

Environmental Health: Preventing Exposure to Hazardous Substances

Presenter's Name

Presenter's Title

Title of Event

Date of Event

What is environmental health?

- ❑ Environmental health focuses on the relationship between the environment and human health.**
- ❑ The Agency for Toxic Substances and Disease Registry (ATSDR) protects human health from the effects of contaminants and hazardous substances found in the environment.**

Why is this important to you?

□ Having knowledge about environmental health will allow you to

- Protect you and your family from hazards in your environment
- Better understand the results of ATSDR's investigations
- Know what questions to ask the U.S. EPA, ATSDR, and other public health officials



What is a contaminant

- ❑ **A substance that may be harmful to human health or the environment**
- ❑ **Other terms:**
 - Hazardous substances
 - Pollution
 - Toxic substances
- ❑ **We will also be discussing exposure to chemicals. Many chemicals can be hazardous substances.**

What is exposure?

- ❑ **An exposure occurs when a contaminant enters your body through**
 - Breathing
 - Touching
 - Eating or drinking

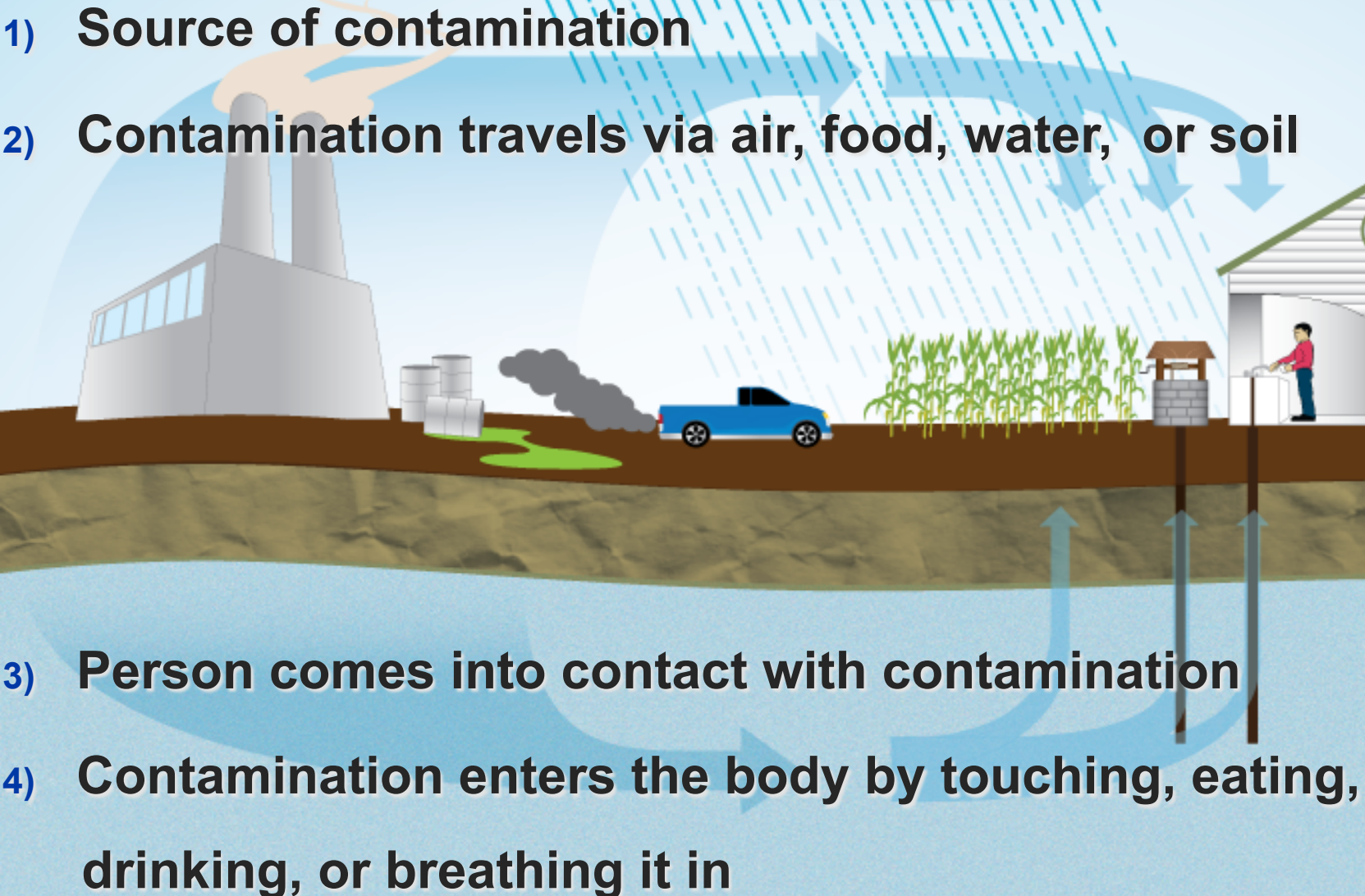
- ❑ **Remember, before a contaminant can harm you, it has to enter your body.**

Not all exposures cause harmful effects

- ❑ **Your general health plays a big role in how much you can be affected by being exposed to a contaminant**
- ❑ **Other factors include**
 - the type of chemical you were exposed to,
 - the amount of a chemical you were exposed to,
 - how long the contact lasted,
 - how often you came into contact with a chemical, and
 - how the chemical entered your body.

Contamination

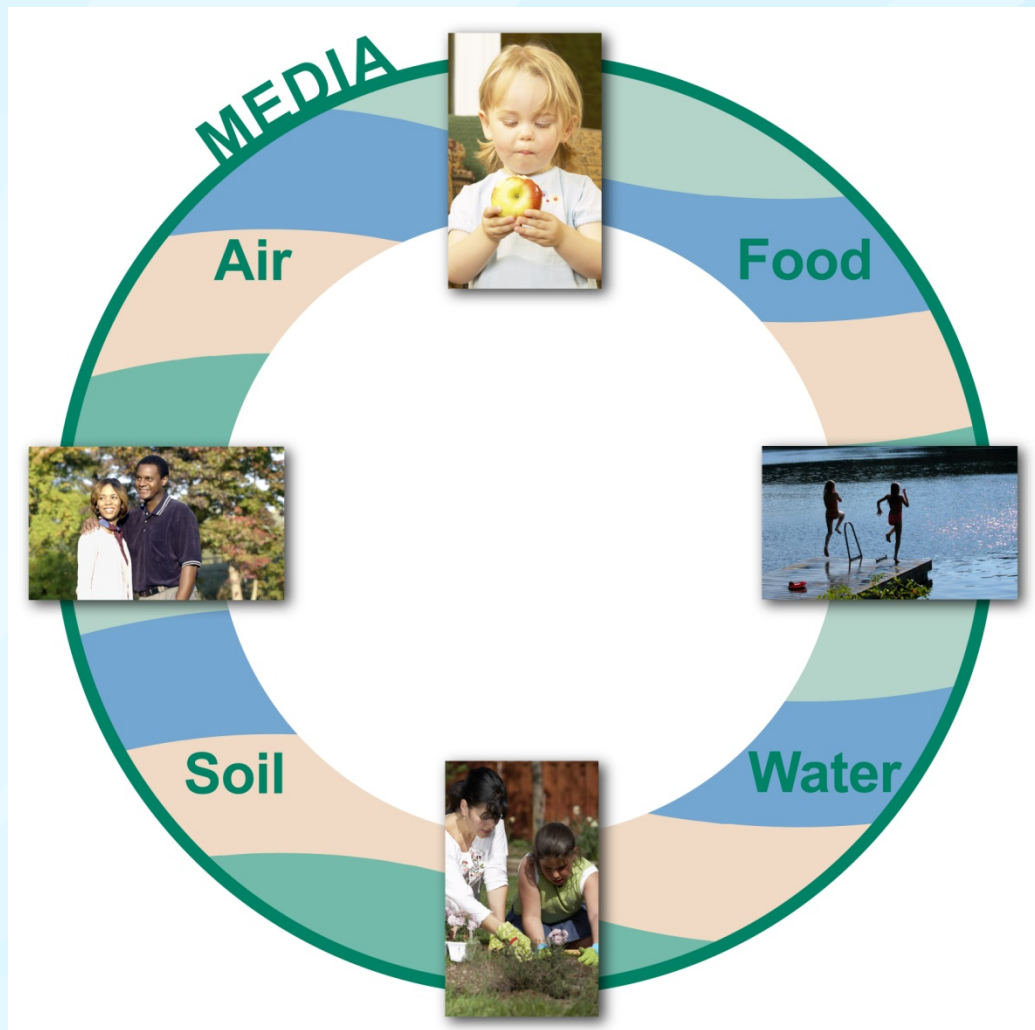
Exposure

- 1) Source of contamination
 - 2) Contamination travels via air, food, water, or soil
 - 3) Person comes into contact with contamination
 - 4) Contamination enters the body by touching, eating, drinking, or breathing it in
- 

Air, Water, Soil, and Food

WHERE IS CONTAMINATION IN THE ENVIRONMENT?

Where is Contamination in the Environment?



Air

- ❑ Most air pollutants come from man-made sources
- ❑ Some air pollutants also come from natural sources, such as forest fires and volcanoes.
- ❑ Air pollution may cause breathing problems
- ❑ Air pollution can also bother your eyes and skin



Water

- ❑ **Harmful substances enter the water when rain or water washes them into rivers, lakes, streams, or the ground**
 - Harmful substances can also be “dumped” into rivers, lakes ,or streams
- ❑ **When contaminants enter sources of groundwater and surface water, they can a**
 - Drinking water
 - Part of the food chain
 - Human and aquatic life



Soil

- ❑ Chemicals such as pesticides can pollute the soil
- ❑ Polluted soil can affect the food you grow and eat and the water you drink
- ❑ Polluted soil can also spread through the air as dust particles.



Food



Humans may become exposed to contaminants if

- ❑ **They eat food or drink beverages that have been exposed to chemicals or other contaminants**
- ❑ **Plants and animals become exposed in their natural habitat and humans eat them.**

Touching, Breathing, Eating, Drinking

PATHWAYS

Exposure Pathways



Touching

Contact with skin (dermal)

- ❑ Chemicals can enter your bloodstream through the pores, small cracks, or cuts in your skin
- ❑ Chemicals may irritate or burn your skin, exposing it to infection



Contact with eyes

- ❑ Some chemicals may burn or irritate your eyes
- ❑ Some chemicals may enter your body through the eye

Breathing (Inhalation)

Contaminants that enter the lungs

- ❑ can either have a direct effect on the cells of the lung**
- ❑ or can be absorbed into the bloodstream**

Contaminants that enter the body by breathing include

- ❑ gases, vapors, aerosols, particles, and fibers (such as asbestos)**

Eating and Drinking (Ingestion)

- ❑ Food or drinks may have chemicals on or in them, and the chemicals can enter your body. These chemicals are absorbed, or taken in, by the digestive system.
- ❑ Hazardous substances can be ingested
 - They are on hands, clothing, or hair.
 - They are on food or in beverages.
 - Children eat or drink chemicals or soil (pica)
 - Children's hands pick up hazardous dusts
 - You play or walk in a contaminated area



Children, Pregnant Women, and Older Adults

THE EFFECT OF CONTAMINATION ON SENSITIVE POPULATIONS

Do toxic substances affect everyone the same?

❑ **Some populations are at a higher risk of the effects of toxic substances than others. These populations include**

- Young children
- Older adults
- Pregnant women



Children

❑ Children:

- Are closer to the ground
- Are more likely to put their hands in their mouths
- May eat dirt
- Have a limited diet



❑ Chemicals may be passed in breast milk

❑ Developing tissues of children are vulnerable

How to protect children from exposure

- ❑ Wash hands!
- ❑ Wash toys, bottles, and pacifiers often
- ❑ Keep poisons locked up
- ❑ Keep children away from pesticides, cleaning products, and other chemicals
- ❑ Watch where they play



Pregnant and Nursing Women



- ❑ Levels of immunity among pregnant and nursing women are lower than normal
- ❑ Anything the mother eats, drinks, or touches may be passed to her unborn child
- ❑ Contaminants are passed through breast milk

How to Protect Pregnant Women from Exposure

- ❑ **Be careful what you eat**
 - Eat fish that's low in mercury
 - Shrimp, trout, tilapia, catfish, crab, calamari (squid), & wild Alaska salmon
 - Wash fruits and vegetables
- ❑ **Wear gloves and a face-mask when gardening**
- ❑ **Have someone else do the painting**
- ❑ **Use no-VOC paint**
- ❑ **Avoid using pesticides**



Older adults

Older adults

- ❑ May have weak immune systems
- ❑ Tend to have more sensitive lungs
- ❑ May be less aware of environmental emergencies
- ❑ May have more trouble moving to a safer place
- ❑ May have poor nutrition



How to protect older adults from exposure



- ❑ Use clear, large print labels on all chemical products
- ❑ Do not store chemicals in food containers
- ❑ Do not store food in chemical containers
- ❑ Be aware of local concerns

At Home, At Work, & At Play

PREVENTING EXPOSURES

At Home

❑ Home built before 1980?

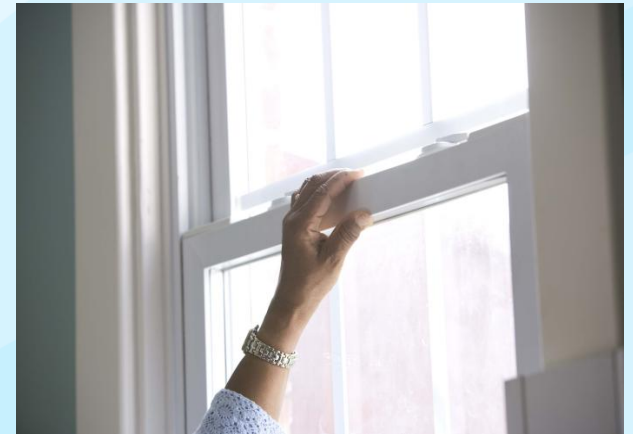
- Asbestos
 - Insulation
 - Wiring
 - Shingles
- Mercury
 - Thermostats
 - Thermometers
- Lead
 - Paint
 - Plumbing

❑ Avoid tobacco use and smoke



Cleaning Products

- ❑ Open window or turn on fan when you clean
- ❑ Store safely away from children
- ❑ Keep in original containers
- ❑ Do not mix different products
- ❑ Read labels and follow directions
- ❑ Alternatives to chemical cleaners
 - Vinegar (mix with water for an all-purpose cleaner)
 - Lemon juice (removes stains, serves as glass cleaner, deodorizer)
 - Baking soda (mix with water for an all-purpose cleaner)
 - Olive oil (furniture polish)



Heating your Home



- ❑ **Wood-burning fireplaces**
 - Have your chimney checked and cleaned
 - Do NOT burn treated wood
- ❑ **Kerosene Heaters**
 - Ventilate, follow instructions, and keep 16” away from anything flammable
- ❑ **Don't use gas ovens or burners to heat your home**
- ❑ **Never use gas or charcoal-fueled barbecues or grills in the house, carport, or garage**
- ❑ **Install carbon monoxide detectors**

In the Garage

- ❑ Find a source for throwing out old oil
- ❑ Use paint thinners, kerosene, and gas with care
- ❑ Keep products in well marked (preferably original) containers
- ❑ Store all hazards out of reach of children
- ❑ Use masks, gloves, goggles, and appropriate clothing
- ❑ Never idle your car in a closed garage



In the Garden and Yard

- ❑ **Take off your shoes at the door to avoid tracking soil into the home**
- ❑ **Wash your hands after working**
- ❑ **Contaminated soil?**
 - Use raised-bed gardening, dampen soil to reduce dust
- ❑ **Using herbicides, pesticides, and fertilizers**
 - Use natural products if available
 - Follow directions, calculate correct amount, and don't apply before/after heavy rain
- ❑ **Always wash fruits and vegetables**
- ❑ **Wash pets frequently**



At Work

Possible work exposures include dust, fibers, chemicals (liquids or fumes), radiation, or biologic agents

- ❑ Contamination can be carried with you on**
 - Your hair and body**
 - Your car**
 - Your clothes**
- ❑ Wear personal protective equipment**
- ❑ Shower or change clothes before you go home**
- ❑ Wash your work clothes separately**

Hobbies

- ❑ Be aware of the chemicals you are using
- ❑ Read the instructions
- ❑ Store correctly & away from children
- ❑ Wear gloves, masks, and other protective clothing
- ❑ Keep work area ventilated
- ❑ Wash your hands!
- ❑ Alternatives:
 - Investigate less toxic alternatives for wood strippers, paints, adhesives, etc.



Summary

- ❑ **Contaminants can be found in air, water, soil, and food**
- ❑ **Contaminants can enter your body by breathing, touching, eating, or drinking them**
- ❑ **Contamination must enter your body before it can make you sick**
- ❑ **Not all chemical exposures make you sick**
- ❑ **Some populations are more sensitive than others (pregnant and nursing women, children, and older adults)**
- ❑ **You can reduce your exposure**

Reduce Your Exposure

- ❑ Be aware of chemicals in everyday products**
- ❑ Be aware of any contamination or pollution around your home or work**
- ❑ Wash your hands**
- ❑ Wash fruits and vegetables before eating them**
- ❑ Read labels that warn you about chemical exposure**

Reduce Your Exposure

- ❑ Don't burn treated wood**
- ❑ Follow proper disposal guidelines for electronics, batteries, paint, and other chemical-containing products**
- ❑ Avoid cigarette smoke**
- ❑ Eat fish low in mercury**
- ❑ Follow local fish advisories**

Questions?

For more information please contact Agency for Toxic Substances and Disease Registry

4770 Buford Hwy. NE, Chamblee, GA 30341

Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348

E-mail: cdcinfo@cdc.gov Web: www.atsdr.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.