

Saarth

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Indian Socio-Cultural, Religious Heritage And Spiritual Literature on Environmental Singh Rinkle R*

Introduction

Environment Health is the Branch of public health the is concerned with all aspect of the Natural and build Environment that my effect Human Health. Environment health is the Science of rachiOf prewenting human injures, illness and promoting wellbeing by identifying and evaluating envenomated source and hawardowr agents and exposed to hjardows physical.Environmental protection and making use of our natural resources efficiently are two of the most pressing demands in the present stage of our development. The task of preserving the purity of the environment is of utmost significance both at notational as well as at global levels. An essential prerequisite for successful solution to the environmental problems is training of the technical manpower who could develop and implement effective means for protecting the environment. The book was written to fulfil the above objective and presents in a systematic manner the available methodologies it the field of environmental. Information on carbon cycle, demographic and Environmental trends, energy consumption patterns and their impact on the environment, and global warming.

What effects can the Environment have on Health?

Body.

This brief account can address only a small part of a vast and expanding subject. The environment in which we live can be considered as having three fundamental sets of components:

- Physical • [energy of one form or another]
- Chemical • [matter i.e. substances whether natural or man-made]
- Biological [living things].

Hazards • can present themselves to us in various media e.g. air, water. The influence they can exert on our health is very complex and may be modulated by our genetic make up, psychological factors and by our perceptions of the risks that they present. The following deals with general environmental health hazards, and not extremes of climate, occupational hazards, hazards associated with food, most "accidents" or sexually transmitted disease. Health effects from economic and social consequences of environmental change are also not considered here. Associations between an exposure and an adverse health effect do not, on their own, prove that the former is the cause of the latter. Many other no causal associations could explain the findings. These concerns explain why the language in this context may well be "hedged" even though you might have formed impressions from other sources that some postulated causal associations had been proven.

*Singh Rinkle R.Lecturer, Dept of EngSankar B.Ed. CollegePipaliya, Dist: Baroda

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Physical Hazards, and their Adverse Health Effects

Although you will have heard or read a great deal about the environmental consequences of global warming, man will probably be affected through famine, or war long before the health of the population as a whole is harmed to a serious degree by the temperature change. However increasing extremes of temperature, as a result of climatic change, could result in increased mortality even in temperate climates.

Important issues concerning physical hazards include those relating to health effects of electromagnetic radiation and ionizing radiation. If one excludes the occupational environment, then noise and other physical hazards may present a nuisance to many inhabitants, and impair general well being. Environmental noise does not usually contribute to deafness but notable exceptions may include noisy discotheques and "personal stereos".

Electromagnetic radiation ranges from low frequency, relatively low energy, radiation such as radio and microwaves through to infra red, visible light, ultraviolet, X-rays and gamma rays. These last as well as other forms of radioactivity such as high energy subatomic particles (e.g. electrons - Beta rays) can cause intracellular ionization and are therefore called ionizing radiation. Exposure to ultraviolet (UV) radiation carries a increased risk of skin cancer such as melanoma, and of cataracts which are to an extent exposure related. Some pollutants such as chlorofluorocarbons (CFCs) used as refrigerants or in aerosol propellants or in the manufacture of certain plastics can damage the "ozone layer" in the higher atmosphere (stratosphere) and thus allow more UV light to reach us, and harm us directly. Ultraviolet light may also cause harm indirectly by contributing to an increase in ozone in the troposphere (the air we breathe) - see below under chemical hazards, or elsewhere in connection with air quality.

Radioactivity is associated with an exposure dependent risk of some cancers notably leukemia. Contrary to popular belief however, most radiation to which the average person is exposed is natural in origin, and, of the man made sources, medical diagnosis and treatment is on average the largest source to the individual. A very important issue is the extent to which radon gas arising from certain rock types beneath dwellings can contribute to cancer risk. According to some estimates it could result in a few thousand cancer deaths per year in the U.K. (but still probably less than one twentieth of the cancer deaths alone caused by tobacco smoking).

Ionizing radiation from the nuclear industry and from fallout from detonations contributes less than 1% of the annual average dose to inhabitants of the U.K.

The explanation for leukemia clusters around nuclear power plants is not yet resolved. Similar clustering can occur in other parts of the country. The effect of viral infections associated with population shifts may be important but requires further study.

Non ionizing electrical, magnetic or electromagnetic fields are an increasing focus of attention. The scientific evidence of adverse health effects from general environmental exposure to these fields is "not proven". If there are adverse effects yet to be proven, the risk is probably likely to be very small.

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Chemical Hazards, and their Adverse Health Effects

If one includes tobacco smoke as an environmental hazard then it probably represents the single biggest known airborne chemical risk to health, whether measured in terms of death rates or ill-health (from lung cancer, other lung disease such as chronic bronchitis and emphysema, and disease of the heart, especially, and of blood vessels and other parts of the body). To a much lesser degree of risk, these adverse effects apply to non-smokers exposed passively to side stream tobacco smoke. General airborne pollution arises from a variety of causes but can usefully be subdivided into pollution from combustion or from other sources. The image shows the silhouette of a power station - an important source of airborne products of combustion. Combustion of coal and other solid fuels can produce smoke (containing polycyclic aromatic hydrocarbons - PAH) and Sulphur dioxide besides other agents such as those also produced by:

Combustion of liquid petroleum products which can generate carbon monoxide, oxides of nitrogen and other agents. Industry and incineration can generate a wide range of products of combustion such as oxides of Sulphur and nitrogen, polycyclic aromatic hydrocarbons, dioxins etc. Combustion of any fossil fuel generates varying amounts of particulate matter. It also adds to the environmental burden of carbon dioxide - an important "green house" gas but in these low concentrations it does not affect human health directly. Combustion of fuel can also generate hazardous substances in other ways, besides by chemical oxidation, such as by liberating benzene (from the "cracking" of petrol) or lead (from leaded petrol). Some of the primary pollutants such as nitrogen dioxide can, under the influence of UV light generate secondary pollutants notably ozone (an allotrope of oxygen). Find out more about air quality in relation to these substances.

Undoubtedly tens of thousands of deaths have resulted from acute pollution episodes (e.g. the smog's in large cities in the early 1950s). Nowadays some people e.g. asthmatics can be adversely affected by excursions in levels of urban air pollution (notably ozone) in some major cities. What is still unclear is the extent to which urban airborne pollution in the majority of cities complying with current air quality guidelines, contributes to ill health, i.e. whether the air quality guidelines are stringent enough, to protect all the population.

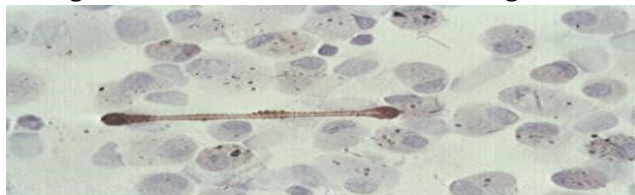
Health effects of concern are asthma, bronchitis and similar lung diseases, and there is good evidence relating an increased risk of symptoms of these diseases with increasing concentration of Sulphur dioxide, ozone and other pollutants. Moreover, there is increasing evidence to suggest that pollution from particulate matter at levels hitherto considered "safe" is associated with an increased risk of morbidity and mortality from cardiopulmonary disease especially in people with other risk factors (such as old age, or heart and lung disease). These concerns are the subject of a great deal of research throughout the world. Although high occupational exposures to exhaust especially from diesel, and to benzene does increase the risk of some cancers, reliable direct evidence of an increased cancer risk to the population at large from the lower levels to which they are exposed is lacking. Incineration can also generate hazardous substances if substances not best suited for disposal by incineration are "disposed" of in this way or if incineration is carried out at too low a temperature (for example this may generate dioxins). Products of combustion and other harmful airborne

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pollutants can also arise within the home. Thus nitrogen dioxide generated by gas fires or gas cookers can contribute to an increased respiratory morbidity of those living in the houses. Certain modern building materials may liberate gases or vapors such as formaldehyde at low concentration but which might provoke mild respiratory and other symptoms in some occupants. Modern building standards for asbestos in buildings are such that the resulting airborne fiber concentrations are so small as not to present any risk at all of asbestosis. However, some estimates suggest that perhaps one extra death per year might result in the UK from asbestos related cancer as a result of nonoccupationally exposure in buildings. The image shows an asbestos body i.e. an asbestos fiber which has been coated by ferruginous protein during its residence within the human lung.



Large scale industrial releases with serious acute effects are fortunately rare but you might recollect some events such as in Bhopal (India). Various smaller scale events occur such as leaks from road tankers, or fires in warehouses and factories. Special local environmental exposures can arise for example in communities exposed to drifting pesticide sprays containing say, organophosphates. Some natural phenomena such as volcanic eruptions can present serious risks to health. Fortunately they are rare but can be catastrophic. Water can be an important source of chemical hazards. It can leach lead from

pipes especially if the water is soft. There is good epidemiological evidence that this can have a relatively small but measurable harmful effect especially on neurological function even at levels hitherto considered "acceptable". Other adverse effects can arise from chemicals added to the water.

Chlorination of water has probably saved millions of lives (see biological hazards).

Some concern has been raised about possible increased cancer risks in association with chlorinated water but there is as yet no proof that a causal association between the two exists. Fluoride added to water reduces the risks of caries but can also have unwanted effects such as mottling of the teeth.

Nitrate in water usually arising from fertilizer leaching (natural or artificial) can increase the risk of methemoglobinemia ('blue babies') in bottle fed infants but this is extremely rare. Although pesticides can and do leach into water, there is no evidence that the current standards for water quality are inadequate in this respect, but most standards are based on evidence other than human epidemiology which in this context is extremely difficult to conduct.

Beyond the point of supply further problems in drinking water quality may result. Thus for example water tanks containing lead may increase the burden of this metal in the water, while water softeners may increase its sodium content (can be harmful for bottle fed infants).

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Deposition of solid hazardous waste can result in harmful substances leaching into water supplies, becoming airborne or being swallowed or otherwise absorbed directly (for example because of children playing on the sites). If the sites are well contained to prevent leaching into water supplies and segregated from human activity then the risk to human health is usually immeasurably small. However where the position of disposal sites and their contents are unknown and houses are proposed to be built on them or they are to be developed in other ways, extensive prior investigation may be needed in an attempt to estimate health risks.

Biological Hazards, and their Adverse Health Effects

These generally fall into two broad categories: those which produce adverse health effects through infection and those which produce adverse effects in non-infective (allergic) ways.

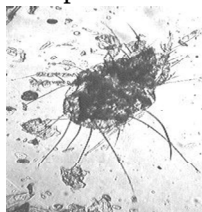
As regards microbiological hazards in water, substantial improvements in the health of the population have resulted historically from the supply of drinking water free from disease causing organisms such as cholera. Similar improvements can be expected in the health of the inhabitants of developing countries if microbiologically safe water is provided by avoidance of contamination, and appropriate purification including disinfection (usually by

chlorination). Occasional outbreaks of waterborne infection still arise from contamination of drinking water by soiled water (usually coliforms).

There can be other opportunities for further bacteriological contamination. Thus *Legionella* can grow in sumps or dead legs in the plumbing system and may then be dispersed as aerosols from showers.

Recreational water which is heavily contaminated with pathogens, notably coliform bacteria has been shown to be associated with an increased risk of gastrointestinal and other infectious illness, usually self-limiting.

So-called "clinical" waste is not merely an occupational hazard of health care workers but is becoming an increasingly more important risk, for example for children finding blood stained needles. Many allergens such as grass pollen grains, or faecal material from house dust mites may cause attacks of asthma or "hay fever" (allergic rhinitis). There is evidence that high exposure to these allergens early in life, increases the risk of suffering from asthma later on. An increasing number of studies suggest that airborne chemical pollution can act synergistically with naturally occurring allergens and result in effects on lung function at concentrations lower than those at which either the allergen or the chemical irritant on its own would have produced an adverse effect.



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Conclusion:

The above account demonstrates the wide range of effects that the environment may have on human health, but it is very far from exhaustive and for the sake of conciseness many hazards or their effects have not been mentioned. Moreover, the simplicity of the above has meant that very important concepts have not been discussed. These include the distinction between mere association, and causation, or the quantitative implications of understanding the difference between hazard and risk. Finally, to keep things in perspective, we must not forget, that as a species we are the way we are because of the influence of the environment on our evolution. Problems to health arise at two levels: At the level of the individual, the environmental influences which slowly 'shape' the species may in some respect or another cause harm to some members of the species -that is how a species evolves. At the level of the species, we must remember that the process of evolution is relatively slow when compared to the rate at which man can bring about environmental change. This means that unless efforts are made to care for the environment, the human species may suffer to an extent that other species already have suffered.

References:

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