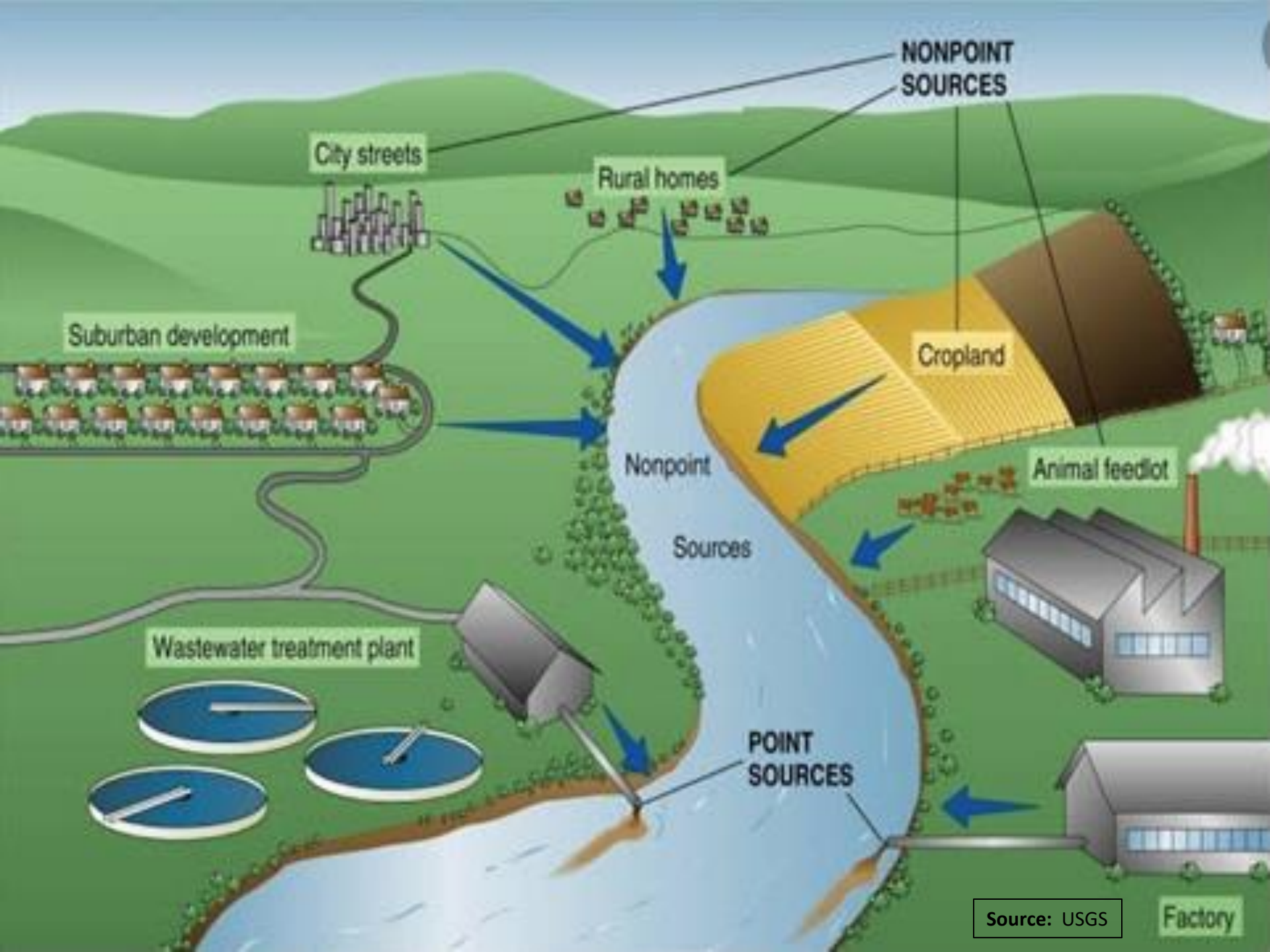


Staying on Target:

A guide for avoiding off-target damage caused by herbicides





Source: USGS

Factory

Preventing Point & Nonpoint Pollution as Chemical Applicators

- Application timing
- Application method
- Proper equipment calibration
- Proper herbicide selection
- Consideration of site conditions

Follow Label Directions!

Remove the clothing immediately if pesticide gets inside. Wash the clothing thoroughly and put on clean clothing.
Remove PPE immediately after handling this product. Wash the face, hands, and forearms thoroughly with soap and water.
Remove PPE before removing. As soon as possible, wash the inside of gloves into clean clothing.
Change the clothing immediately if pesticide gets inside. Wash the clothing thoroughly and put on clean clothing.
Remove PPE immediately after handling this product. Wash the face, hands, and forearms thoroughly with soap and water.
Remove PPE before removing. As soon as possible, wash the inside of gloves into clean clothing.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate.

This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination.

Physical or Chemical Hazards

Combustible: Do not use or store near heat or open flame. Do not cut or weld container.

DIRECTIONS FOR USE

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

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

Application Timing

- **DEPENDANT UPON:**
 - 1) **LABELED USE**
 - 2) **Management goal and target species**
 - 3) **Growth stage of both target plant and commodity**
 - 4) **Weather conditions**
 - 5) **Site conditions**

Herbicide Drift

- Influenced by:
 - a) Application methods
 - b) Meteorological \ Climatic Factors
 - c) Chemical Formulation

ORGANIC
FARM
DO NOT
SPRAY

Herbicide Drift: Spray Droplet Size

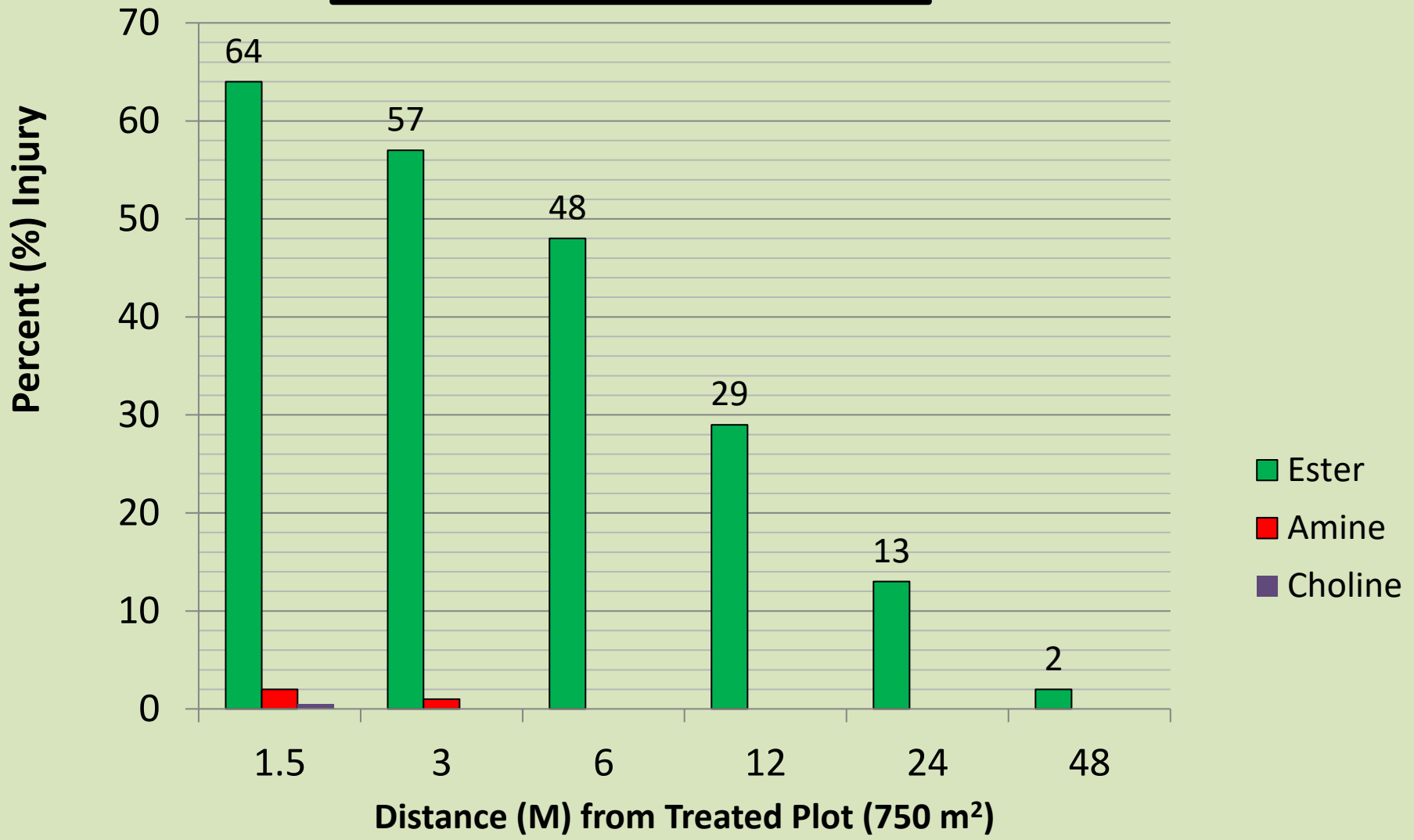
- Large droplets less likely to drift than small
- Determined by nozzle orifice and pressure
- Utilize drift reducing nozzles
- Use proper adjuvants- drift control agents & surfactants

Herbicide Drift: Height of Herbicide Release

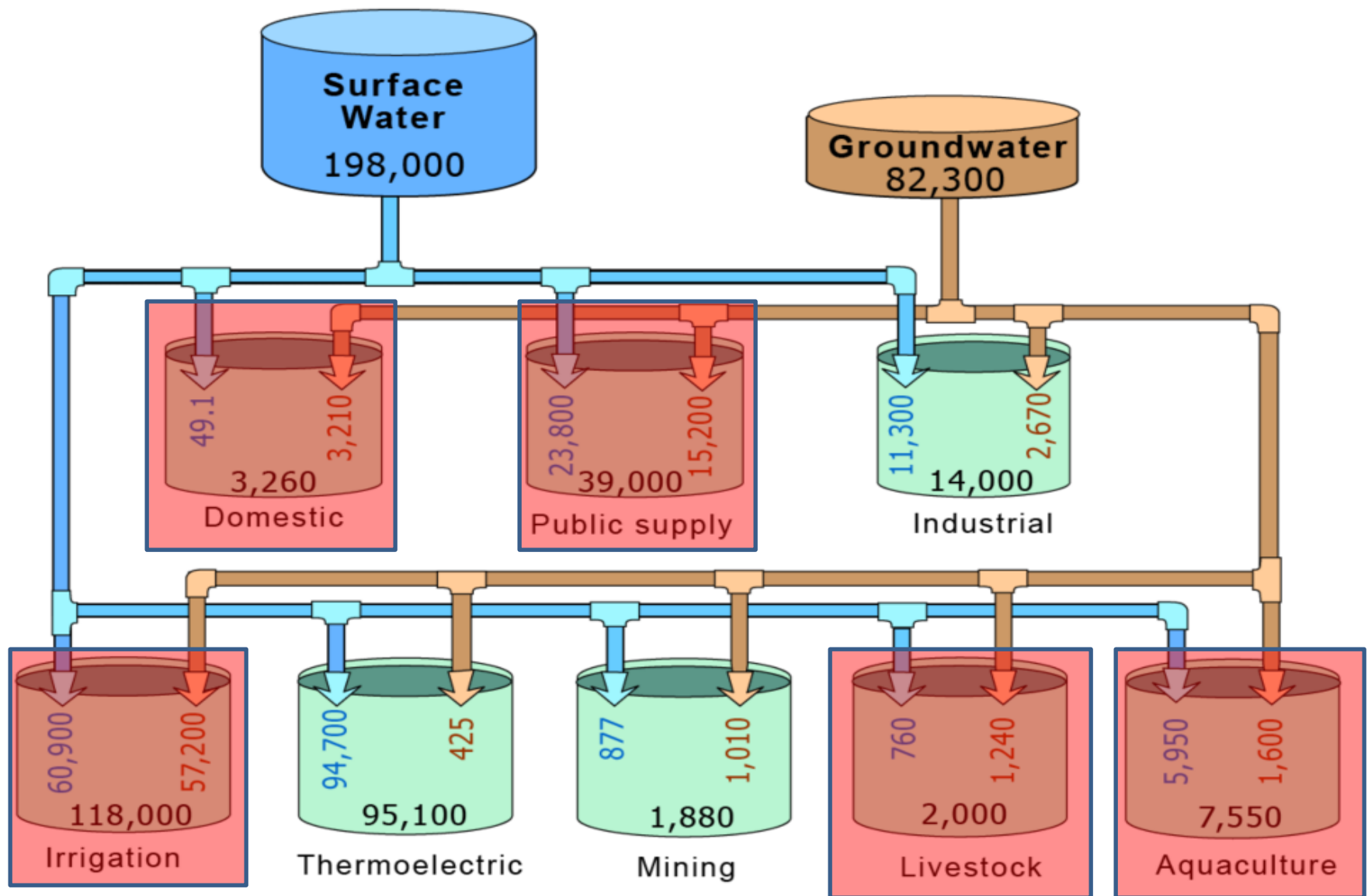
- Should be made as close as possible to target soil or plant
- Refer to nozzle manufacturer literature
- Ensure proper nozzle orientation



Volatility of 2,4-D Formulations



Source and use of freshwater in the United States, 2015



Explanation

➡ 1,234 Surface water

➡ 1,234 Groundwater

1,234 Total water use

Data are in million gallons per day and rounded

Surface Water Pollution

Causes:

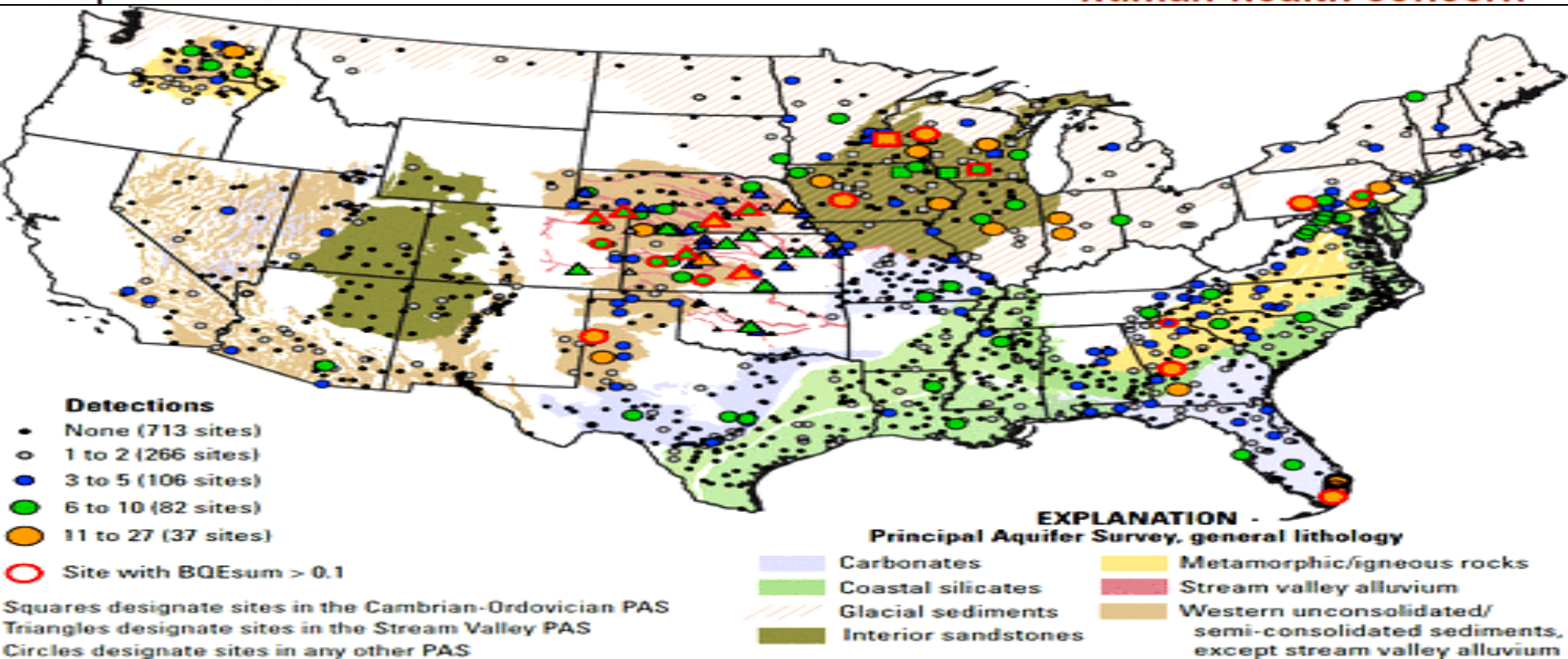
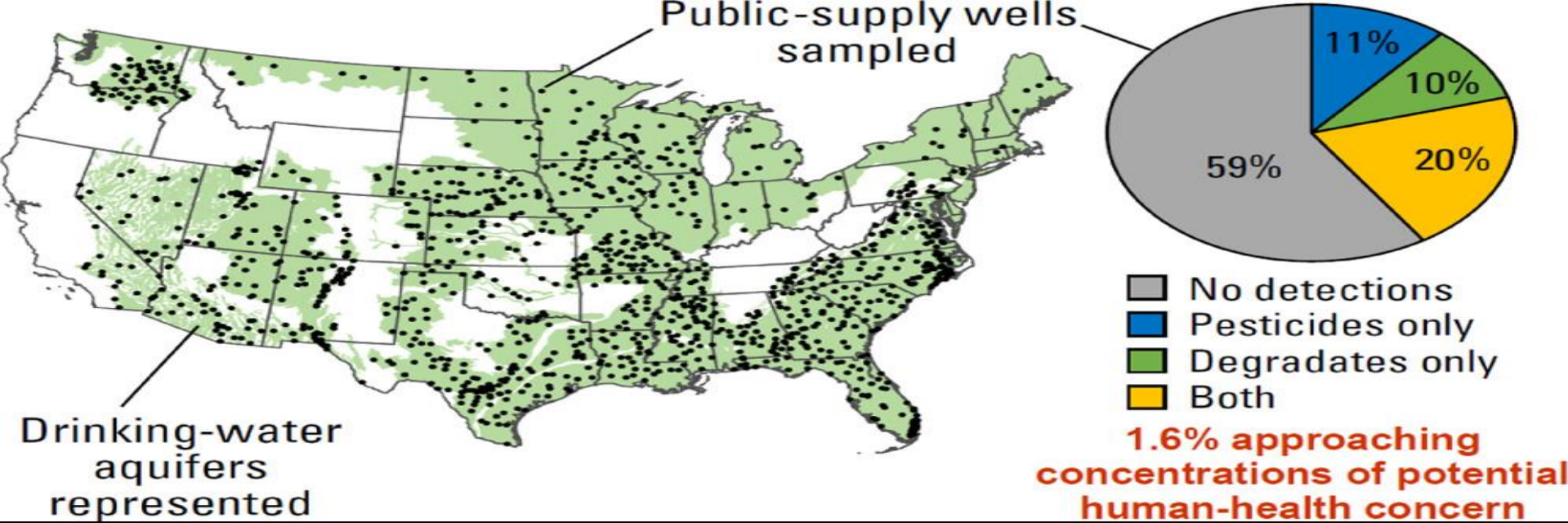
- Drift
- Runoff
- Accidental Application
- Improper Disposal
- Windblown Soil



Herbicide Fate in the Environment

Degradation Influenced By:

- Photochemical- Broken down by UV radiation
- Microbial- Broken down by microorganisms
- Chemical- Hydrolysis & Oxidation
- Metabolism- Broken down by plants & animals



Pollution in Context

- Cantilever Enhanced Photoacoustic Spectroscopy Quantum Cascade Laser Source Analysis
- High-Performance Liquid Chromatography w\
Mass Spectrometry
- Parts Per Quadrillion (PPQ)
1,000,000,000,000,000
- Equivalent to 1 second in 31.7 million years

In Conclusion

- READ THE LABEL!!!
- Thoroughly assess site conditions
- Follow safe handling and application practices
- Think ahead....
- Communication reduces conflict
- Utilize FieldWatch Programs:
 - DriftWatch-Speciality Crop Registration
 - FieldCheck-Applicator Registration
 - BeeCheck-Apiary Registration

A close-up photograph of a purple thistle flower. A grasshopper is perched on the flower, and a wasp is flying nearby. The background is a blurred field of similar plants.

Thank You!

Huerfano County Noxious Weed Department

Staff:

Charles Bryant-Department Manager

Rod Smircich- Experienced Technician