

## **ENVIRONMENTAL POLLUTION – Health Hazards and Remedial Measures**

All around us pollution is on the increase in the air, in water, on the land, It is mainly due to industrial technology. Pollution has grown as the population has grown and people have become prosperous. Pollution studies are of a multidisciplinary nature and concerns people working in a number of fields—biology, medicine, engineering and legislature. Environmental pollution has been defined as any substance that changes the natural composition of the environment (since the world began, the environment has been changing).

Every breath pollutes the air. Decay of an organic substance emits poisonous odours. Now man, animals and vegetation have been joined by cars, ships, airplanes, houses and a host of industries as pollutants of the air. All the large cities of the world have problems created chiefly by overcrowding. More crowded the city more the likelihood of further pollution.

Simple process of burning fuel to produce heat and energy is accompanied by the production of many pollutants. Combustion (incomplete) of fuels (coal, gas, oil, etc.,) in industry, internal combustion engine, electricity generation and domestic and commercial heating, etc., leads to the production of carbon monoxide, sulfur dioxide and nitrogen oxides. Internal combustion of gasoline of motor vehicles produces unburnt hydrocarbons (HC), particles of carbon, soot and smuts. Ash is formed from non-combustible substances. Smoke is a fine suspension of ash and

soot particles in the air.

It is estimated that sixty per cent of city air pollution and ninety per cent of the nitrogen oxide emissions are due to automobile. Increased amounts of carbon dioxide affects photosynthesis and may affect world climate. Carbon monoxide in the air has adverse effect on health. Blood hemoglobin has 200 times more affinity for carbon monoxide than oxygen. The transport of oxygen from the lungs to the tissue is thus impaired.

Sulfur dioxide in higher concentrations produces respiratory problems. At a much lower concentration sulfur dioxide damages plants, limestone and marble, works of art (especially fresco). Unpainted timber absorbs sulfur dioxide and are susceptible to damage. Sulfur dioxide is shown to be the major contributor to the deterioration of books and papers. Sulfur dioxide damages leather, and corrodes metals.

Nitrous oxide (2 mg. kg) is known to cause leaf damage in sensitive plants and may bleach certain dyes. In higher concentration nitrous oxide irritates mucous membranes.

Photochemical oxidants are produced by a complex series of chemical reactions initiated when specific emissions (hydrocarbons and oxides of nitrogen) by internal combustion engines and other sources are exposed to sunlight. The result is the formation of ozone, peroxyacyl nitrate (PAN), formaldehyde, arleen, nitrogen peroxide and organic peroxides. Pollutant ozone concentrations damage vegetation, motor vehicle tyres and asphalt and cause irritation of the respiratory system. PAN effects vegetation particularly young leaves, and alters cardiovascular functions and is an irritant to mucous membrane in human beings.

Air borne particulate matter in the ambient air have their origin from pollen grain, microorganisms, fungi, spores, insects, sand, dirt, smoke, dust, insecticides, aerosols, metallurgical operations, etc., These particulates injure the respiratory system and cause infection, cancer, etc. Deposits of aerosol are unsightly and expensive to remove. Air odours arise from house hold and commercial garbage harmful or not, present a problem of aesthetics Indoor pollutants have their sources from outdoors and from within. Noise is unwanted sound. As noise builds up to 60 decibels it begins to interfere with ordinary conversation. It disturbs sleep, learning,

blood pressure rises, heart rate changes, pupils dilate, serum cholesterol increases and stomach acidity increases—heart burns. Noise may be continuous or intermittent and the sources of noise are motor vehicles, planes, trains, factories, machineries, constructions, sound of horns, loud speakers and human voice.

## **Urban Problems and Social Pathology**

Problems of large cities are created by overcrowding in housing, employment, education and recreation. Cumulative effects of a spectrum of environmental hazards, by dust, dirt, noise, stagnant air, smog, CO, packs of stray dogs, etc., confuse the psyche and undermine the efficiency of human performance. Long term exposure to urban stress can disturb psychological balances, which leads to outburst of violence, vandalism, breaking and entering, robberies, assaults, arson, setting fires, suicide, homicide. The result is the quality of individual's life style declines. Man needs nature more than ever.

Today 90 per cent of air pollution comes from man made sources. The demand is great for clean air. Air pollution is costly. It ruins vegetation, makes paint peel off and discolour, cracks, tyres, and deteriorates nylon, rusts iron and tarnishes silver, kills cattle and blocks out the sun thus adding to house, clothes, cleaning, heating and lighting bills and reduces visibility and causes more automobile accidents.

Can we afford to reduce our industrial output or use of transport or can we modify our existing methods without increasing penalties? Or embark on a totally different approach toward the same objectives?

## **Battle for the Environment**

An individual's awareness for change and determination to carry out the change are the key points in keeping our environment clean. Rich must treat the poor with generosity. The social reformers of seventy years ago, had objectives which were attained long after the pioneers had died. Politics today is very short sighted. The press has a large role to play in educating the public and raising the public opinion. The public (consumers) must make politicians answerable to the people on all aspects of environmental

policy. Patching up is good for the present, but the real solution has to be determined by civil servants, scientists, engineers and physicians.

## **Automobiles**

Removing cars from the city scene virtually eliminates the problem, reducing the dirtiness of the internal combustion engine and finding an alternate method of propulsion - *e.g.*, battery powered cars. Automobile engines should be cleaned and tuned regularly and periodically. Use of automobiles with visible 'exhaust' should be made a punishable offence. Lorries and buses should be designed to have their exhaust pipes turned upwards so that 'exhaust' is discharged towards the sky. Stopping, starting and accelerating of idle vehicles/should be minimized. The number of traffic lights should be minimized or done away with and substituted by traffic police. 'One Way' has to be introduced wherever parallel roads exist. Sounding of horns should be made illegal except under special circumstances. Automobile traffic should be prohibited in congested and commercial areas. Lorry traffic should be diverted only through certain main roads preferably where police stations are situated. Outstation buses should start and stop at the outskirts of the City.

## **Building Construction**

Workers should be housed in proper lodges and provided with transport to the work spot. Water and toilet facilities for the workers should be made compulsory at the construction site. Orientation courses on environmental pollution including the effect of garbage, excreta and noise should be arranged as a rule. Multistoried buildings should have their own incinerators.

Industrial workers should be educated about environmental pollutants. Orientation courses for workers in restaurants, hotels, and recreation clubs with regard to personal hygiene and communicable diseases should be made compulsory. It is necessary to improve and increase the number of public toilets, bathrooms with good supervision and eliminate stray dogs and beggars. Indiscriminate throwing of litter in public and open spaces should be made illegal and open air fruit and vegetable selling abolished.

Construction of multistoried buildings in the centre of the city should be stopped. Smoking in public places should be prohibited. Planting of trees should be encouraged. Water drains should be covered and maintained properly. Use of public loud speakers and address systems should be prohibited except in notified places. Processions and protest groups should not voice their grievances vocally. Advertisement on the importance of clean environment in lucid language is imperative.

### **‘KEEP THE CITY CLEAN’**

It is earnestly hoped that aesthetic and healthy planning of the city set by our far-sighted forefathers will not be ruined by considerations other than the interest of public health.

