

# COMMUNITY MEDICINE

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# Environmental Health

Black: what the doc says  
in the lecture.



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We are going to talk about the  
environment its health,  
problems, the global  
warming, climate changing.

# Environmental Health

✓ Across the world, the environment is a key determinant of health and well-being.

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

✓ **Examples:** **Unimproved water** (clean water that people drink) **and sanitation, ambient** (outdoor) **air pollution, indoor pollution** (inside offices, home, schools) **from solid fuels** inside homes from cooking, heating, **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.

One of the important factors that lead to human health or disease.

The environment around us contains the air that we breath, water that we drink, food that we eat, and also all the products around us that contain chemicals and materials that may cause harm to our health.

# Why Is Environmental Health Important?

- **1 Maintaining a clean healthy environment is central to increasing quality of life and years of healthy life.** In the old usually health problems used to be infectious diseases (killed many of the children and people), Now we have the problem of chronic diseases (one of the major contributors to it is the environmental problems)
- **2 The burden of preventable environmental diseases are disproportionately felt by residents of poor developing countries.** The majority of people on earth -who get diseases from environmental problems- live in poor developing countries comparing to those who live in the developed world.

# Why Is Environmental Health Important?

- **3** The reasons for this disproportionate effect in poor countries include: lack of modern technology people have old cars with old engines that produce a lot of smoke \*so more pollution\*, **weak protective environmental laws and regulations** environmental problems in many countries are controlled by governmental laws & regulations that are enforced, **a lack of awareness** people who are aware to health problems that can result from certain environmental hazards try to make something to reduce the exposure, **and poverty** it is a big problem poor housing

# WHO Definition of Environmental Health

**It refers to the theory and practice of assessing, correcting, controlling, and preventing those factors in the environment that can potentially affect adversely the health of present and future generations.** Many of the problems that result from the power activity on earth may not affect us directly but they will affect the next generations.

# What Is Environmental Health Science?

“The study of those **factors** in the environment that affect human **health**” under these conditions:

- **Factors** (“pollutants” or “toxicants” = Hazard (a factor that may adversely or badly affect human health)) in air, water, soil, or food ... that human activities produce.
- **Transferred** to humans by inhalation, ingestion, or absorption (exposure).
- **Production of adverse health effects** as a result of that exposure.  
If these substances don't cause harm (or any adverse health effect) then they are not hazards & there is no problem of exposure to them.

# Basic Requirements for a Healthy Environment

- Clean air
- Safe and sufficient water
- Safe and adequate food
- Safe and peaceful settlements place of residence
- Stable global environment



# WORLD ENVIRONMENT DAY



5 JUNE

Forests: Nature at Your Service

In support of the UN International Year of Forests

Yearly, on 5 of June a lot of activities are carried on all over the world by the Organization of the United Nations.

Example: one time it was about forests, nature at your service (protect tree & nature)



# WORLD ENVIRONMENT DAY



@RaeesYameen2018



## I'm with Nature



Using **renewable energy** sources like wind energy, using **bicycles** instead of cars, and one of the targets is to replace all the fuel based cars to **clean electricity cars**, planting more trees.

Trees are considered the lung of earth which collects all carbon dioxide that come from breathing ,cooking, making any fire, heating.

CO<sub>2</sub> is the main cause of global warming and climate changing.

**Deforestation:** people are cutting trees all over the world in accelerating state in order to make roads ,build houses and malls ,and for other human activities.

IF YOU CAN'T REUSE IT,  
REFUSE IT



This maybe for 2017

This is about plastic pollution, it's is one of the big problems.

The loads of plastic that we use everyday is really large thus it is harmful.

Where does these amounts of this plastic go?????

After collecting it, it goes to **dumps**, or **bury** them or even **burn** them.

If they are burned they will produce a black smoke which is very toxic & the little pieces of plastic will take thousands of years to be degenerated.

If we bury them also they will take thousands of years to be degenerated, and they will produce bad substances that will stay in the soil which we will use again for planting our food.

It may be **thrown in the oceans** and defect marine life.





Transmission toward more environmental sustainability:

Greenhouse gas emissions from all sources especially using fuel

Waste disposal

Water to conserve water on earth



**GREENING THE BLUE REPORT 2018**  
THE UN SYSTEM'S ENVIRONMENTAL FOOTPRINT AND EFFORTS TO REDUCE IT



# World Environment Day 2021: June 5th



**Theme for 2021:**  
**" Ecosystem Restoration":** restore forests, oceans (marine life) which are affected by chemical wastes of factors

**Launch of Waste Wise Cities Tool in Pakistan  
for Clean and Healthy Cities and Oceans**

**Celebrating World Environment Day**

**UNITED NATIONS DECADE ON  
ECOSYSTEM  
RESTORATION  
2021-2030**

**clean  
seas**  
turn the tide  
on plastic

**27 May, 2021**

Logos of partner organizations: UN HABITAT, Ministry of Climate Change Government of Pakistan, UN environment programme, WASTE WISE CITIES, GFWA, Sindh Environmental Protection Agency, Sindh Solid Waste Management Board, URBAN POLICY & STRATEGIC PLANNING, NED UNIVERSITY OF ENGINEERING & TECHNOLOGY.

# Basic terminology:

## Hazards

- ✓ Things in the environment that are harmful are called **hazards** and include things like chemicals, disease-causing **bacteria**, loud noises and even stress in our life (in the social part of environment).
- ✓ hazards can be natural or human-made.

Maybe found in the food and can harm our health

# Hazards in the Environment

## major classification:

Chemical: Air pollutants, toxic wastes, pesticides used for plants, VOCs

Biological: Disease organisms present in food and water which should not be produced there, also Insect and animal allergens.

Physical: Noise, ionizing and non-ionizing radiation

Socioeconomic: Access to safe and sufficient health care.

# Routes of exposure

## How do hazards get transformed to our bodies????

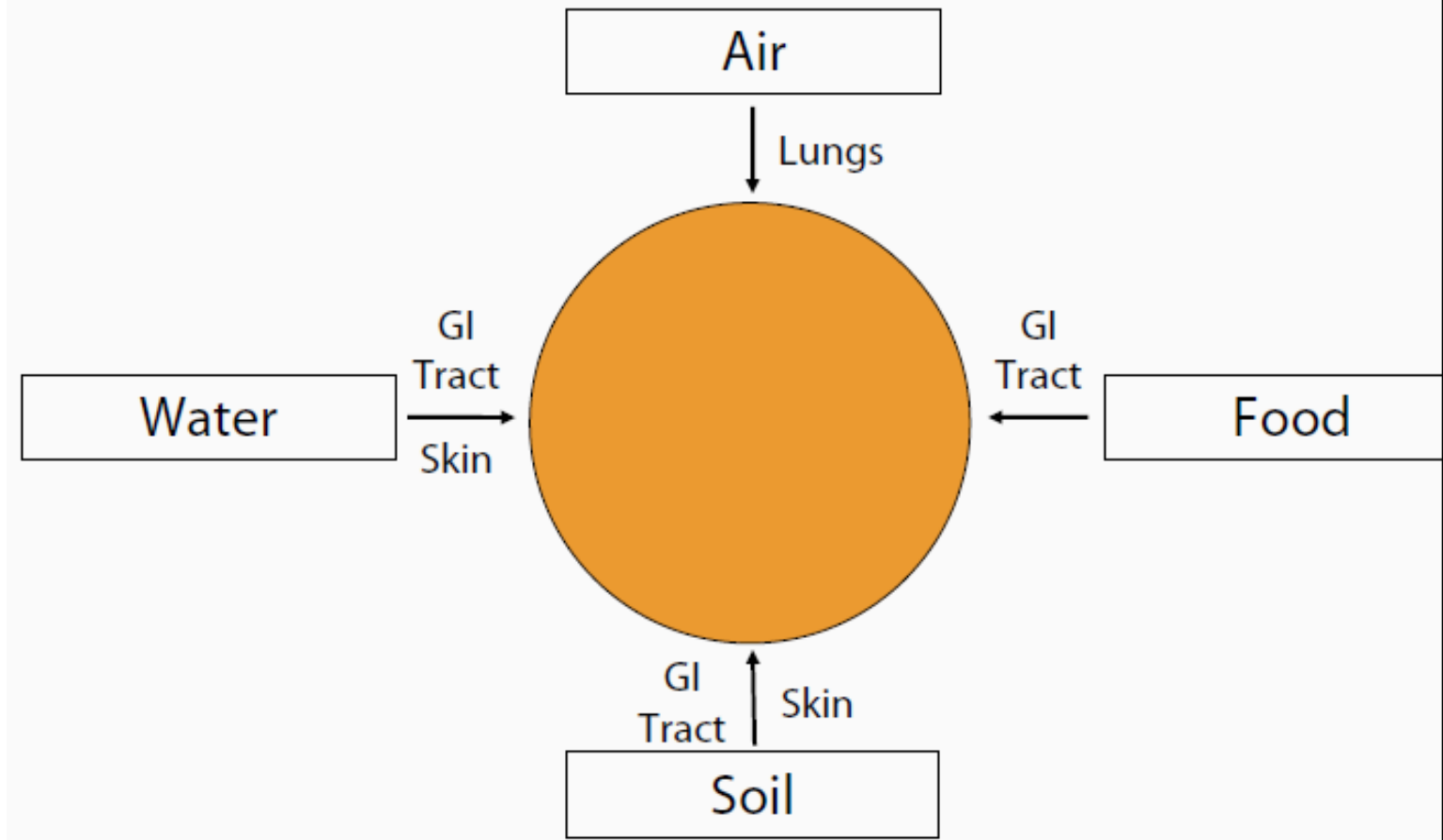
\*If the hazard is in **air** it will be transferred to reach the **lungs**.

\*If in **food** so it will be through **gastrointestinal tract**.

\*In **water** so through **GI tract** or sometimes absorbed through the **skin** depending on the substance.

\*In **soil** maybe with food to the **GI tract** or they could be absorbed through the **skin**.

■ Routes of exposure through gaseous, liquid, and solid media



Adapted from Moeller, D.W.



# Health Effects of Hazards

- **Adverse** usually **vs. beneficial**
- **Acute** happens instantly at the same time **vs. delayed onset** many materials will be accumulated in the body, then showing diseases.
- **Clinical vs. subclinical manifestations** sometimes people eat bad food, some of them will show vomiting, diarrhea (clinical symptoms), others who have smaller amount will show subclinical (not clinically showed on examination).
- **Transient (reversible)** it happens then **goes away when you get treatment or when the hazard is removed** so the symptoms will go away **vs. chronic (irreversible)** for some hazards that have been accumulated for long time in the body which will cause chronic damage, **this may not go away even when we remove the hazard.**

# Examples of Manifestations of environmental toxicants or pollutants

- Lung disease
- Reproductive effects
- Teratogenic effects on fetus
- Neurologic effects
- Immunosuppression and hypersensitivity when the person is sensitive to something like peanuts for example.
- Cancer


Depending on the hazard itself, each hazard effects certain place

**Vulnerable Groups (susceptible)** meaning that hazards affect them more intensely, they will show the effect with low doses and at higher risk.

**Low socioeconomic status** because they live with a less nutritious food, less healthy environment and housing, they have no access to clean water all the time, less education, more poverty, communities where they live have a lot of unhealthy factors.

- Women
- Children
- Elderly

# Vulnerable Groups (susceptible)

- **Ethnic minorities** like races: for example in the US african americans ,illegal immigrants from mexico or whites, they have different conditions in their life.
  - **Disabled** they are at higher risk ,because they are not able to control themselves
  - **Indigenous peoples** people who are native to a certain land before occupance came
-  All of whom are often more vulnerable because of **Genetics** or They are **not empowered** to change their environment

This triangle shows the 3 important factors that contribute causing environmental health problems:

- ❖ **Intrinsic genetic** factors for any human being
- ❖ **Age & time** that this person has been living
- ❖ **Environmental exposure** that this person has been exposed to.

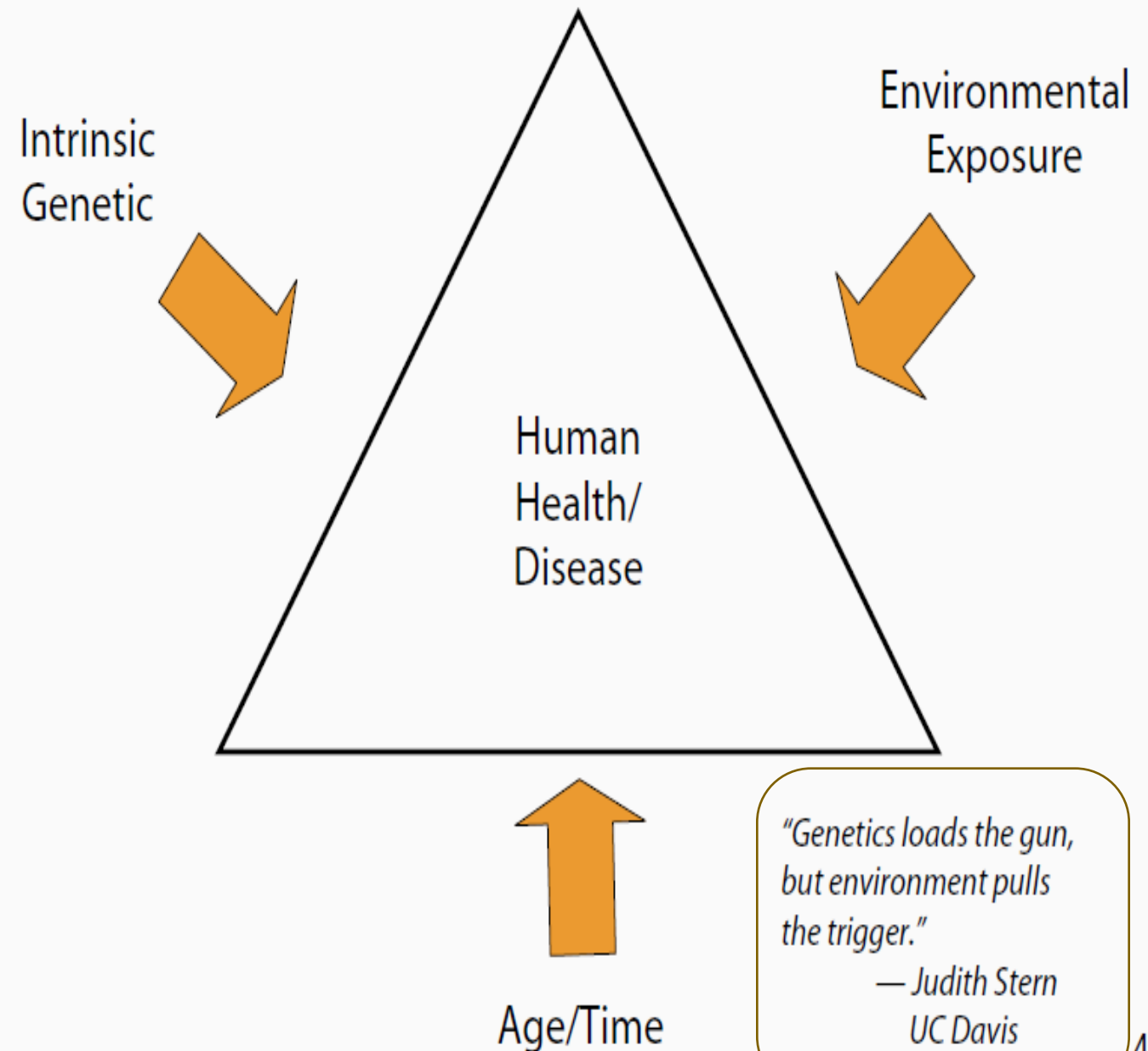
When they are all together they play there role leading to human disease or health.

Ex. Many people exposed to the same hazard at the same time for the same length of time (factory), some of them will get a certain disease that result from this hazard but others don't

**,why????**

Because people are different ,their circumstances factors that determine their health are different.

## *Environment Pulls the Trigger*



# Problem Solving Paradigm: six steps

1. Define the problem
  2. Measure its magnitude
  3. Understand key determinants
  4. Develop intervention/  
prevention strategies
  5. Set policy/priorities
  6. Implement and evaluate
- Risk assessment
- Risk management  
*Solving the Problem*

1,2

How many people are affected in this community by this health problem??? What is the rate of the disease in this community???

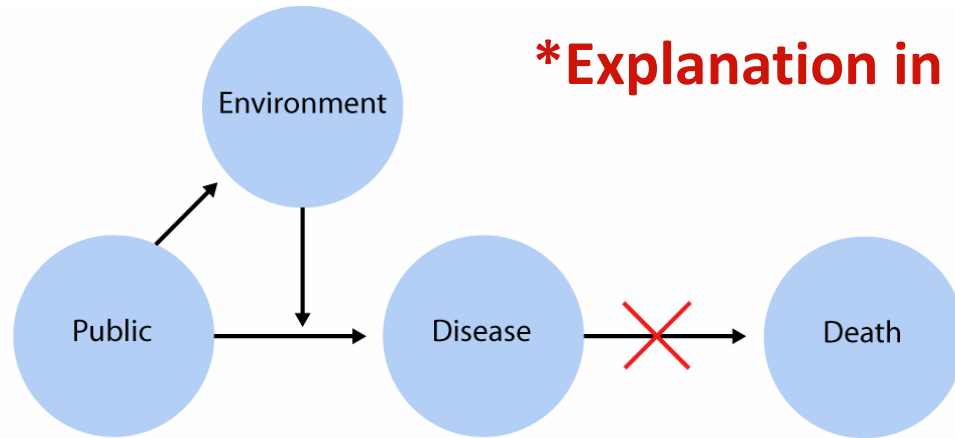
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What cause these people to have a certain disease (what is the hazard)???

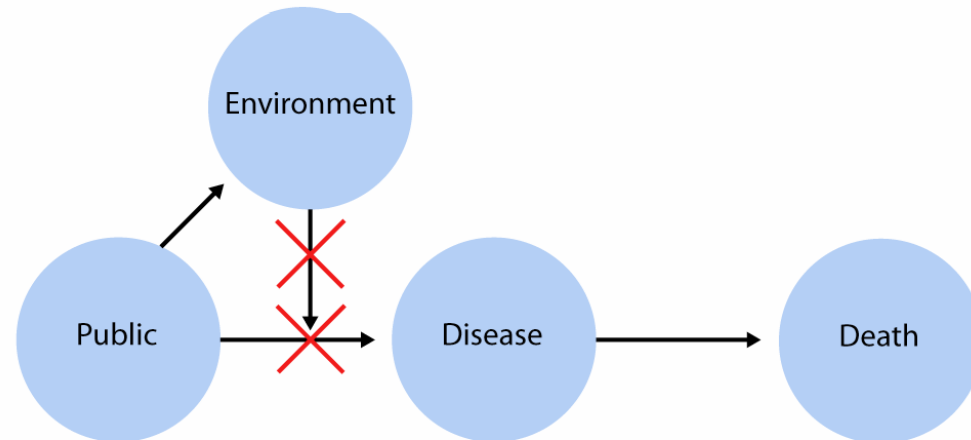
↳ to know whether this intervention that we did work or not.

# Improving Human Health and Environment: 3 Models

**\*Explanation in the next slide 🤔🤔**

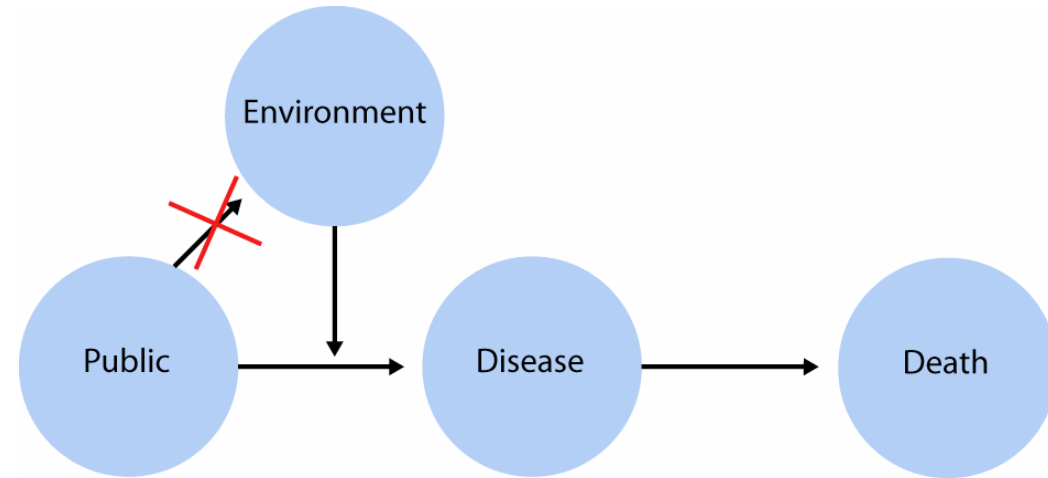


Clinical Intervention Model

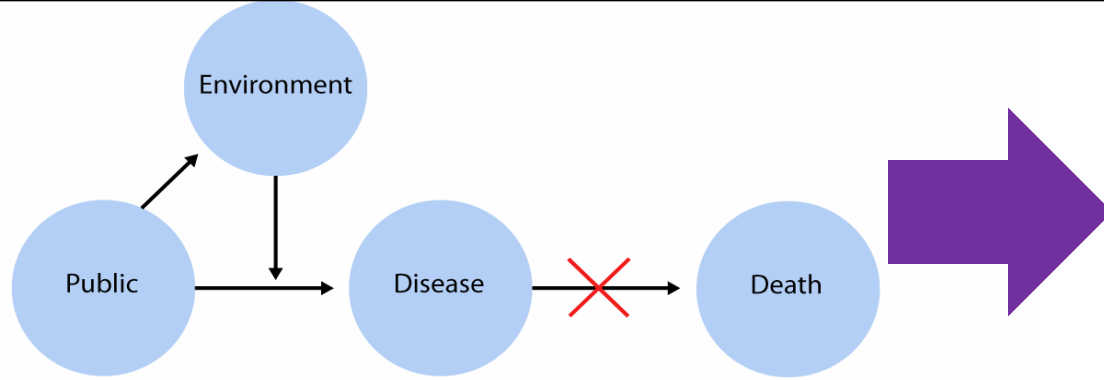


Public Health Intervention Model

**Working on the 3 models together will be the most effective pathway**



Environmental Stewardship Model



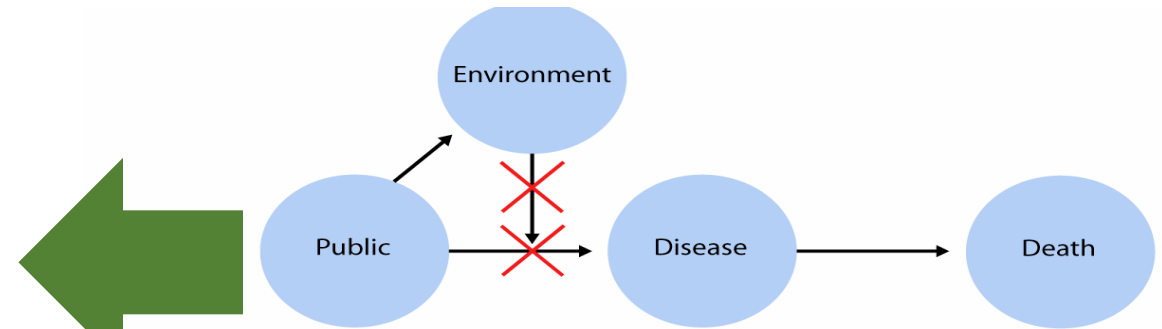
Clinical Intervention Model

## Clinical intervention model

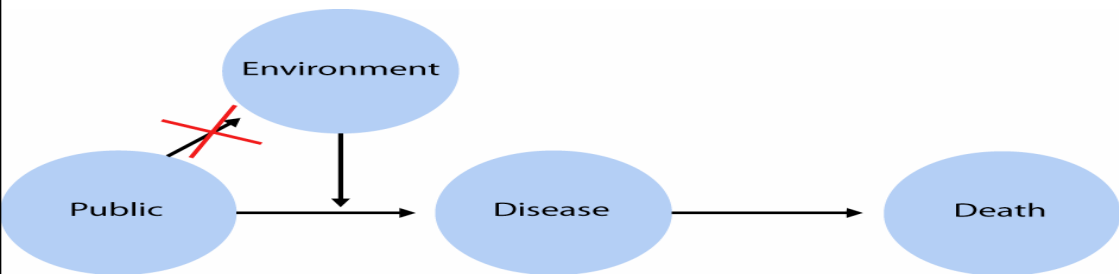
Usually physicians prevent the disease from causing death, trying to treat this patient to prevent death and remove the symptoms.

## Public Health Intervention Model

Here my goal is to prevent this disease from happening to this person (preventing the person from being sick), so it will not need treatment by the physician. We look at what causes this disease and try to remove or prevent it as possible (or block the pathway before disease happens). More efficient.



Public Health Intervention Model



Environmental Stewardship Model



## Environmental Stewardship Model

To make the public feel responsible for their own health and stop doing things (like throwing wastes) that I know that it will cause harm to me later, prevent the public from polluting the environment.

The best way & it is better than public health & clinical intervention models.



# Prevention and Control Methods

- ✓ First choice control method: is usually the most effective and easiest to implement try to reuse water bottle, and produces the largest benefit at the lowest cost.
- ✓ Continued progress requires using more and more expensive methods that remove smaller amounts of pollutant
- ✓ At some point, with more preventive measures, costs will outweigh benefits

# 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 ambient pollution
  - 2) Surface and ground water quality
  - 3) Toxic substances and hazardous wastes
  - 4) Homes and communities the quality of housing is very important determinant for health
  - 5) Infrastructure and surveillance
  - 6) Global environmental health

# 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.

**But** what actually happens around the world is that people with certain races, low income are at higher risk for environmental problems which is unfair.

\*In air pollution ,countries that are producing the biggest amount of CO<sub>2</sub> (like US) goes through the atmosphere to the other side of the globe which cause problems for the other countries that also don't benefit from this economic development.

# 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. They cannot defend their rights because they don't have representatives in the parliament.

For example, toxic waste dumps, polluting factories, and busy highways are often built in lower-income neighborhoods or communities of color.

# COP 26

1-12 November, 2021  
Glasgow, Scotland



UN CLIMATE  
CHANGE  
CONFERENCE  
UK 2020

IN PARTNERSHIP WITH ITALY

For the first time,  
world leaders  
promise to **end**  
**deforestation by**  
**2030**, and to reduce  
emissions by 30% by  
2030 (compared to  
2020 levels).

*Thank you all*

