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**Environment and Health**

The term **environment** implies all the external factors living and non-living, material and non-material which surround man. **Proper environmental management** is the key to avoid the quarter of all preventable illnesses which are directly caused by environmental factors.

The environment influences our health in many ways — through exposure to physical, chemical and biological risk factors, and through related changes in our behavior in response to those factors.

***Public Health Definition of “The Environment”***

All that which is external to the individual host. It can be divided into physical, biological, social, and cultural factors, any

or all of which can influence health status in populations.

1. ***Physical****:* Water, air, soil, housing, wastes, radiation, etc.

2. ***Biological****:* Plant and animal life including bacteria, viruses, insects, and animals.

3. ***Social****:* Customs, culture, habit, income, occupation, religion, etc.

***The purpose*** of environmental health is to create and maintain ecological conditions that will promote health and thus prevent disease.

***Pollution of Water***

A more serious aspect of water pollution is that caused by human activity-urbanization and industrialization. The sources of pollution resulting from these are: sewage, industrial waste, agricultural pollutants, and physical pollutants.

***Water Related Diseases***

Ingestion of contaminated water either directly or through food may affect man’s health by causing water related diseases. Such

diseases may be classified as:

***A. Biological water-borne diseases***

1. Those caused by the presence of an infective agent:

a. Viral, b. Bacterial, c. Protozoal, d. Helminthic

2. Those due to the presence of an aquatic host:

a. Snail: b. Cyclops:

***B. Chemical***

These include industrial and agricultural wastes. Such pollutants include detergents solvents, cyanides, heavy metals, minerals and organic acids, nitrogenous substances, bleaching agents, dyes, pigments, sulfides, ammonia, and toxic of organic compounds of great variety. These pollutants affect health, directly and indirectly by accumulating in foods which are consumed by human beings, e.g. fishes.

***Purification of Water***

It comprise of one or more of the following measures:

1. Storage 2. Filtration 3. Disinfection

***Storage***

Water is drawn out from the source and impounded in natural or artificial reservoirs. As a result of storage, a very considerable amount of purification takes place.

***Filtration***

By filtration apart other impurities, 98-99 percent of the bacteria are removed.

***Chlorination***

 Chlorine kills pathogenic bacteria, but it has no effect on spores and certain viruses except in high doses. It has limited effectiveness against protozoans that form cysts in water.

***Air Pollution***

The term Air Pollution signifies the presence in the ambient atmosphere of substances generated by the activities of man in concentrations that interfere with human health, safety or comfort, or injurious to vegetation and animals and other environmental media resulting in chemicals entering the food chain or being present in drinking water and thereby constituting

additional source of human exposure.

***Sources of Air Pollution***

1. Automobiles

2. Industries

3. Domestic sources

4. Tobacco smoke

5. Miscellaneous: burning refuse, incinerators, etc.

***Prevention of air pollution:***

1. *Assessment*: is the first step to solve air pollution.

*2. Reduce exposure:* These can be accomplished by regulation of manmade pollution through legislation.

3. *Adequate ventilation* is also a key to control exposure to air pollution. Home and work environments should be monitored for adequate air flow and proper exhaust systems installed.

4. *Restricting smoking* is an important key to a healthier environment. Cigarette smoke is one of the most dangerous air pollutants.

***NOISE***

***Definition****:* “wrong sound, in the wrong place, at the wrong time”.

***Sources****:* Automobiles, factories, industries, air crafts, loudspeakers, radios, T.V sets etc

***Effects of noise exposure:***

***1. Auditory effect:***

a. Auditory fatigue: It may be associated with side effects such as whistling and buzzing in the ears.

b. Deafness: Temporary or permanent.

***2. Non-auditory effect:***

a. Interference with speech.

b. Annoyance: This is primarily a psychological response.

c. Efficiency: Reduction in noise has been found to increase work output.

d. Physiological changes: A rise in blood pressure, intracranial pressure, heart rate, increase in breathing and sweating.

***Control of noise:***

1. Control of vehicles.

2. By improving acoustic insulation of building.

3. Industries and railways should be outside the residential areas.

4. Protection of exposed persons: Workers must be regularly rotated from noisy areas to comparatively quiet posts in factories.

5. Legislation: Workers have the right to claim compensation if they suffered a loss of ability to understand speech.

6. Education about noise pollution should be given.

***RADIATION***.

***Sources of Radiation Exposure***

***Natural Sources***

*Natural sources* are those of natural origin that are unperturbed by human activities and those of natural origin affected by human activities *(enhanced* natural sources). Examples include the sun (UV and cosmic x-rays) and the soil (radon).

***Man-made Sources***

*Man-made sources* are those specifically produced by man. Examples include medical devices, and consumer products

a. Medical and dental X-rays, radioisotopes.

b. Occupational exposure.

c. Nuclear radioactive fallout.

d. Miscellaneous: television sets, radioactive dial watches, isotope tagged products, luminous marker.

***Biological Effects of Radiation***

1. ***Somatic effects:***
2. Immediate effects are: Acute radiation syndrome, central nervous system syndrome …. etc
3. Delayed effects are: leukemia, malignant tumors, shortening of life, and abnormality of fetal development.

***Effect of radiation on oral tissues:***

1. Mucositis : secondary infection by Candida albicans.
2. Test buds damage.
3. Salivary gland disorder, like xerostomia.
4. Tooth growth retardation.
5. Rampant caries may occur.
6. ***Genetic effects****:* Chromosome mutations (affect sterility) and *Point* mutations (affect genes).

***Radiation protection:***

1. Use of lead shields and lead aprons.

2. Periodic medical examinations, regular working hours, recreation and holidays must be ensured to workers to maintain their state of health.

3. Unnecessary x – ray exposures should be avoided especially in children and pregnant women

4. Film badges should be used by all the workers.

5. Safe distance from x-ray machine and using lead- lined collimator.

**A Textbook of**

**Public Health Dentistry**

**CM Marya**