Chapter-One

Introduction to Environmental Health

Basic concepts/Definition

- **Health** is a state of complete physical, mental, and social well being and not merely the absence of disease or infirmity.” (Constitution of WHO).
- Health is only possible where resources are available to meet human needs and where the living and working environment is protected from life and health threatening pollutions, and physical hazards. “WHO, 1992, Earth summit conference”.

Basic concepts/Definition con’t

- **Environment:** Comes from the French word known as environner which means to encircle or surround.
- It is the circumstances and conditions that surround an organism or a group of organisms
- The social and cultural conditions that affect an individual or a community.
- Since humans inhabit the natural world as well as the “built” or “technological”, social, and cultural world, all constitute important parts of our environment.

Basic concepts/Definition con’t

- **Environment** is the sum of all external influences and conditions which affect health, life, and growth.
- This includes the physical, biological, chemical, and psycho-social environment” (WHO); It is all that which is external to the individual human host (Last 1995).

Basic concepts/Definition con’t

- **Ecology** is the study of organisms in relation to the surroundings (environment) in which they live. It is also the study of the interactions between living organisms and their environment.
- **Human ecology** is the study of the interactions between humans with one another, with other living things, and with their environment in general. While the environment leads to a productive life, disturbance of a healthful interaction may lead to unsafe environment and hostility.

Basic concepts/Definition con’t

- **Public Health** is “the science and the art for preventing diseases, prolonging life, and promoting health through organized efforts of society” (WHO). It is an organized effort carried out for the benefit of community.

Basic concepts/Definition con’t

- **Sanitation**: Sanitation in Latin is derived from sanitas meaning health.
- is “the establishment of environmental conditions favourable to health.
- It is the prevention of diseases by eliminating or controlling the environmental factors which form links in the disease transmission.” (WHO).
- This definition can be equally applied to Environmental sanitation/Environmental hygiene/Environmental health. Hygiene and sanitation are often interchangeably used.

Basic concepts/Definition con’t

- It means that it “comprises those aspects of human health, including quality of life, that are determined by interactions with physical, chemical, biological and social factors in the environment.
- **Universal human rights**: “ All people have the right to a standard of living adequate for health and wellbeing of themselves and their family, including food, clothing, housing, healthcare, and the necessary social services” (UN 1948 universal declaration of human rights) .

Historical Development of Environmental health

- Prehistoric times: Mose’s law for human waste disposal;
- Spiritual/religion leaders: Prophet Mohammed’s law of personal hygiene;
- Sewage and water lines known in ancient Babylonia, Egypt, Athens, and Rome civilization;

Historical Development of Environmental health

- Schistosomiasis in ancient Egypt;
- Plague documented in the 3rd century, pandemic appeared in the 6th century (middle ages);
- Edwin Chadwick in 1842 and later Fredrich Engels in 1844 wrote a historic report on “The sanitary conditions of the laboring population in Great Britain”.

Historical Development of Environmental health

- John Snow a British Physician documented in 1954 that cholera is caused by the drinking polluted water from the then Broad Street pump in London.
- Louis Pasteur in the 2nd half of 19 century developed the germ theory of disease transmission;

Historical Development of Environmental health

- Mid 19 century improvement of sanitation, housing, nutrition, etc, in some countries have contributed to the decline of communicable diseases, decrease of mortality rates and increase of LE at birth.
- After 2nd world War: new events: antibiotics, vaccines development; and creation of WHO in April 7, 1948;

Why do we concern on Environmental health?

- Inadequate basic housing sanitation particularly in developing countries
- Lack of adequate water supply specially the third world.
- Lack of basic sanitation and the great rural and urban disparity prevailing in the 3rd world
- A significant number of all deaths in under fives is due to diarrhoea.
- About half of the 3rd world population lives in conditions of extreme poverty.

Why do we concern on Environmental health?

- Majority of health problems in developing countries are due to lack of safe water and basic sanitation;
- Ozone depletion has raised the risk of skin cancer;
- Loss of biodiversity has raised the need of basified in many developing countries;
- Global climate change has become a concern in the world:
- Deforestation, draught, earthquakes, hurricanes (a storm with a violent wind e.g Suname) etc. are wiping out the lives of many people every year;

Why do we concern on Environmental health?

- Ambient air pollution and indoor air pollution: the health of 400-700 million people in the world is endangered due to indoor air pollution;
- Ambient air pollution and indoor air pollution: the health of 400-700 million people in the world is endanger due to indoor air pollution;

Why do we concern on Environmental health?

- **Ethiopian Situation**
- A significant number of registered OPD cases are associated to lack of basic sanitation: dysentery, diarrhea, skin and eye infections, helminthiasis, protozoal infections.
- A high proportion of diarrhoea among under five children.
- Inadequate accessibility to safe water and sanitation.

Role of Environmental Health in public Health

- **Three basic strategies:** Promotion, Prevention and Control
  - **Promotion:** targeted to behavioural changes mainly through IEC; housing improvement, basic sanitary provisions.
  - **Prevention** of communicable diseases before it happens: safe water, safe food, latrine provisions, personal hygiene, proper solid waste management, vector control, etc.
  - **Control** of communicable diseases through various environmental interventions.

Role of Environmental Health in public Health

- **Factors essential for the transmission of communicable diseases**

1) Etiologic agent
2) Source of the infection (reservoir)
3) A mode of escape from the reservoir
4) A mode of transmission to the new host
5) A mode of entry of the new host
6) A susceptible person.

Determinants of Health

- For a person to get sick from a germ, three conditions must exist simultaneously:

I. Agents- these are pathogens (disease causing microorganisms such as bacteria, viruses, etc.)

II. Host- the animal that is exposed and infected by the pathogen, i.e. man.

III. Environment-see the definition given in ***Section One*** of this ***Unit***.

- The interactions of these three conditions, as indicated in the following figure, make a person sick.