

POLLUTION IN SRI LANKA

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Pollution has become a source of public concern in Sri Lanka in recent times. This development is probably the outcome of several contributory factors. A primary factor is the increasing population and the increasing industrial and agricultural activities in recent years. This would lead to the increasing emission of pollutants into the surroundings — including the contamination of our waterways and water bodies, for example, with sewage and domestic and municipal garbage. Another important factor is the rapidly increasing public awareness on matters relating to the environment. It must be emphasised, however, that monitoring for pollutants in the environment is practised quite insufficiently in Sri Lanka and it is more than likely that many problems of pollution remain to be uncovered. In other countries experience has shown that sometimes pollution (say from a dump for toxic chemicals) may lie undetected for some decades before its damaging effects reveal its presence.

Another problem in Sri Lanka is the insufficient availability of sensitive and reliable instrumentation for detecting pollutants and the inadequate scientific infrastructure in general. It should be noted that other countries in this region have developed an awareness of the importance of Science to the well being of the nation and are giving every incentive for their scientists to make their contributions. It is particularly important in the field of pollution control that we do not rely on "Crisis Management" but develop a monitoring and prevention capability.

There are many types of pollution being experienced in Sri Lanka today and it will not be possible to review all of them in the space available. However, some examples will be selected for discussion to indicate the variety of pollutants

which are possible and some of the ill effects they can cause.

1. Human, domestic and urban wastes

There are many instances which come to mind of pollution due to human, domestic and urban wastes. When human and domestic wastes are released into waterways such as the Colombo Canals, this can lead to the water becoming unfit for any hygienic use and also to the breeding of mosquitoes etc., once the mosquito larvae-consuming fish population has been reduced or died out.

Another consequence of organic matter pollution of freshwater bodies is the developing of eutrophication which can be seen in the Beira Lake in Colombo. Construction of toilets etc. in unsuitable locations can also lead to pollution of domestic wells and other sources of water supply.

Dumping of refuse without proper disposal practices, such as covering with a layer of soil, can lead to unhygienic situations and examples may be seen in numerous towns. Dumping of refuse on hill slopes can, for instance, eventually lead to the pollution of the streams, which frequently flow in the valleys, thereby causing problems in downstream areas, as well.

2. Vehicle exhaust emissions

Vehicle exhaust emissions are a major problem in Sri Lanka. Most motor vehicles in Sri Lanka burn either petrol or diesel. Vehicles burning petrol emit carbon dioxide, carbon monoxide, particles and unburnt hydrocarbons, oxides of nitrogen and lead. Vehicles burning diesel fuel emit carbon dioxide, carbon monoxide, particles and unburnt hydrocarbons, oxides of sulphur and oxides of nitrogen. Insufficient action has been taken so far to control excessive emissions from motor vehicles.

A number of harmful effects can arise from the pollutants in vehicle exhaust emissions. The carbon dioxide which is released is believed to add to the global greenhouse effect which is expected to result in raising the atmospheric temperature in the years ahead. However the contribution made by Sri Lankan sources to the global load is probably negligible.

Unburnt hydrocarbons are effectively unburnt fuel and it has been estimated that some of the badly belching vehicles may be emitting well over 10—15% of the fuel in an unburnt form, which thus amounts to a considerable financial loss, both as foreign exchange as well as local expenditure. Some hydrocarbons found in fossil fuels have been proven to be cancer-causing and would thus carry a health hazard, as well. Carbon monoxide is well known as being a gas which is readily fatal but in lower concentrations can also cause drowsiness and the slowing down of ones reflexes; thus contributing to accidents on the road. Oxides of nitrogen and sulphur can cause problems of the respiratory system and in the developing of acid rain. Lead may have an effect on the nervous system particularly in young children and on the production of components of the blood.

Emissions from motor vehicles are believed to be the principal factor leading to the “smog” or haze reported over Colombo from time to time in recent years.

3. Noise

Noise is an ever-growing problem in many countries. Many complaints in Sri Lanka concern noise produced by road traffic and industries and during the use of loudspeakers. Recent research world-wide is providing evidence that the effects of excessive exposure to noise can include not only damage to ones hearing but also the causing of high blood pressure, and heart and psychological problems and the alteration of the functioning of some enzyme systems in the liver. Awareness of noise problems has not been highly developed in Sri Lanka up to now and the problem has been allowed to escalate to a very large extent. Due to the lack of concern about this problem in previous years, industries have been allowed to go up next to private homes, heavy commercial traffic travels on roads through residential areas etc; the correction of such problems at the present time will be expensive and time-consuming. Urban planning taking noise-related factors into account from some decades ago would have resulted in the non-development of the existing situation. Other effects

such as the depression of property values also result when undesirable environmental noise levels develop.

4. Agricultural

Increasing numbers of problems related to agriculture are being reported. However, insufficient monitoring is being done due largely to insufficient analytical facilities and other scientific infrastructure being available.

a. Pesticides

The problems with pesticides are very many. They include problems caused to the farmers during the use of pesticides, problems to the consumer caused by the presence of pesticides in food, development of pesticide resistance in the target species, damage caused to non-target species such as honey bees etc.

Malathion has been designated for use only for mosquito-control purposes in order to avoid or delay the build-up of resistance to the pesticide (as did happen with DDT).

b. Fertilizer

Improper use of fertilizer has resulted in the damage of groundwater supplies in certain areas of the Jaffna peninsula. Storage of fertilizer in unprotected areas has created similar problems in Hunupitiya. Reports from Western Europe also suggest that the large quantities of cattle manure produced in West European agricultural areas may, through liberation of ammonia, be contributing to the death of trees.

c. Food additives

Insufficient controls are routine in Sri Lanka with regard to food additives such as preservatives and colouring. Reports have appeared from time to time of the use of materials like formalin and malathion for the preservation of fresh food and the use of textile dyes etc. in the manufacture of sweets and other foods.

It should, however, be noted also, that proper storage and recommended methods of food preservation must be used where necessary to prevent food spoilage and development of natural health hazards such as the aflatoxins, which are cancer-causing in small amounts.

d. Agro-based industries

Huge amounts of pollutants are known to be released from industries based on agricultural and forestry products. These include volumes of smoke generated in cocount shell charcoal manufacture and large amounts of cocount husk coirdust and saw dust. These pollution problems can be relieved if suitable uses are made of these materials. Paddy husks which are a waste product are being used as a fuel in some areas.

There appear to be opportunities in the country today for individuals or firms who can effect the development of a good idea, e.g. use of waste sawdust as a fuel, into a viable and functioning commercial enterprise.

5. Industrial

Several sources and types of industrial pollution exist in the country at the present time. Some industry-related examples are.

a. Cement manufacture

The cement factories were provided, where necessary, with electrostatic precipitators for the cleaning of dust from the atmospheric emissions. However, problems developed with these precipitators and they are presently being replaced.

b. Paper and pulp manufacture

The paper and pulp factories in Valaichchenai and Embilipitiya are causing considerable pollution of the Valaichchenai Lagoon and of the Walawe river respectively. The chemical recovery system obtained for the Embilipitiya factory does not work effectively due to the presence of significant amounts of silica in the paddy straw used as raw material.

c. Leather manufacture

Certain processes of manufacture of leather results in the release into the environment of, among other pollutants, chromium compounds. In some forms, chromium compounds are known to be cancer-causing.

d. Food processing

Food processing industries, such as fruit

canning and milk factories, release a considerable amount of organic materials into waterways, together with numbers of putrefying microorganisms.

e. Emission of gases

Gases emitted by industrial establishments in Sri Lanka have included ammonia from the former urea factory at Sapugaskanda. Oxides of sulphur and nitrogen are also liberated from factories and power plants burning diesel and furnace oil as fuel.

f. Oils

A large quantity of oil is released into the surroundings from garages, petrol stations etc.

Concern is growing worldwide regarding hydrocarbons emitted into the atmosphere from these sources and refineries as well as in motor vehicle exhaust emissions.

6. Thermal

Fears have been expressed that the coal-fired power plant proposed to be constructed at Trincomalee could result in significant thermal pollution of the water in the vicinity of the discharge point.

7. Indoor air pollution

In Sri Lanka, this area mostly concerns cigarette smoke and certain industrial work places; in addition to that arising from poorly maintained toilet facilities. In other countries, however, other forms of indoor air pollution may take on greater significance.

The above account is a brief sketch of some of the pollution problems of relevance to Sri Lanka at the present time. We have not, as yet, perhaps encountered to a significant extent, problems such as sonic booms and electromagnetic and light pollution which are being experienced in the industrialized countries of the world. However, it is possible that many instances of chemical pollution exist already and await detection. In this connection, close and continuing surveillance should be made of methods employed for the disposal of industrial wastes.

It is probably a worthy challenge to Sri Lankan scientists to develop a programme for the identification of the existence of pollution by the observation of living plants and animals, without resorting to the use of expensive instrumentation in the first instance.