

At the end of the introductory lecture the students should be able to:

1. apply the concept of environmental hazards on their day to day life
2. understand the influence of environment on human health

INTRODUCTION TO ENVIRONMENT AND HEALTH

COURSE OBJECTIVES:

At the end of this session the participants should be able to conceptualize:

-health in its physical, mental, social and spiritual context.

-environment to be an important factor in the interaction of agent and Host in the epidemiological or ecological triad.

-the physical, biological and psychosocial environment and understand their impact on health.

- Concept of Health and disease.
- Determinants of health ---- Environmental determinant
- Interaction of agent, host and environmental factors ---- Epidemiological triad
- Definition of environment ---- Internal environment and External environment, Macro-environment and micro environment.
- Components of environment ---- Physical, Biological and Psychosocial.

HEALTH:

- **“HEALTH IS A STATE OF COMPLETE PHYSICAL, MENTAL, SOCIAL AND SPIRITUAL WELL-BEING AND NOT MERELY THE ABSENCE OF DISEASE OR INFIRMITY.”**
- **in recent years the statement is amplified to include,**
- **“THE ABILITY TO LEAD A SOCIALLY AND ECONOMICALLY PRODUCTIVE LIFE.”**

HOLISTIC CONCEPT OF HEALTH:

- This concept recognizes the strength of social, economic, political and environmental influences on health

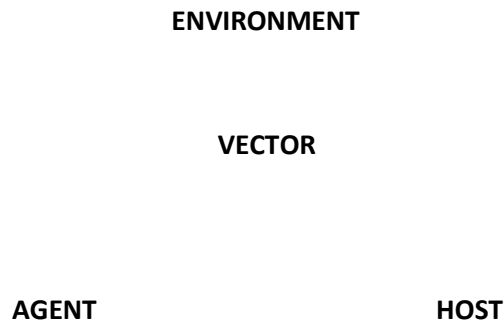
DETERMINANTS OF HEALTH:

- | | |
|-----------------------------|------------------------------------|
| • Heredity | Health and family welfare services |
| • Environment | Life-style |
| • Socio-economic conditions | Others |

Concept of Disease:-

- Disease result from complex interaction between man, an agent and the environment.
- From ecological point of view disease is defined as “maladjustment of the human organism to the environment”.

EPIDEMIOLOGICAL TRIAD:-



ENVIRONMENTAL IMPACT:-



ENVIRONMENT

All that which is external to man is the environment broadly speaking. The concept of environment is complex. *The external environment or the Macro-environment* is said to be responsible for millions of preventable diseases originating in it. Micro-environment is the Domestic environment in which man lives. The term *Internal environment* is some time used for the environment inside the body.

EXTERNAL ENVIRONMENT:

“All that is external to the individual human host, living and non-living, and with which he is in constant interaction

Components of environment:

PHYSICAL: air, water, soil, housing, climate, geography, heat, light, noise, debris, radiation, etc.
BIOLOGICAL: man, viruses, microbial agents, insects, rodents, animals and plants, etc.

PSYCHOSOCIAL: cultural values, customs, beliefs, habits, attitudes, morals, religion, education, lifestyles, community life, health services, social and political organization.

The environment is all external conditions, circumstances, and influences surrounding and affecting the growth and development of an organism or community of organisms.

Environmental health is the study and management of environmental conditions that affect the health and well-being of humans.

Environmental hazards :-

Environmental hazards may be biological, chemical, physical, psychological, sociological, or site and location hazards.

I. Biological Hazards:-

These are living organisms or their products that are harmful to humans

A. Water-borne diseases:- are diseases that are transmitted in drinking water

1. Examples are polio virus, hepatitis A virus, Salmonella, Shigella, cholera, amoebic dysentery, Giardia, and Cryptosporidium.

2. These disease organisms are shed into the water in feces, and can produce illness in those who consume untreated, contaminated water.

3. Our municipal water treatment facilities are usually able to purify water by removing these agents or killing them by disinfecting the water.

B. Food-Borne diseases:

are diseases transmitted in or on food

1. Examples of food-borne agents are the bacteria Salmonella, serotype enteritidis, Escherichia coli 0157:H7, as well as other agents.

2. To protect against food-borne diseases, sanitarians from local health departments routinely inspect food service establishments (restaurants) and retail food outlets (supermarkets) to verify that food is being stored and handled properly.

C. Vector –borne diseases:

are those transmitted by insects or other arthropods

1. Examples are St. Louis encephalitis and La Crosse encephalitis transmitted by mosquitoes and plague and murine typhus transmitted by fleas.

2. Improper environmental management can cause vector-borne disease outbreaks.

II. Chemical Hazards

result from mismanagement or misuse of chemicals resulting in an unacceptable risk to human health

A. Pesticides are chemicals

that have been manufactured for the purpose of reducing populations of undesirable organisms (pests)

1. Examples of categories of pesticides are herbicides and insecticides.

2. Most pesticides kill non-target organisms as well as the target, or pest species.

3. The wise use of pesticides can protect human health and agricultural crops.

B. Environmental tobacco smoke (ETS):-

is an environmental hazard produced by millions that smoke

1. Diseases associated with ETS include lung cancer and perhaps heart disease.
2. ETS contains 4, 000 substances.
3. The EPA has classified ETS as a Class A carcinogen.
4. Smoking has been increasingly restricted from public buildings and from many private work sites.
5. Regulation of smoking seems to be the best approach to controlling this pollutant

C. Lead

is a naturally occurring element that is used in the manufacturing of many industrial and domestic products

1. Health problems associated with the over exposure to lead are anemia, birth defects, bone damage, neurological damage, kidney damage, and others.
2. Exposure is by ingestion and inhalation.
3. Children are particularly at risk from eating peeling lead paint.
4. The prevalence of very high blood lead levels among young children declined significantly between 1984 and 1994 primarily because the removal of lead from gasoline.
5. **Occupational exposure is a major source of lead intake for adults.**

III. Physical Hazards

include airborne particles, humidity, equipment design and radiation

A. Radon contamination results from over exposure to radon gas.

1. Radon gas arises naturally from the earth and sometimes occurs at dangerous levels in buildings and homes.
2. Breathing in radon gas can cause lung cancer.
3. Homes can be tested for the presence of radon gas for \$20.

VI. Psychological hazards

are environmental factors that produce psychological changes expressed as stress, depression, hysteria.

V. Sociological hazards

are those that result from living in a society where one experiences noise, lack of privacy and overcrowding.

A. Population growth may be a sociological hazard.

1. Principles

- a. Growth of living populations can be expressed as an S curve with a lag phase, log phase and equilibrium phase.
- b. When environmental resources can support no further growth, the population has reached the equilibrium phase and the environment is said to be at its carrying capacity

VI. Site and Location Hazards

A. Natural disasters are geographical and meteorological events of such magnitude and proximity to communities that they produce significant damage and injuries.

1. Examples are cyclones, earthquakes, floods, hurricanes, tornadoes, typhoons, and volcanic eruptions.
2. The magnitude of devastation of these events can sometimes be great.
3. Biological, psychological and sociological hazards may increase following a natural disaster.

