

Environmental Health

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COMMUNITY MEDICINE, FIRST SEMESTER 2015/ 2016

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Environmental Health

- ✓ Across the world, the environment is a key determinant of health and well-being.
- ✓ Unimproved water and sanitation, ambient air pollution, indoor pollution from solid fuels, and lead exposure are among the leading contributors to global burden of disease.
- ✓ In addition, many current and emerging exposures in food, water, soil, air, and consumer products adversely affect human health.

What is the environment?



The trees, air,
& soil around
us

ALL the places we
live, work & play



Our fields,
farms,
factories &
the food we
grow

Our oceans,
lakes, and rivers



What is Environmental Health?

The World Health Organization (WHO) defines environment, as it relates to health, as “all the physical, chemical, and biological factors external to a person, and all the related behaviors.”

Environmental health consists of preventing or controlling disease, injury, and disability related to the interactions between people and their environment.

What is Environmental Health?

Environmental Health is the field of science that studies how the environment influences human health and disease.

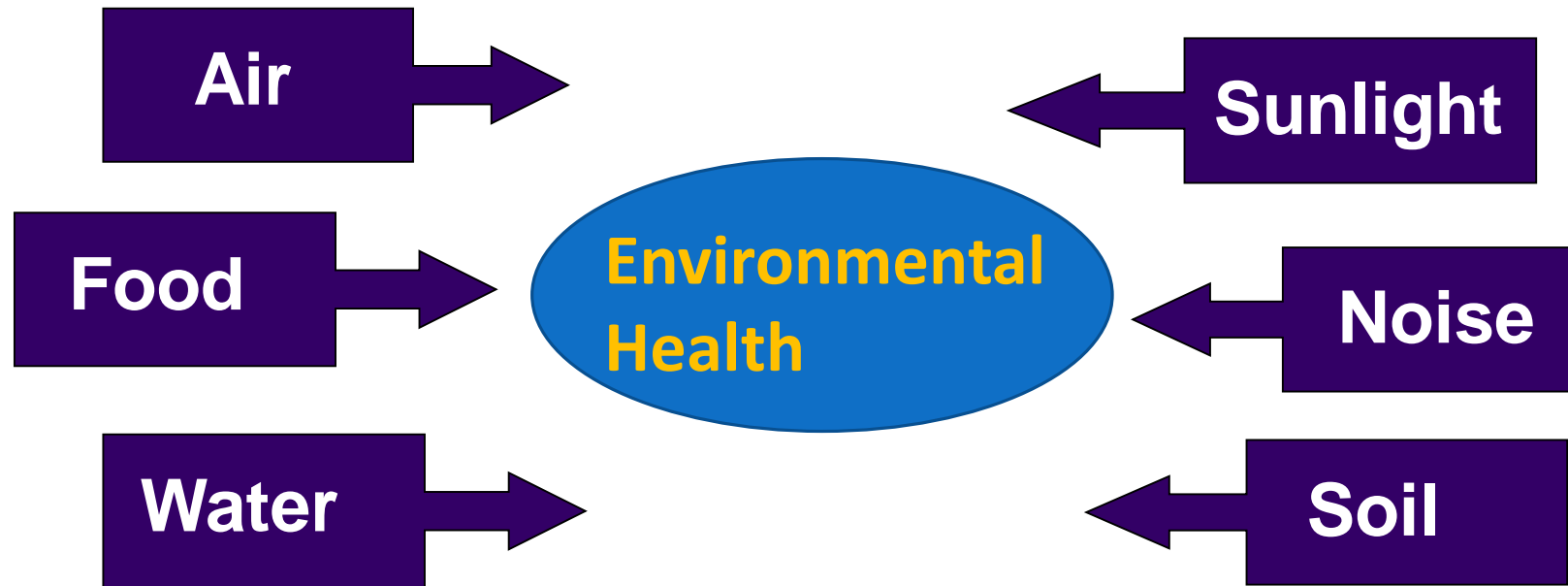
“**Environment**” in this context, means things in the natural environment like air, water and soil, and also all the physical, chemical, biological and social features of our surroundings.

Why Is Environmental Health Important?

Maintaining a healthy environment is central to increasing quality of life and years of healthy life.

Globally, nearly 25 percent of all deaths and the total disease burden can be attributed to environmental factors.

Environmental Health?



The study of how the environment affects our health.

Good Things Around Us (in the environment)

- ☐ Oxygen in the air
- ☐ Beautiful scenery to look at
- ☐ Nutrients in food
- ☐ Medicine & vitamins
- ☐ Family & friends

There are many things around us that help us stay healthy.

Hazards

- ✓ Every day, you come in contact with things in your environment that can help you or hurt you. Some of these things are important for keeping you healthy, such as oxygen or medicines.
- ✓ However, some of these things may be harmful to your health, such as tobacco smoke or snake venom.
- ✓ Things in the environment that are harmful are called **hazards** and include things like chemicals, disease-causing bacteria, loud noises and even stress.
- ✓ Hazards can be natural or human-made.

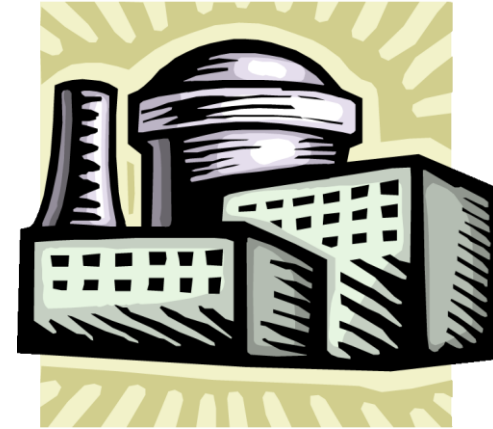
Environmental Health Careers

People working in the field of environmental health . . .

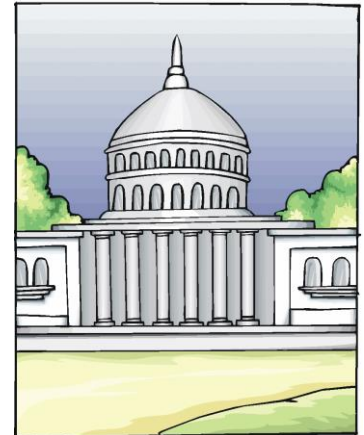


Work as
scientists in
research
labs

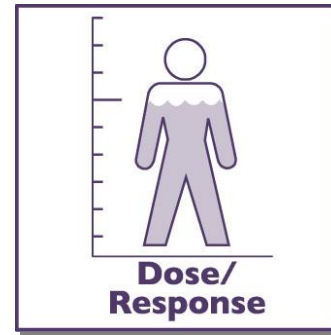
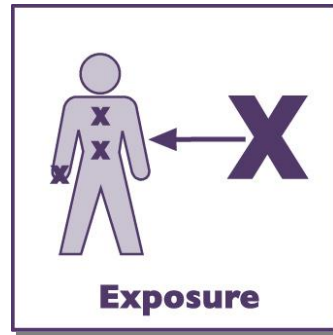
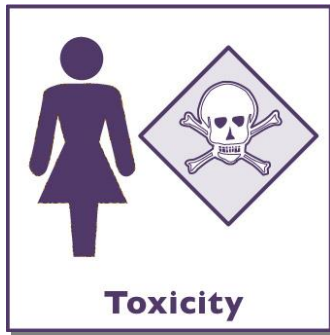
Work for
corporations
making sure
workplaces
are safe for
workers



Work for the
government
writing
regulations and
studying
pollution



The 7 Core Concepts



Toxicity

Toxic means poisonous or dangerous .

Toxicology is the study of poisons.

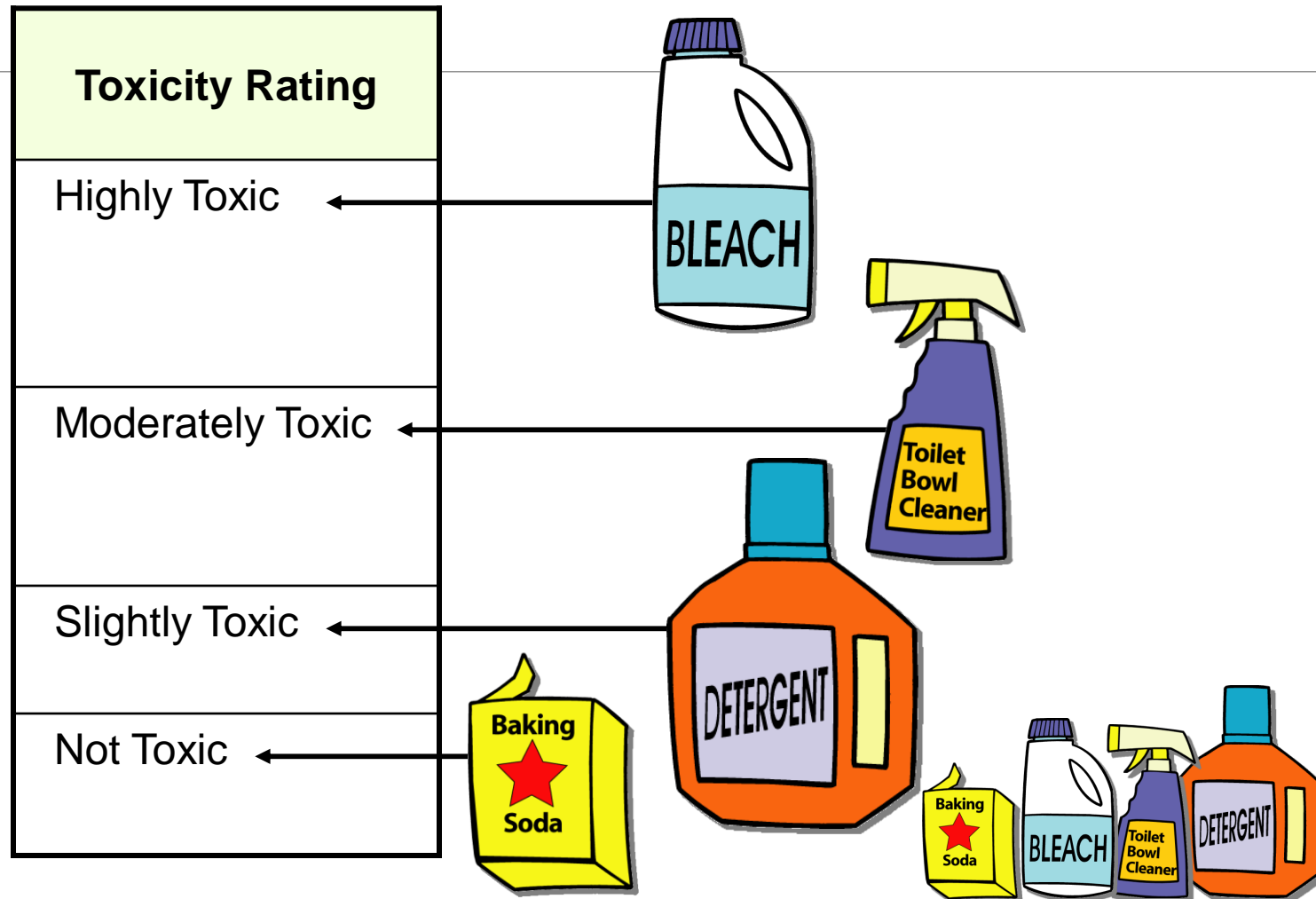
Toxicity is a measure of how dangerous a chemical is.

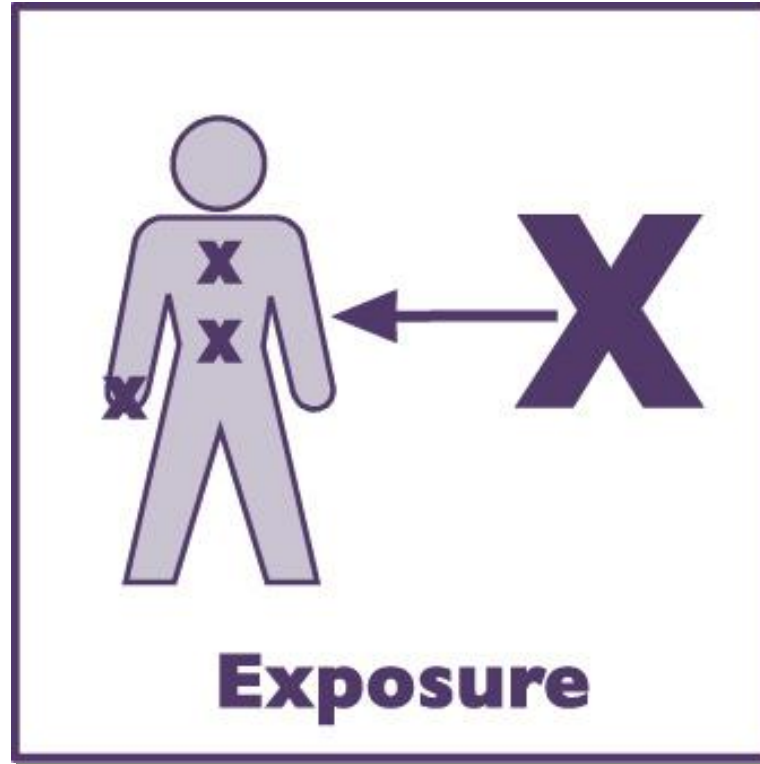
Toxicology

Toxicology is the study of how environmental hazards, such as natural and human-made chemicals, can enter our bodies and make us sick.

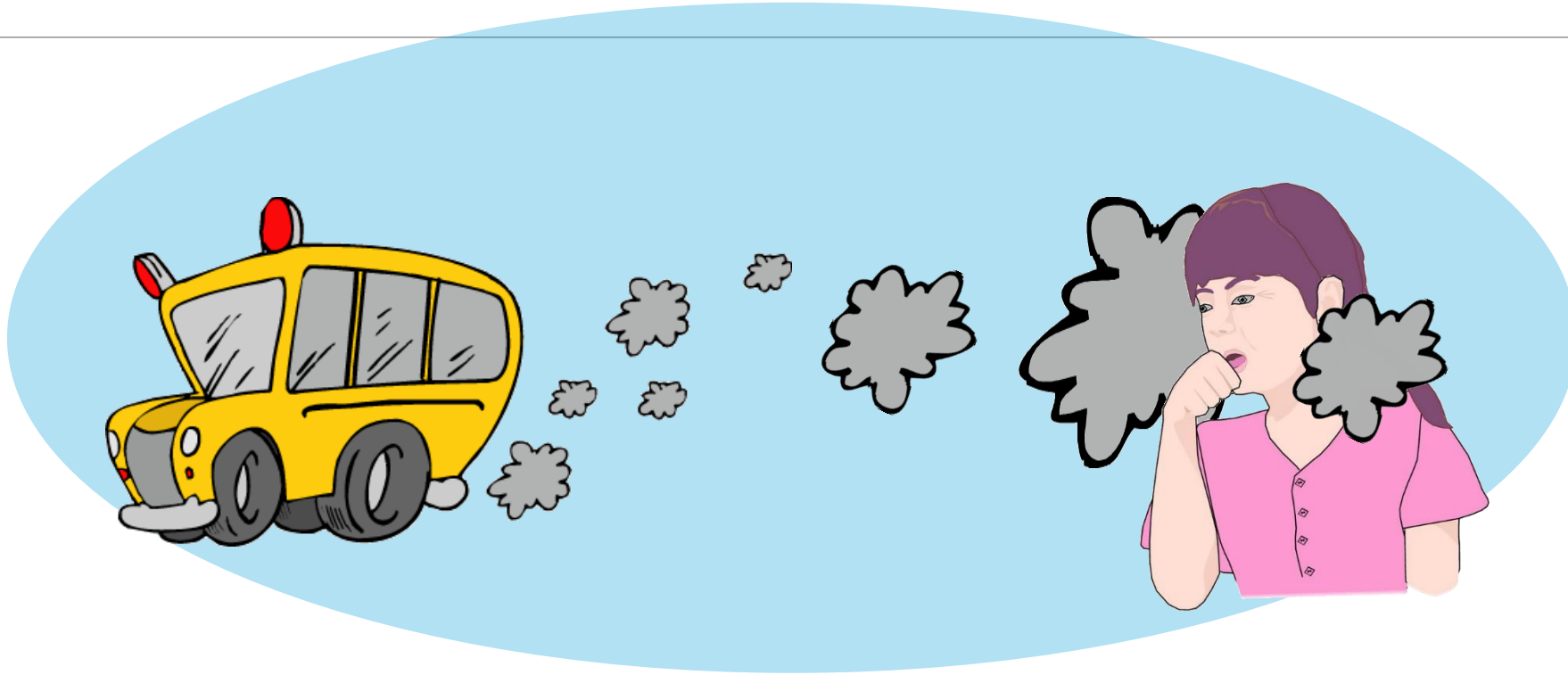
When scientists study different chemicals in the environment to see if they might be dangerous to humans, they are trying to understand the toxicity of those chemicals.”

How would rate these products in Toxicity?



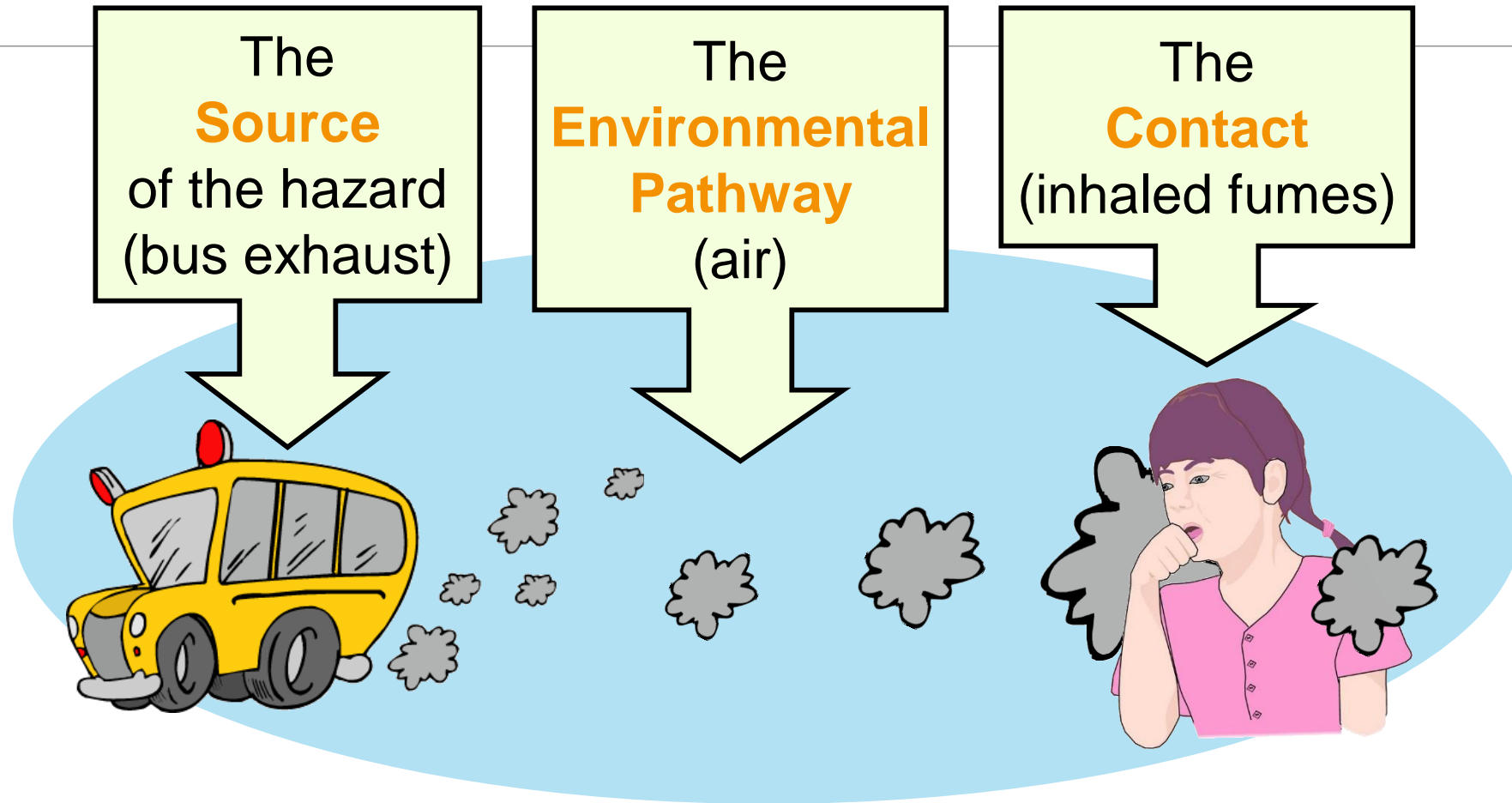


Exposure is

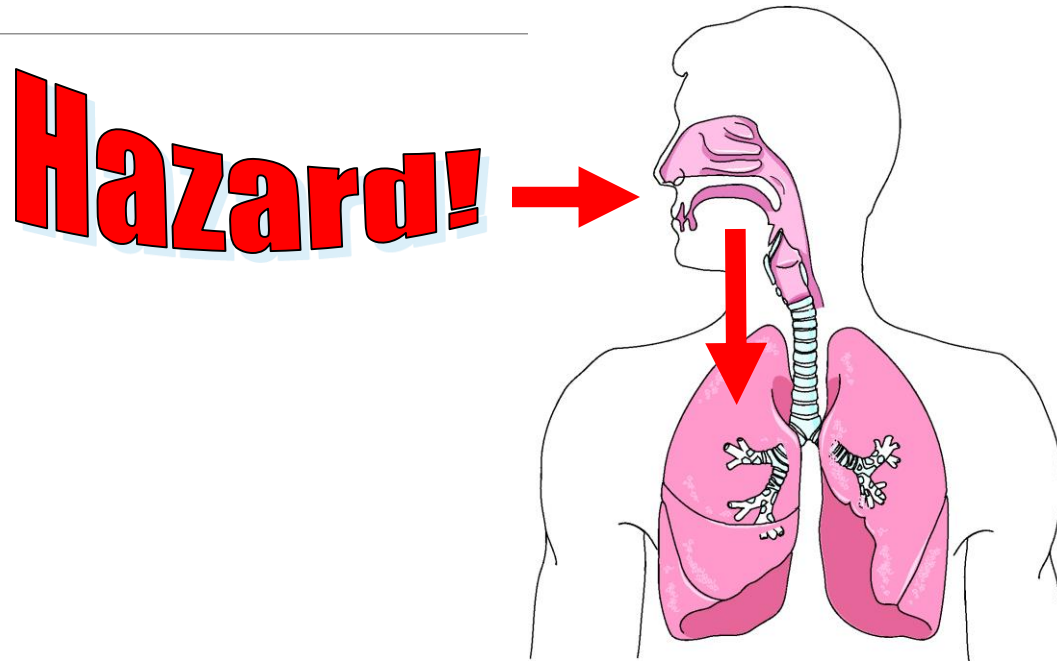


The total amount of a hazard that comes in direct contact with the body.

The 3 parts of exposure



Which route will the hazards take? **Route #1: Inhalation**

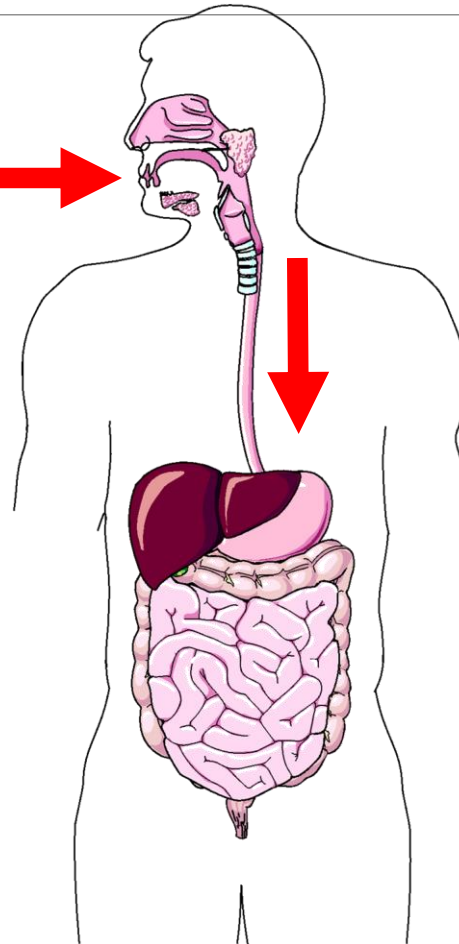


Inhalation:

Breathing. When chemicals enter the body through this route of exposure, they can get stuck in the lungs and/or be taken up into the bloodstream.

Route #2: Ingestion

Hazard!

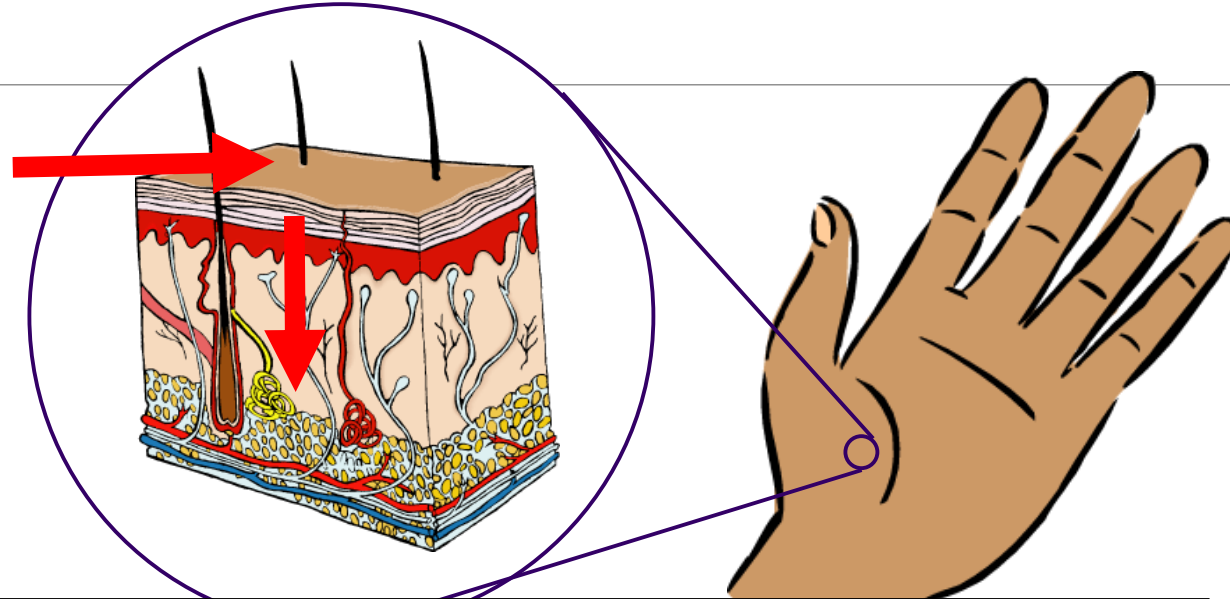


Ingestion:

Swallowing (usually by eating or drinking). When chemicals enter the body through this route of exposure, they can easily be taken up into the bloodstream.

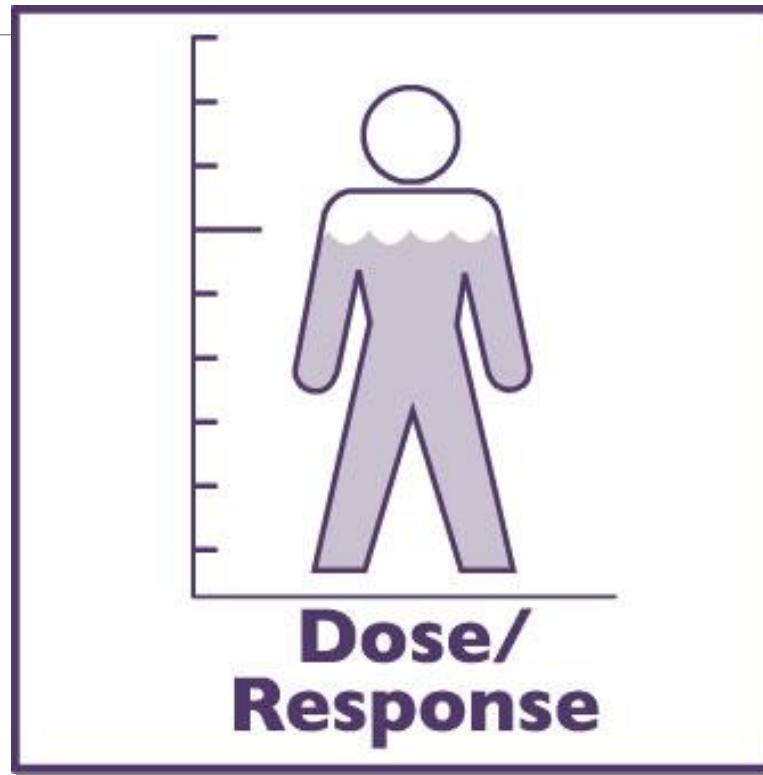
Route #3: Dermal Absorption

Hazard!

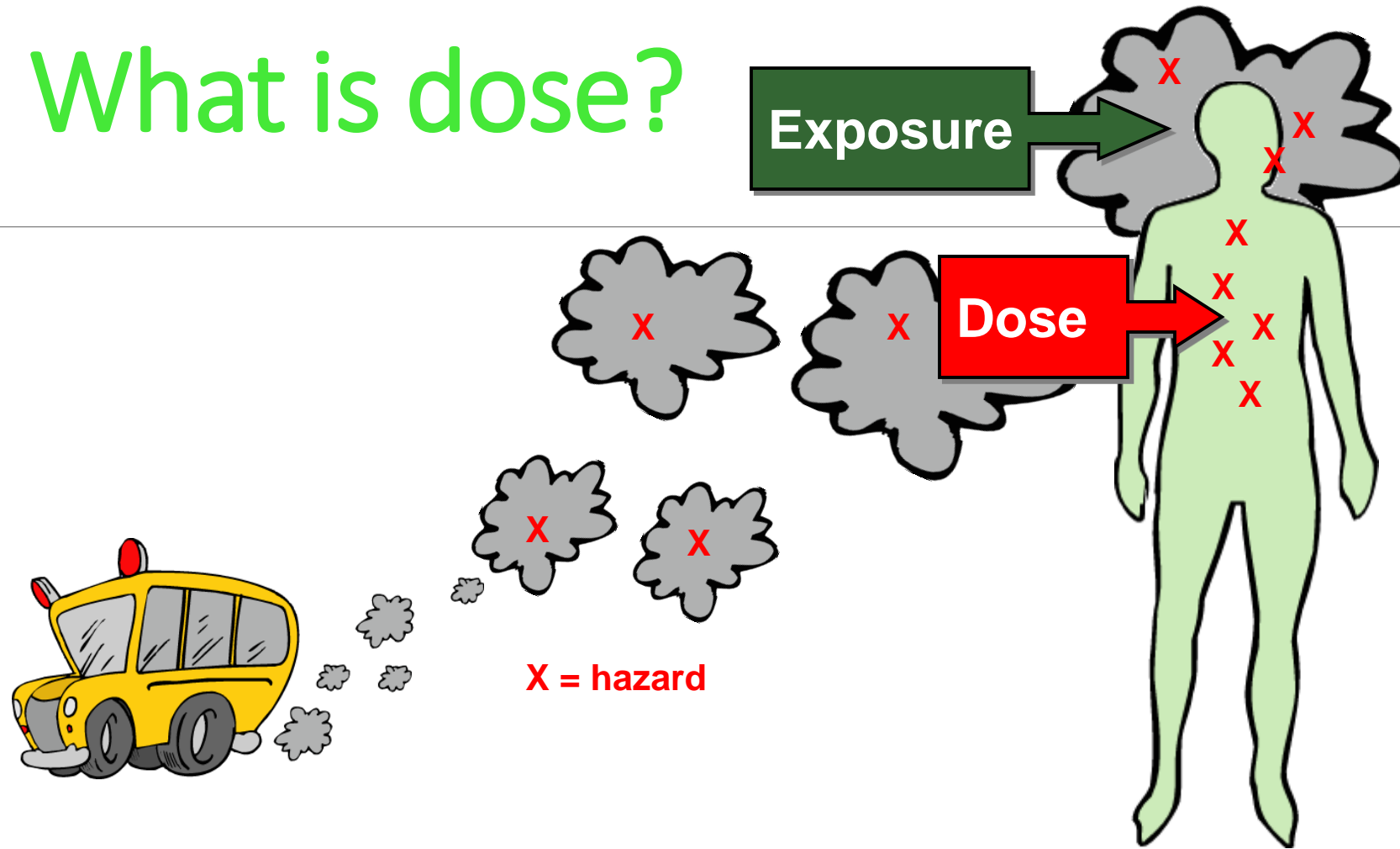


Dermal Absorption:

Absorbing a chemical through any part of the skin, including the eyes. When chemicals come in contact with the skin, they can sometimes enter the bloodstream through this route of exposure.

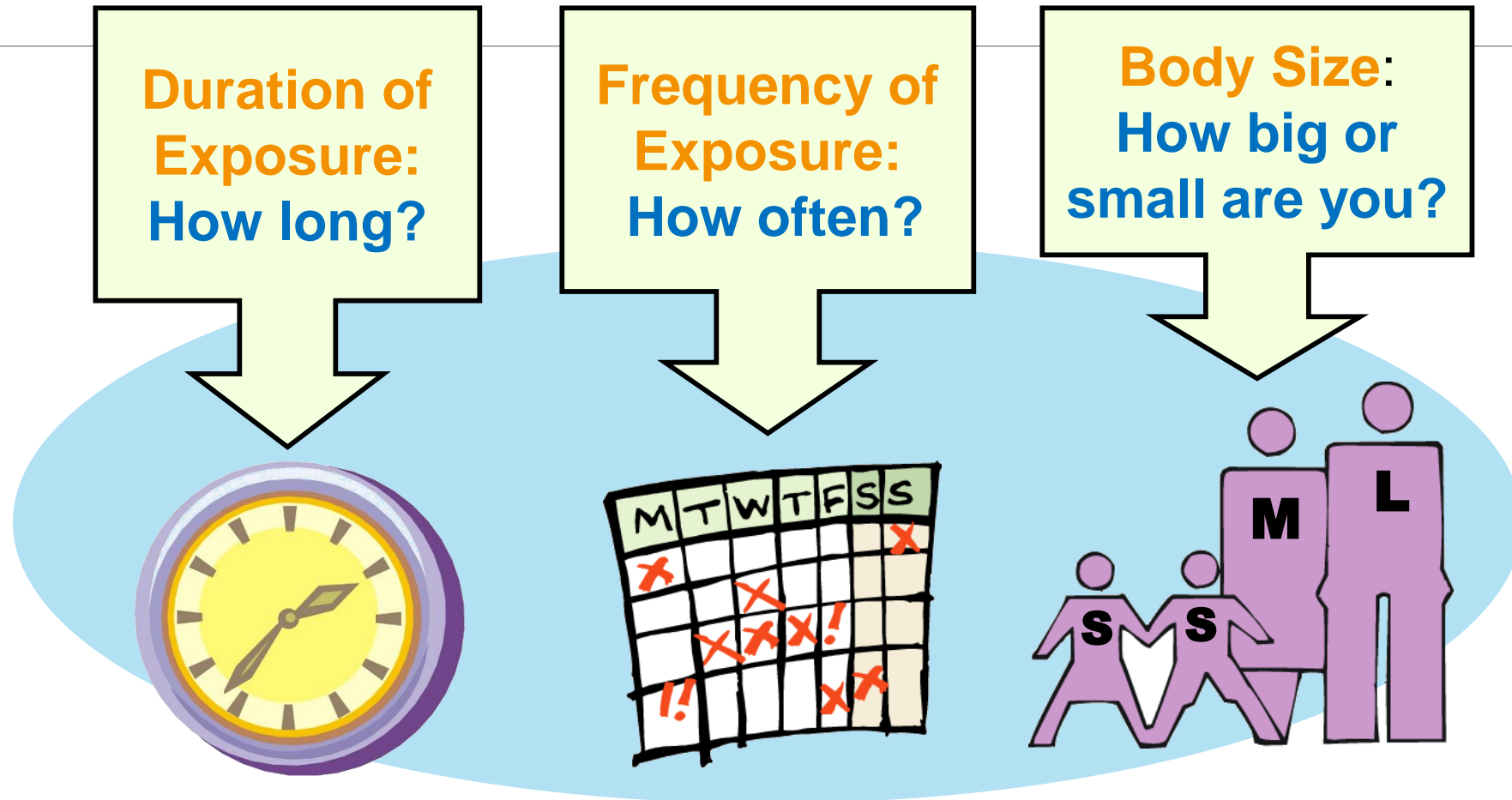


What is dose?



Dose is the amount of a hazard that actually **enters** your body.

Dose can depend on...



What determines Exposure?

Imagine that some people have been exposed to a hazardous chemical through one of the three possible routes of exposure. They have now received a **dose** of that chemical.

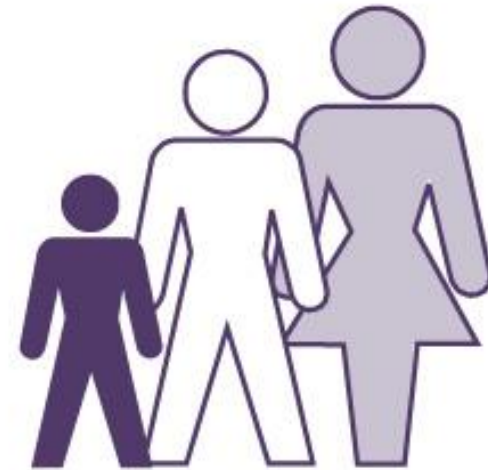
Dose is the amount of the hazard that actually enters the body. The amount that gets into their body (their dose) depends on many factors, including:

- 1. How long they are exposed**
- 2. How often they are exposed, and**
- 3. How big or small they are.**

Dose/ Response Relationship

The dose you receive can influence how your body responds to a hazard.

For most hazards, the larger the dose, the more extreme the response will be. The smaller the dose, the more mild the response will be.



**Individual
Susceptibility**

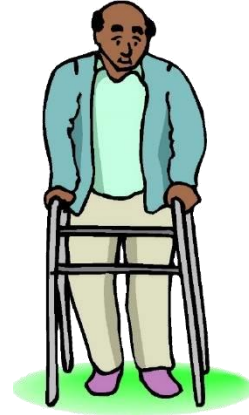
Individual Susceptibility



Individual Susceptibility



Pregnant women and their developing babies



Elderly people whose defense mechanisms are less efficient



Sick people who have weakened immune systems



Infants and children who are still developing

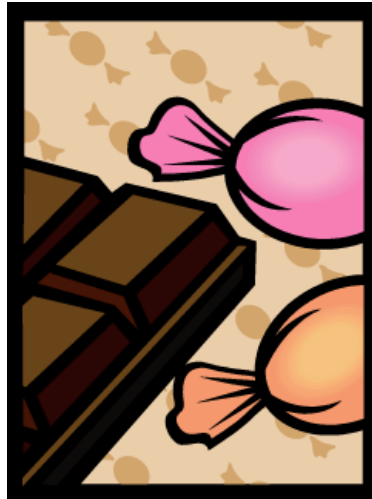


What are the risks & benefits?

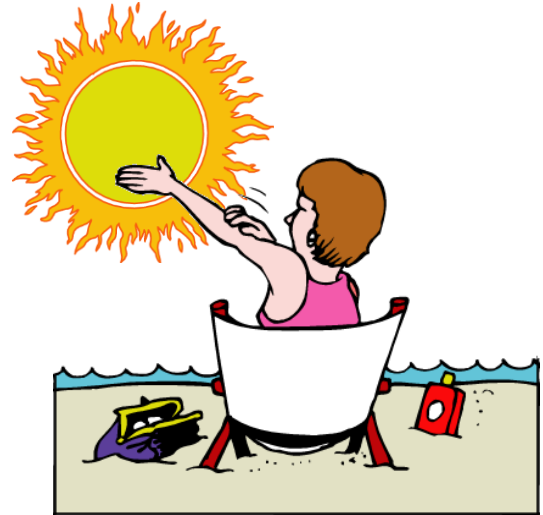
1



2



3



Risks and Benefits

We live in an industrial society that depends on the use of both natural and human-made chemicals to function. The use of these chemicals results in benefits to society as well as risks.

Pesticides, for example, make it easier to grow fruits. Unfortunately, in some cases, pesticides can make people sick.

Risks and Benefits

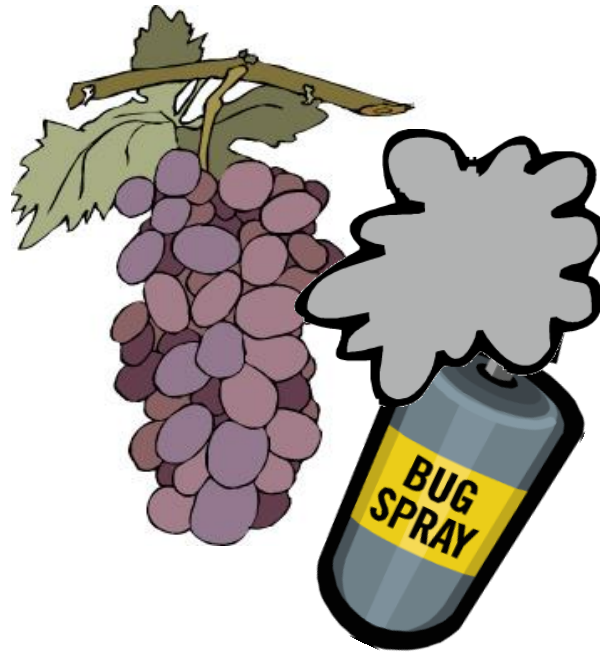
We can reduce the risk of getting sick without giving up the health benefits that fruit offers by washing or peeling the fruit before we eat it.

By understanding the risks and benefits that we face each day, we can make decisions that reduce our risk and keep us as safe and healthy as possible.

Risks & Benefits

BENEFITS

- No bugs!
- Better looking fruit that is more visually appealing
- Bigger crops so farmers can make more profit



RISKS

- People ingest pesticides with the fruit and get sick
- Pesticides get into dirt and water
- Animals ingest pesticides and get sick



What is environmental justice?



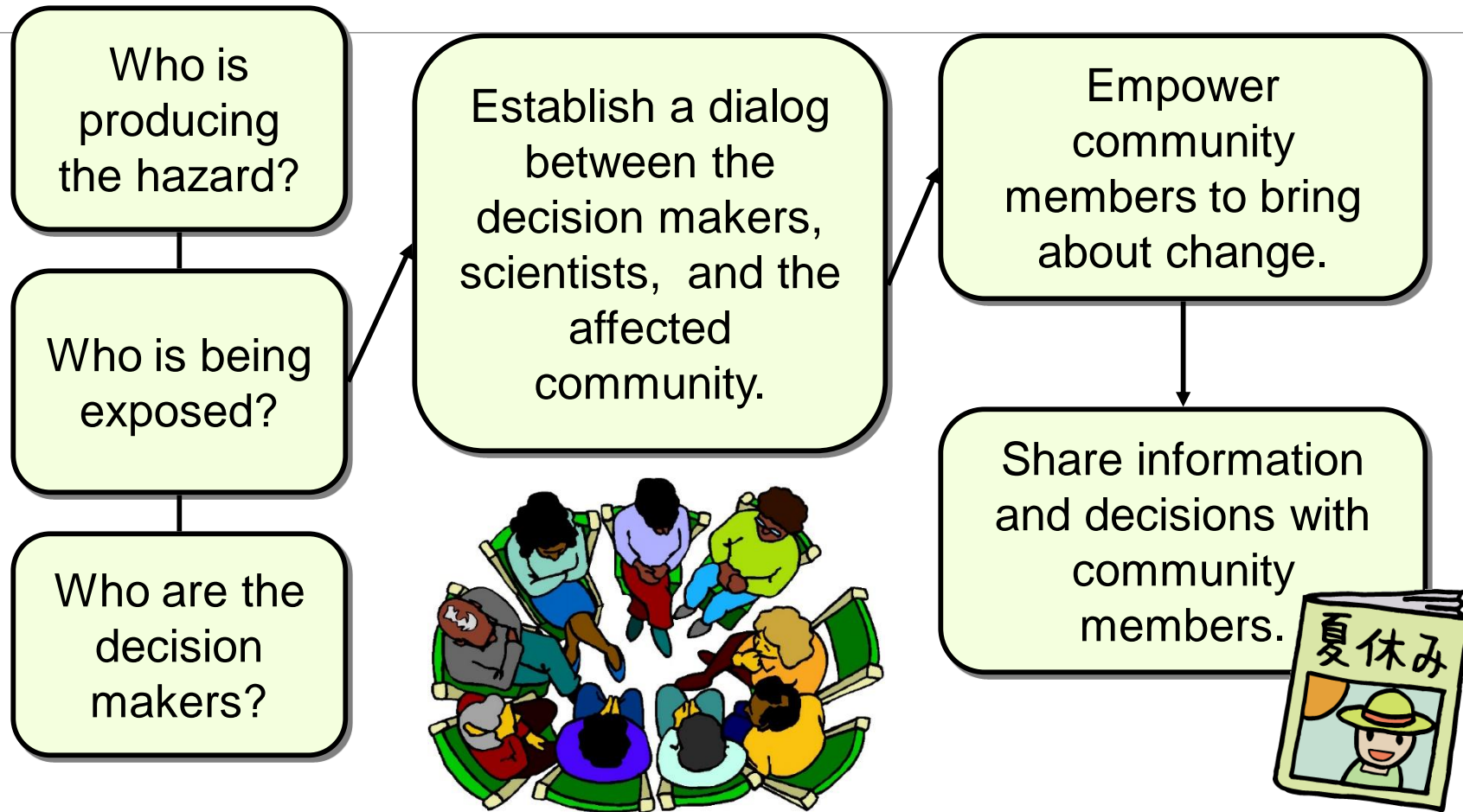
Environmental Justice (EJ) means that everyone has a right to live in an environment that doesn't make them sick, regardless of their race, culture, or income.

Environmental Justice

Unfortunately, some neighborhoods or communities are exposed to more environmental hazards than others, and may suffer higher rates of health problems.

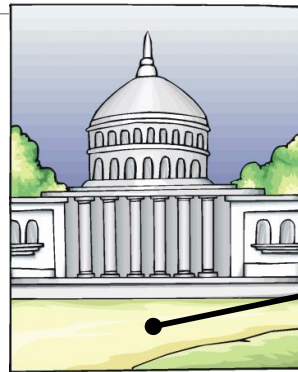
These communities often have less economic or political power in society when decisions are made. For example, toxic waste dumps, polluting factories, and busy highways are often built in lower-income neighborhoods or communities of color.

The E J Process





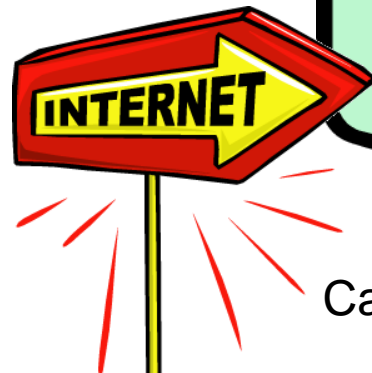
Where can you go for information?



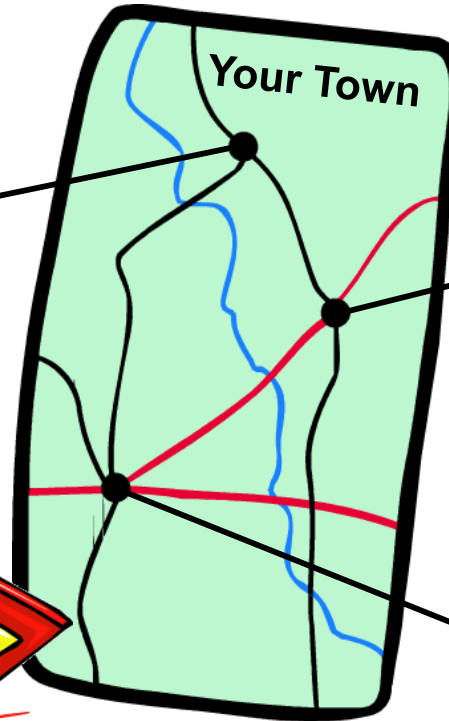
City hall
State agencies
Federal agencies



Schools
Libraries
Universities



Caution!



Doctors
Nurses
Hospitals
Health Department

Emerging Issues in Environmental Health

- **Climate Change**
- **Disaster Preparedness**
- **Nanotechnology**
- **The Built Environment**
- **Exposure to Unknown Hazards**
- **Blood Lead Levels**

The 6 Themes of Environmental Health: Healthy People 2020

The Healthy People 2020 Environmental Health objectives focus on 6 themes, each of which highlights an element of environmental health:

- 1) Outdoor air quality
- 2) Surface and ground water quality
- 3) Toxic substances and hazardous wastes
- 4) Homes and communities
- 5) Infrastructure and surveillance
- 6) Global environmental health