

Environmental health analysis



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What is Environmental Health? Environmental health is the branch of public health that is concerned with all aspects of the natural and built environment that may affect human health. It also refers to the theory and practice of assessing and controlling factors in the environment that can potentially affect 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. The man-made, or “ built,” environment includes physical structures where people live and work such as homes, offices, schools, farms and factories, as well as community systems such as roads and transportation systems, land use practices and waste management.

Consequences of human alteration to the natural environment, such as air pollution, are also parts of the man-made environment. The social environment encompasses lifestyle factors like diet and exercise, socioeconomic status, and other societal influences that may affect health.

The Media of Environmental Hazards ? Air, water and food are the major environmental media or vectors through which exposure to hazardous environmental agents occur. ? Disease Vectors – mosquitoes, rats, birds
Additionally, fire in the form of incineration has emerged as a major and somewhat controversial issue in environmental medicine. While soil is often overlooked as a route of exposure, in some cases such an oversight may result in a critical underestimate of actual exposure. Home gardens may be an exposure route dermal or through inhalation to contaminants in soil, dust, or chemical uptake in the plants. How do chemicals enter the environment?

There are six ways in which hazardous substances can enter the environment. ? Direct exposure (pesticides, cigarettes, lead in paint) Direct discharge (toxic emissions from transportation, smokestacks, incinerators) Inadequate landfills (runoff or leaching of contaminants into drinking water and food chain) Illegal Dumping (dumping of oil in backyards, or mass dumping of toxic chemicals) Catastrophic events (accidental releases of large quantities of extremely virulent Ecological catastrophic events (events that lead to human health toxins) onsequences such as volcanoes, floods, famine and hurricanes) The major environmental hazards and their relative importance in various environmental settings. Chemical agents: pesticides, VOC'S, and PCB'S Physical agents: ionizing and non-ionizing radiation, vibration, temperature, and Biological agents: infectious and allergic disorders noise.

Interaction between hazardous exposures and humans Four characteristics critical to exposure assessment: Route (Inhalation, Ingestion, Dermal) Magnitude (Concentration or Dose) Duration (Minutes, Hours, Days, Lifetime) ? Frequency (Daily, Weekly, Monthly, Seasonally) All of the environmental media are possible exposure routes, and should be considered in a risk assessment. Humans have access to environmental toxicants by contaminated food, drinking contaminated water, and breathing contaminated air. Hazardous pollutants may also enter the human body through the skin or a combination of these routes, rarely are humans exposed to a single pollutant along a single route.

Relationship of magnitude, duration, and frequency The concept of “ dose” in environmental medicine is a function of the amount of he toxicant absorbed

and time factors. A toxicant may be present in very low, perhaps minute concentrations, and stimulate biological responses in the host. Even a very small concentration of a highly toxic substance can cause a significant clinical response.

Recognition of Human Hazardous Exposures

The only way to accurately determine to what extent persons come in contact with a specific environmental hazardous pollutant is to actually measure the exposure. There are three ways to accomplish this:

- o Use of micro-environmental samplers
- o Use of personal monitors
- o Use of biologic measurements in human tissue