- Insecticides containing phosphorus
- Acephate (ORTHENE, PAYLOAD)
- Malathion
- Azinphos-methyl (GUTHION)
- Mevinphos (PHOSDRIN)
- Chlorpyrifos (DURSBAN, LORSBAN)
- Diazinon Parathion (PENNCAP, PHOSKIL)
- Phosmet (IMIDAN)
- Ethoprop (MOCAP)
- Terbufos (COUNTER) Fenamiphos (NEMACUR)
- Trichlorfon (DYLOX)
- Fonophos (DYFONATE)

Fertilizers

- Ammonium Polyphosphate-10-34
- Ammonium Thiosulfate-12-0-0-26
- Ammonium Nitrate (Urea)-32%
- Anhydrous Ammonia-

Herbicides

- Glyphosate-Roundup PowerMax 3
- Dicamba
- 2,4-D-Enlist
- Glufosinate-Liberty
- Atrazine-
- Metolachlor-Parallel
- S-Metolacholr-Brawl II
- Sulfentrazone-Anthem Maxx
- Mesotrione-Solstice

Common Farm Chemicals

Organic Materials: Barn dust, Grain dust, Organic pesticides, Herbicides, Fuels (gasoline, diesel), Cleaning solvents, Fungicides



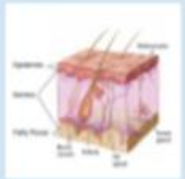


Inorganic Materials: Inorganic pesticides, road dust, burn piles, metals, Anhydrous ammonia




Health Impacts: Lungs, Eyes, Skin, Nervous system, GI system






AgriSafe Network
Protecting the People Who Feed the World

Common Farm Chemicals continued…

Cleaning solvents

Dry

Liquid

Flammable gases,

Acetylene

Fumigants

Methyl bromide

Carbon disulfide

Carbon tetrachloride

Dibromochloropropane

Fuels

Diesel

Gas

Motor oils

Grease guns

AgriSafe Network
Protecting the People Who Feed the World

Other Hazardous Materials

Carbon monoxide- poisoning from fossil heating units, power washers in confined space, skid loaders

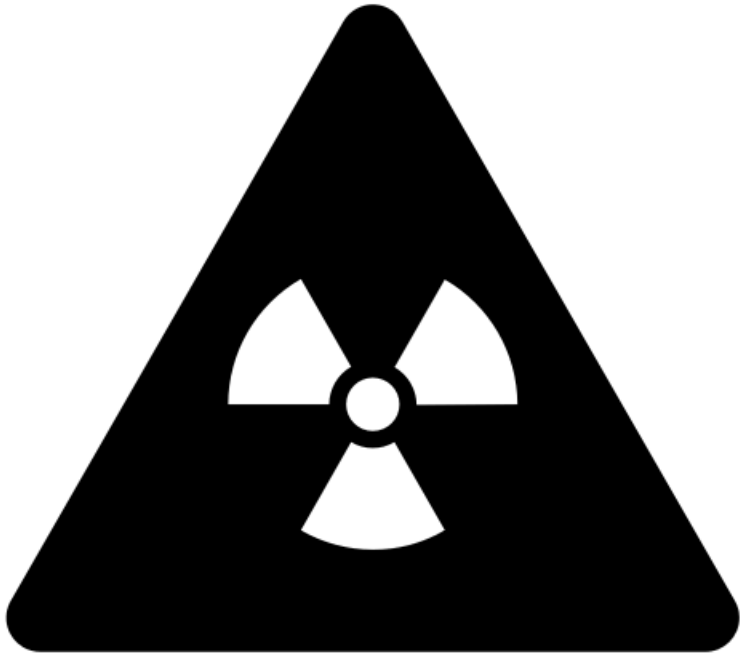
Battery acids

Metal fumes-welding

Veterinary chemicals-pour on medications

Manure gas

Falling objects or flying objects



Hazard Communication Labels

High priority

- If have an unknown material-hold to its highest level of toxicity, abrasiveness, flammability, and corrosiveness
- Contact chemical sales representative for complete label if needed.
- Compile Safety Data Sheets into easily accessible binder.
- Never store chemical in unmarked containers-i.e. empty soda bottles, or other jugs.

AgriSafe Network
Protecting the People Who Feed the World

SECTION 1. IDENTIFICATION

Product name : Enlist One®

Manufacturer or supplier's details

COMPANY IDENTIFICATION

Manufacturer/importer : CORTEVA AGRISCIENCE LLC
9330 ZIONSVILLE RD
INDIANAPOLIS, IN, 46268-1053
UNITED STATES

Customer Information Number : 800-992-5994

E-mail address : customerinformation@corteva.com

Emergency telephone : INFOTRAC (CONTRACT 84224).

+1 800-992-5994 or +1 317-337-6009

Recommended use of the chemical and restrictions on use

Recommended use : End use herbicide product

Action Step

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity (Oral) : Category 4

Eye irritation : Category 2A

Skin sensitization : Sub-category 1B

GHS label elements

Version	Revision Date:	SDS Number:	Date of last issue: 01/19/2022
1.1	11/03/2022	800080005448	Date of first issue: 01/19/2022

Hazard pictograms :

Signal Word : Warning

Hazard Statements : H302 Harmful if swallowed.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.

Precautionary Statements :

Prevention:

P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves/ eye protection/ face protection.

Response:

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Example of Required HCS Label Elements

Product Identifier

Pictogram *(Symbol in Red Frame)*

Signal Word *(Danger)*

Hazard Statement(s) *(Extremely flammable gas)*

Precautionary Statement(s) *(Keep away from heat and open flames. No smoking. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. Store in well-ventilated place.)*

Name, Address, and Telephone Number of Manufacturer, Importer, or Other Responsible Party

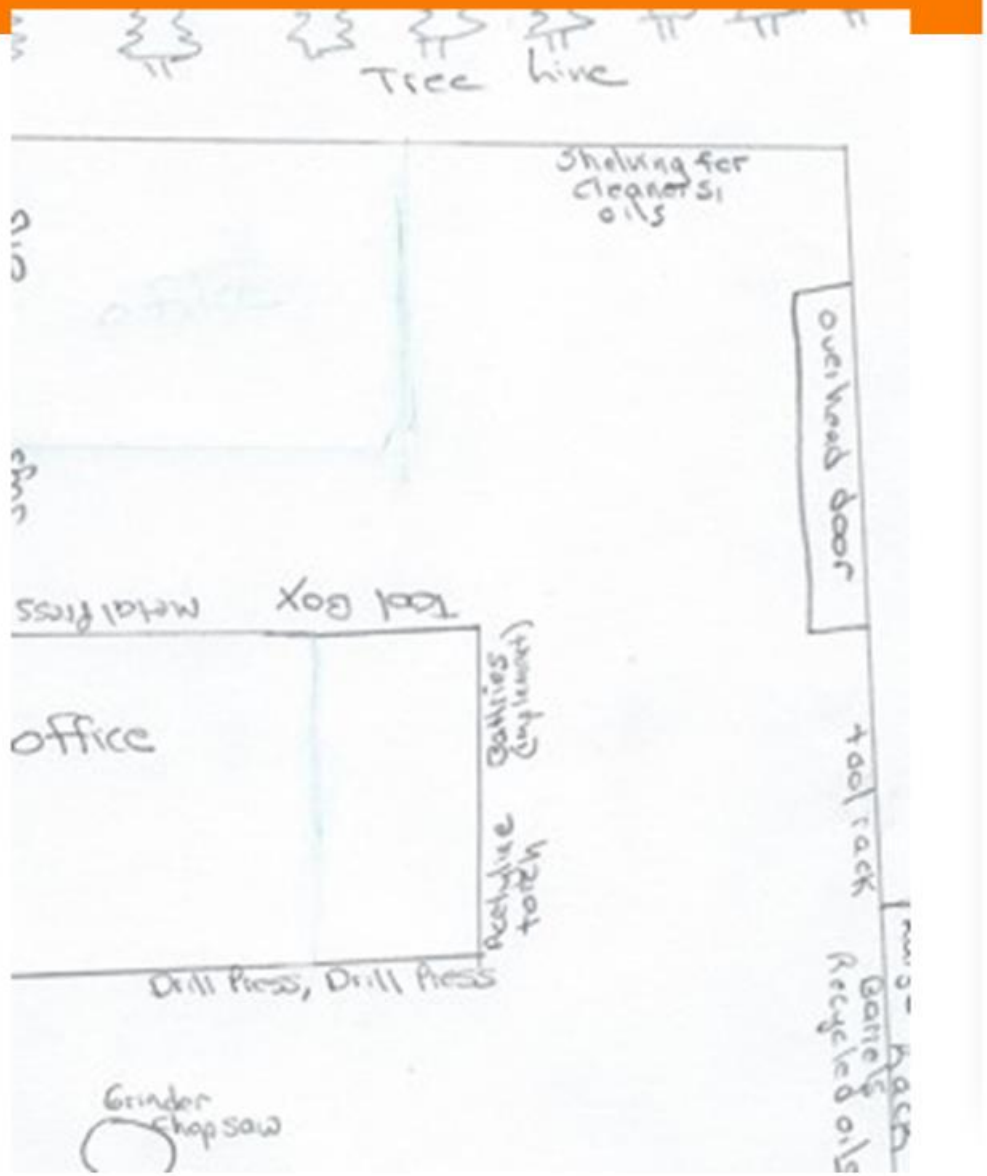
Hazard Communication: Small Entity Guide for Employers that Use Hazardous Chemicals (OSHA 3695-03 2014); Occupational Safety and Health Administration, U.S. Department of Labor

The 9 Pictograms

Health Hazard  • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity	**Flame**  • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides	**Exclamation Mark**  • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder  • Gases Under Pressure	**Corrosion**  • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals	**Exploding Bomb**  • Explosives • Self-Reactives • Organic Peroxides
Flame Over Circle  • Oxidizers	**Environment** (Non-Mandatory)  • Aquatic Toxicity	**Skull and Crossbones**  • Acute Toxicity (fatal or toxic)

Hazard Communication: Small Entity Guide for Employers that Use Hazardous Chemicals (OSHA 3695-03 2014); Occupational Safety and Health Administration, U.S. Department of Labor

Chemical Storage



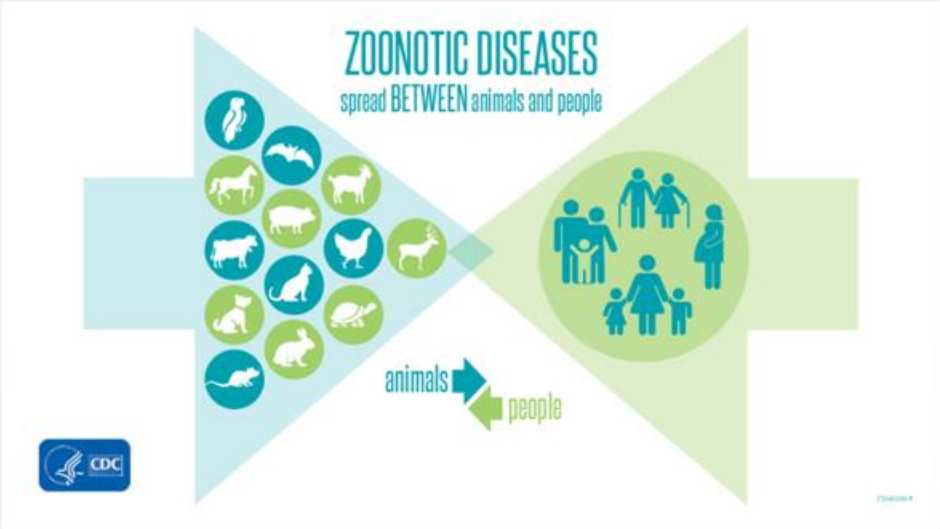
Action Step

- Hazard mapping
- Locked enclosed, ventilated, screened, storage
- Store flammable materials in separate area i.e. fuels, oil, welding supplies, acetylene bottles
- Identify high risk and low risk chemicals, based on labels.

AgriSafe Network
Protecting the People Who Feed the World

Zoonotic Diseases

- Zoonotic diseases are very common, both in the United States and around the world. Scientists estimate that more than 6 out of every 10 known infectious diseases in people can be spread from animals, and 3 out of every 4 new or emerging infectious diseases in people come from animals. Because of this, CDC works 24/7 to protect people from zoonotic diseases in the United States and around the world.



Let's get that barn cleaned up!

AgriSafe Network
Protecting the People Who Feed the World

Hierarchy of Controls

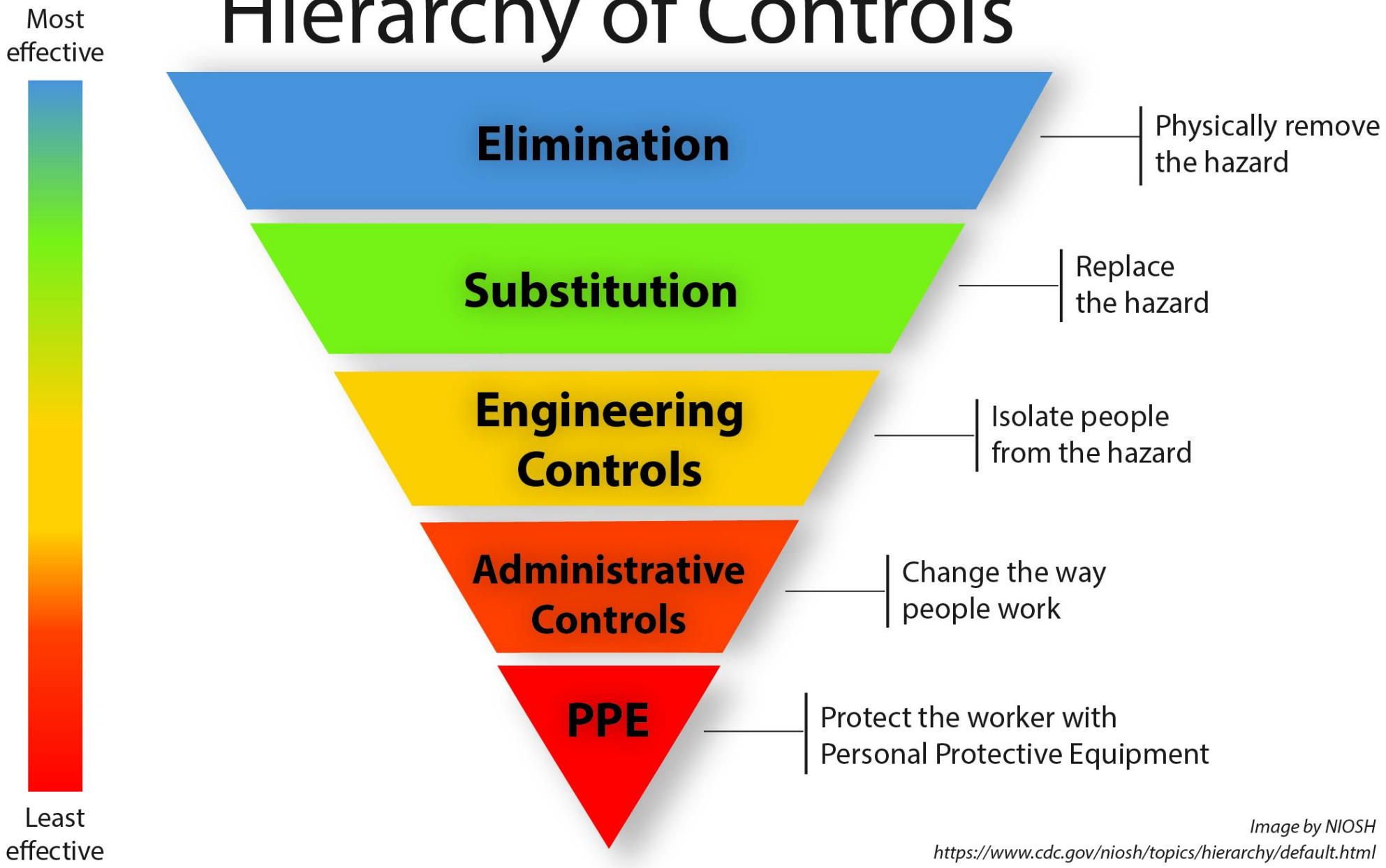


Image by NIOSH
https://www.cdc.gov/niosh/topics/hierarchy/default.html

Sorting it all out

- Right PPE
  - Right Fit
    - Right Environment

AgriSafe Network
Protecting the People Who Feed the World

Eye Protection- What to Recommend

- Most reported eye injuries occur from flying particles.
- The second most common eye injuries are a result of accidents from chemical splash.
- The Bureau of Labor Statistics reports that **almost three out of five workplace eye injuries are due to not wearing appropriate eye protection**—either not wearing eye protection at all; or wearing the wrong kind of eye protection

Bureau of Labor Statistics

Grainger Quick Tips

AgriSafe Network
Protecting the People Who Feed the World

Eye Protection

- **Impact Protection:**
  - ➢*Safety glasses with side shield protection*
  - ➢*Goggles with direct or indirect ventilation*
  - ➢*Face shields worn over goggles or safety glasses*
  - ➢*Full Face respirators*

- **Dust protection**:
  - ➢*Goggles with direct or indirect ventilation*
  - ➢*Full face respirators*

- Occupational Safety and Health Administration (OSHA) - 29 CFR 1910.133
- American National Standards Institute (ANSI) Z87.1-2015

AgriSafe Network
Protecting the People Who Feed the World

Eye Protection

- **Chemical protection:**
  - ➢*Goggles with indirect ventilation or non- ventilated*
  - ➢*Face shields over goggles with indirection ventilation or non – ventilated*
  - ➢*Full face respirator*
  - ➢*Exception: Chemicals in vapor form:*

***Non-vented goggles** have no venting of any kind and offer protection against the passage of dust, mist, liquid and vapors. **For applications where chemical vapor* is the hazard, a non-vented goggle will be required protection**.*

**Non-vented goggles* are NOT gas-proof goggles*

AgriSafe Network
Protecting the People Who Feed the World

Types of Safety Glasses

ANSI Standard Z87.1

- Safety glasses must conform to a higher standard of impact resistance than regular glasses

  - applies to both lenses and frames

  Basic Impact: Z87

  High Impact: Z87+

- Prescription safety glasses

AgriSafe Network
Protecting the People Who Feed the World

Types of Safety Goggles

- Direct ventilation – allows direct flow of air into the goggle

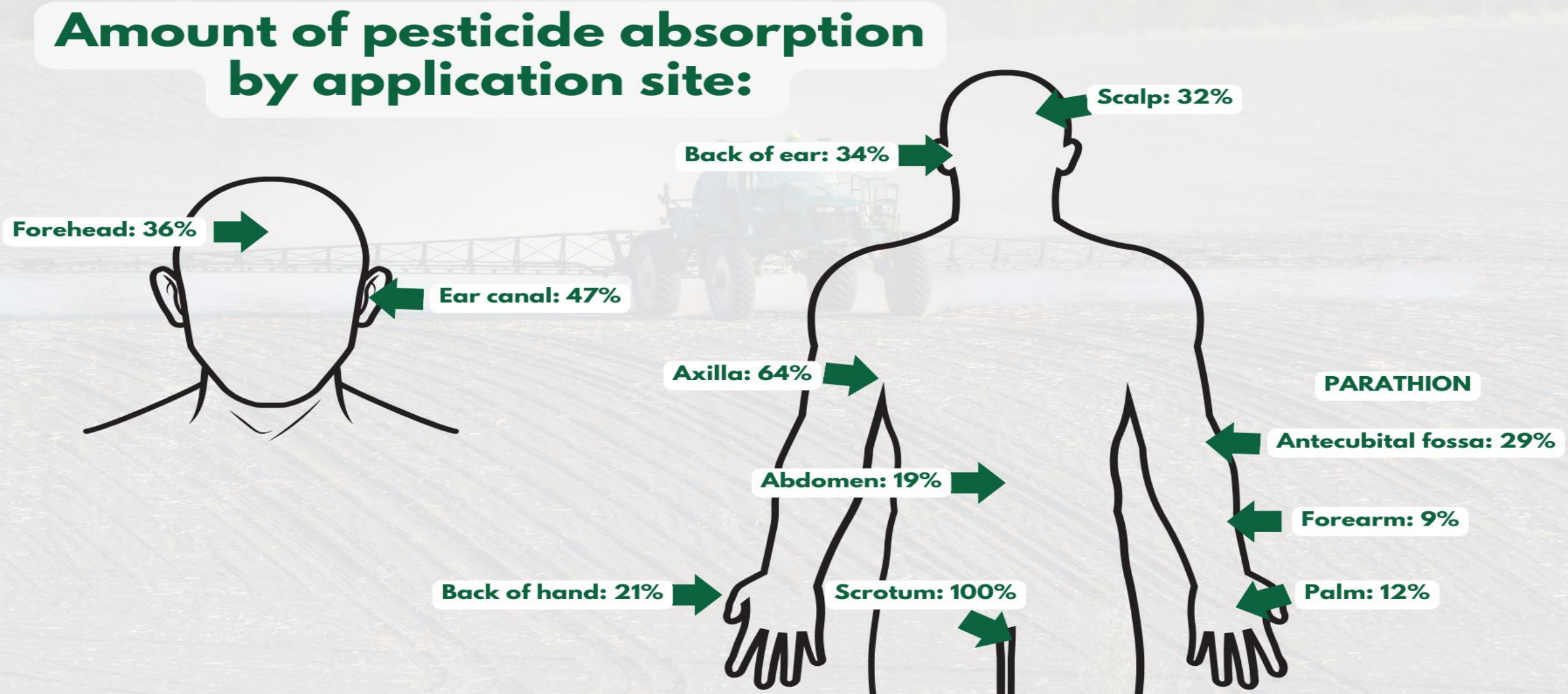
- Indirect ventilation – allows indirect air flow through hooded or covered vents

- Non – vented goggles – allow no air flow at all when properly worn. These are required when working with chemicals in vapor form.

  They are not gas-proof goggles.

AgriSafe Network
Protecting the People Who Feed the World

Head to Toe Protection



Breathe Easy
Donning,
Doffing,

AgriSafe Network
Protecting the People Who Feed the World

Types of Respiratory Exposures

- Confined Animal Feeding Operations (CAFOS) & feed lots
- Grain Handling (many types of grains) & moldy hay / straw
- Chemicals/Pesticides
- Anhydrous Ammonia
- Welding
- Using gas or diesel engine indoors – *Carbon Monoxide!*
- Silo- silage (fermented feed)
- Paint (spraying)
- Woodworking

- What you see: uncomfortable…*a nuisance…may make you cough, sneeze, etc.*

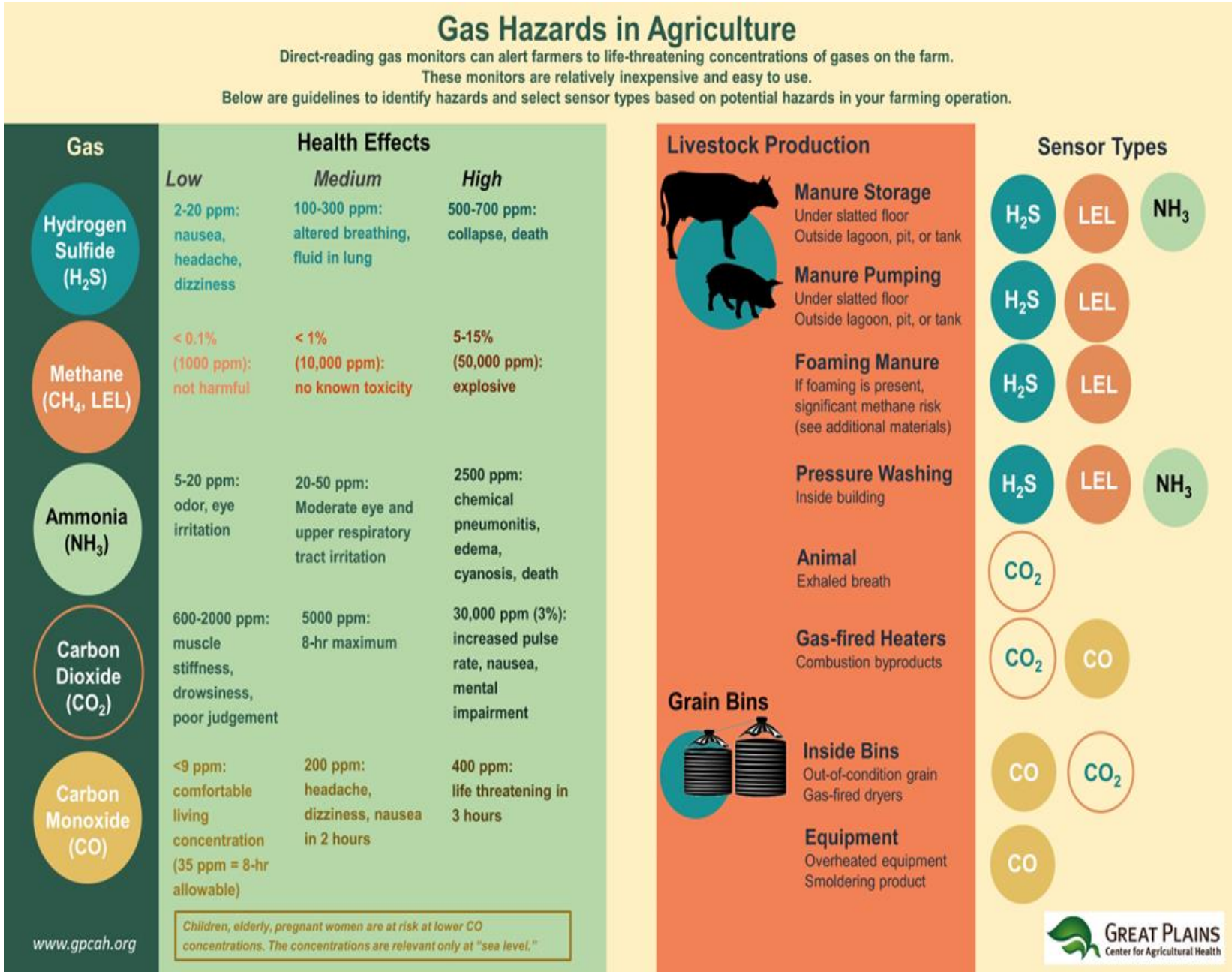
But…

- What you don't see: referred to as ***respirable dust –***
  - ***The ones that REALLY concern us!***

Gas Exposures –Experience Any of These?

Get Out!!

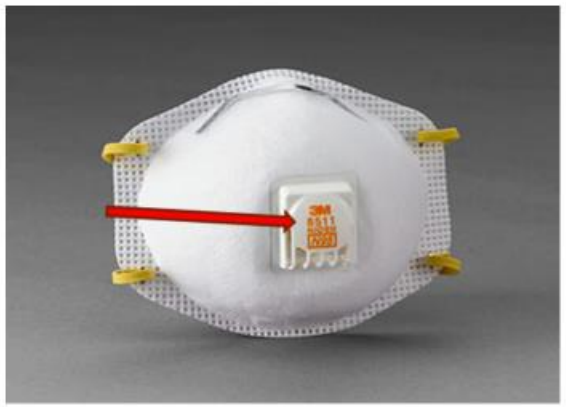
- Headache
- Tiredness
- Nausea
- Weakness
- Vomiting
- Sleepiness
- Dizziness
- Tightness in the chest
- Confusion
- Trouble breathing



The ABC's of NRP of Respirators

Air Purifying: - ***check the letters***

- Filtering face piece
  - **N** series = not for use in presence of oil mist
  - **R** series = some resistance to oil mist
  - **P** series = for use where oil present
- Half mask face piece
- Full face piece
- Powered air purifying



NIOSH certified

Designation according to filter efficiency – ***check the numbers***

- 95 =moderate filtering efficiency (95%)
- 99 = high filtering efficiency (99%)
- 100 = highest filtering efficiency (99.97%)

- Marked with "NIOSH", manufacturer's name and part number, and an abbreviation to indicate cartridge or filter type (e.g., N95, P100, etc.)

When wearing a respirator – the fit is the key

- All respirators - N95 and above – must fit tight to the face and allow no air leaks
- If worn correctly, a respirator will filter out 95% or more of aerosol/particulates
- Respirators must:
  - be donned correctly
  - have a fit check performed each time it is worn
  - be removed (doffed)properly

Seal Check (Fit check) Procedure: an employee(**wearer)** responsibility – and is done ***each*** time a respirator is used

Positive Pressure Check

Negative Pressure Check

Maintenance and Care

- Use a respirator that is clean, sanitary and in good working order.
- Store the respirator properly.
- Do not seal it tight in a plastic bag or container after use - moisture will create a mold environment.
- Store in paper sack or a canister with air flow.
- Throw away the 2-strap dust mask (filtering face piece), or replace respirator cartridges, when you taste, smell, or feel the contaminant coming through.
- *Cleaning and disinfecting are not the same thing!*
  - Wash the respirator, including head assembly and valve covers in warm soapy water and scrub with a soft brush. Rinse breathing diaphragms and gaskets gently.

  Disinfect face piece by soaking in a mild bleach solution (3 tbsp – 2/3 cup bleach & 1 gallon of water) for 2 - 5 minutes.

  Rinse well in clear water - Air dry or dry with a soft cloth

AgriSafe® Network
Protecting the People Who Feed the World

Agricultural Respirator Selection Guide

Use Only NIOSH Approved Respirators

Disposable Particulate Respirators

3M 8210 N95
- Grain
- Hay
- Hogs
- Pesticides (solids)
- Poultry
- Sanding
- Woodworking

3M 8511 N95
Exhalation Valve
- Grain
- Grinding
- Hay
- Hogs
- Pesticides (solids)
- Poultry
- Sanding
- Woodworking

3M 8247 R95
Charcoal Filter
- Hog Odors
- Poultry Odors
- Nuisance Odors
- Oil and non-oil based particles

3M 8271 P95
- Grain
- Grinding
- Hay
- Hogs
- Poultry
- Sanding
- Wood-working

3M 8577 P95
- Oil and non-oil based aerosol particles
- Carbon Filter
- Hog Odors
- Poultry Odors
- Nuisance Odors

3M 8233 N100
- Grain Dust
- Grain Handling
- Grinding
- Hay
- Mold
- Pesticides (solids)
- Spores
- Welding

Reusable Particulate and Gas/Vapor Respirators

Organic Vapor/ Acid Gas
- Disinfectants
- Bleach

Ammonia
- Anhydrous Ammonia
- Hogs
- Poultry

Organic Vapor
- Paint
- Pesticides
- Add particle filter if spraying

Multi Gas
- Paint
- Pesticides
- Disinfectants
- Bleach
- Formaldehyde

Cartridge Face Piece
Use with Cartridges and Particulate Filters

Particulate Filter P100
- Feed or Grain Dust
- Hogs
- Mold
- Organic Dust
- Poultry
- Spores
- Welding
- Woodworking

Filter Retainer
- Use on top of cartridges

Filter Cover

Other Types of Respiratory Protection

Powered Air Purifying
Use Appropriate Filter/Cartridge
- Grain Handling
- Livestock & Poultry Confinement
- Pesticides
- Woodworking

**Not for use in an oxygen deficient environment*

Supplied Air/ SCBA
- Carbon Monoxide
- Fumigation (enclosed areas)
- Hydrogen Sulfide
- Methane
- Manure Pits
- Paint

Self Contained Breathing
- Carbon Monoxide
- Hydrogen Sulfide

(manure pits)
- Methane
- Silo entry

Particulate Filter N95
Use as Pre Filter with Cartridges

AgriSafe® Network
Protecting the People Who Feed the World
www.agrisafe.org

Gloves

- **Leather gloves:** These should be used when welding, as the leather can resist sparks and moderate heat. The risk of cuts and abrasions also can be minimized by wearing leather gloves. ***Do not use for handling chemicals!***

- **Chemical/liquid-resistant gloves:** Several types of gloves help protect against specific chemicals:
  - **Butyl rubber gloves:** nitric acid, sulfuric acid, hydrochloric acid and peroxide
  - **Natural latex/rubber gloves:** water solutions or acids, alkalis, salts, and ketones
  - **Neoprene gloves:** hydraulic fluids, gasoline, alcohols and organic acids
  - **Nitrile rubber gloves:** chlorinated solvents

PPE SHOPPING LIST

Emergency Prepardeness for Rural Families

GOGGLES ANSI NON-VENTED & INDIRECT VENTILATION

- Safety glasses with side shield protection, marked with ANSI Standard Z87.1

Notes:

RESPIRATORS

- NIOSH approved N-95 two-strap air purifying respirators-organic dust/vapor materials
- NIOSH approved Half mask face air purifying respirators with cartridges
- Full face NIOSH air-purifying respirators, ANSI high impact eye protection, four point harness with multi-gas cartridges

Notes:

CHEMICAL GLOVES

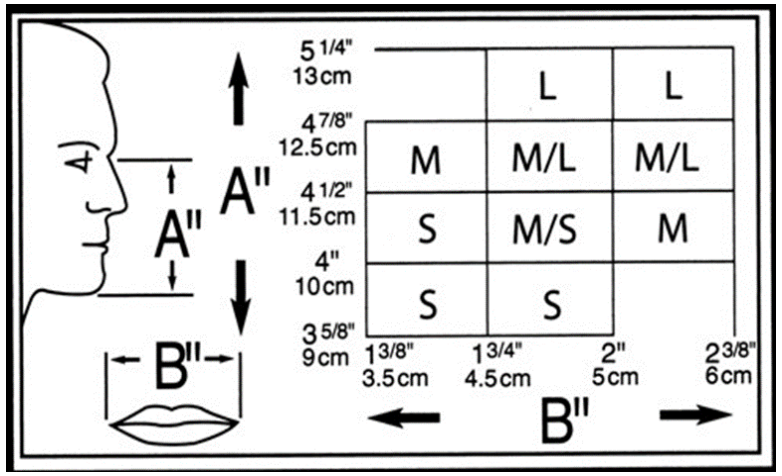
- Nitrile 4ml exam grade gloves
- Chemical resistant gloves: 8 mil glove, 13 inch
- Chemical resistant gloves: 22 mil glove, 18 inch with extended cuff

Notes:

agrisafe.org

Fit is key.

Eye wear should cover from the eyebrow to the cheekbone, and across from the nose to the boney area on the outside of the face and eyes.



To determine your glove size, wrap a tape measure around your dominant hand just below the knuckles, not including the thumb. The measurement in inches is your numerical glove size.

Size #	
5	XXS
6	XS
7	S
8	M
9	L
10	XL
11	XXL

Cleaning It All Up

PPE Clothing Selection

- Use PPE original package manufacturer labels for guidelines to minimum protection
- Select PPE designed to be as cool as possible
- Long sleeved cotton shirts, long pants, wide brimmed hats shoes with good soles and toe coverings are often adequate
- Cooling vests and scarves are options under heavy gear
- Non-woven polyolefin (Tyvek) *does not* allow for air passage –
  - *use for as short a time as possible in high heat*
- Rubber and chemical coatings also prevent air passage
- Footwear - deep channels, lugs, leather can absorb chemicals

Pesticide Laundering Guidelines

http://www.pesticides.montana.edu/reference/laundering.html

Cleanup Resources

High Priority

If have an unknown material-hold to its highest level of toxicity, abrasiveness, flammability, and corrosiveness.

County/Regional Health Departments/Hospitals/Trauma Centers

FFA/Ag teachers

State and local fire departments

Local County Police

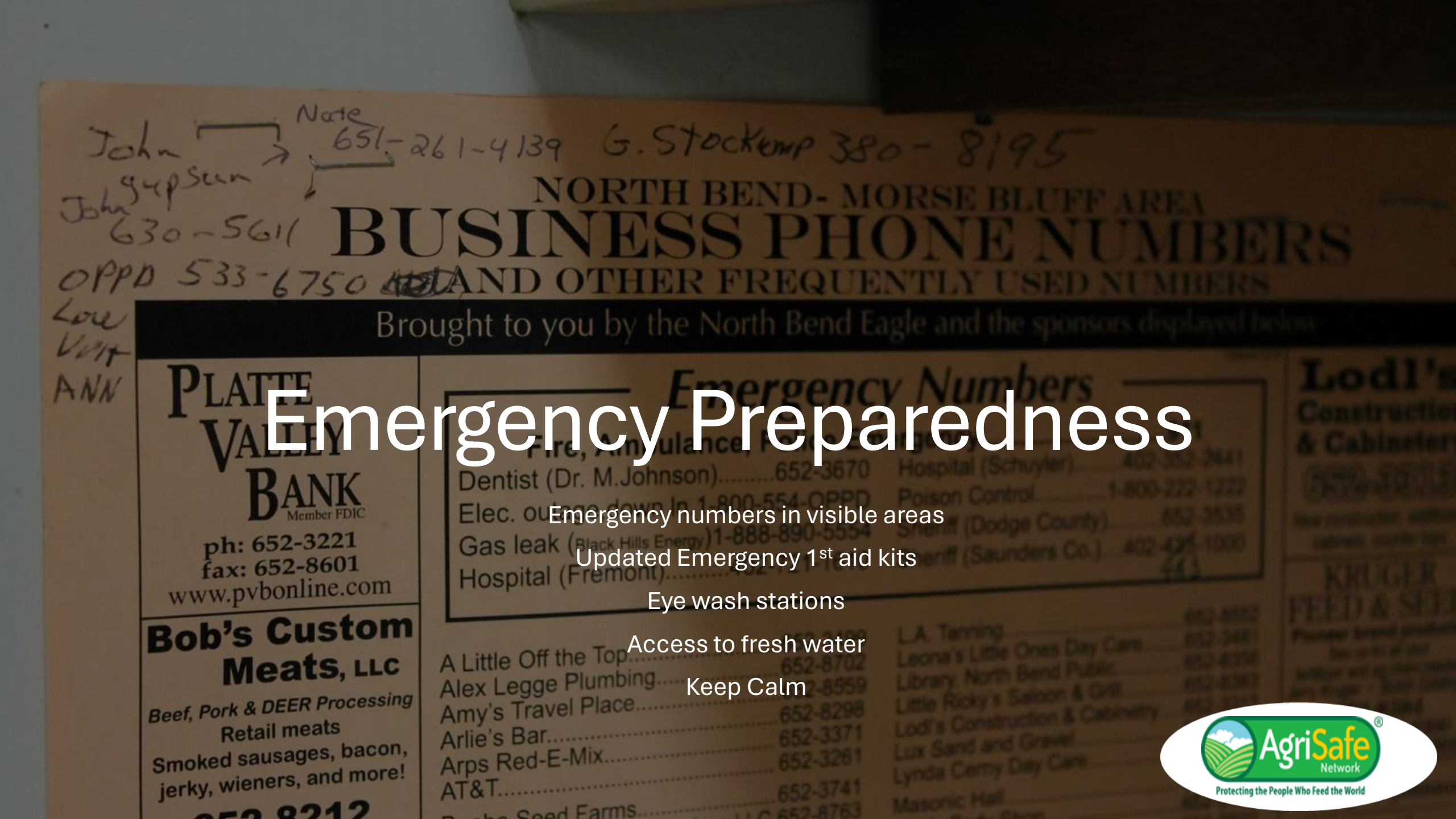
County EMS Services

Hazmat clean up kits (Newpig.com)

Regional Ag Safety and Health Centers

Cooperatives; especially those that handle fuels and chemicals

AgriSafe Network
Protecting the People Who Feed the World



Emergency Preparedness

Emergency numbers in visible areas

Updated Emergency 1st aid kits

Eye wash stations

Access to fresh water

Keep Calm

AgriSafe Network
Protecting the People Who Feed the World

Take Home Message

- ✓ The Label is the Law
- ✓ Know Your Hazards
- ✓ PPE- Right Fit, Right Environment, Right PPE
- ✓ PPE Accessibility

AgriSafe Network®
Protecting the People Who Feed the World

Thank You!

Farm Credit Services of America

Nebraska Women in Agriculture, Purdue University