

SCIENCE AND CULTURE

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DEVELOPMENT AND ENVIRONMENT

THE World Environment Day comes and goes every year. All countries celebrate it on 5th June with fanfare. Much time and deliberations have passed between Rio-de-Janeiro to Johannesburg via Kyoto. But in spite of the decisions taken and protocols signed, actions are tactically delayed or flatly refused by some big polluters due to a lack of political will. Pollution, a term politically correct, is invariably the price of development. But it is used in a narrow sense so that an industry may claim that by using improved or alternate technology, it has minimised or eliminated environmental pollution. Thus, it can get a clean chit from public or a government. But environment degradation is a holistic term and denotes more than pollution. It is much more difficult to prevent environment degradation than to prevent environment pollution.

Although the terms Environment, Pollution and Biodiversity evoke our emotive response, these have lost much sharpness due to overuse and debates over diverse issues with conflicting interests. We are now living in a technological society. Our food, drink, clothes, shelter, communication, education, recreation, even our cultural activities have highly technological components. To supply these in increasingly larger quantity to meet the ever-expanding demands, we are fast depleting non-renewable natural resources for the raw material components. Again, even to produce apparently renewable natural resources like food grains or animal products, productivity is the catchword and to produce more, we have to use lots of chemicals and machinery. To produce and supply all these, we have to burn fuel and produce hazardous wastes that include solid, liquid and gas, and also heat. Modern agriculture, which has brought about the green revolution, actually uses up more energy than it traps from the sun by photosynthesis. Then, the primary produce is now processed for convenience, preservation, transportation and marketing before being actually consumed. All these processes again create environmental pollution, ecological hazards and loss

of biodiversity apart from injuring man and animal health. Some of the chemicals used in crop and animal production are toxic, carcinogenic or act like phytosteroids. The pesticides reach non-target animals through food chain. Instead of diverse seasonal food crops or fishes, we are now intensely cultivating only a few highly priced varieties thus destroying biodiversity. Also, the model and policy of development as determined by the financiers like IMF or World Bank are based on only one model, i.e. USA. The future projections of food needs though statistically justified, are thus faulty. As about half of world population is and will be dependent mainly on grain crops for their protein needs, the global estimated food grain demand will be much less than predicted. In USA, major protein sources are animal flesh or dairy products. There, grains are fed to animals. To produce one kilogram of animal protein, six to ten kg of protein is to be fed to the animal. This highly wasteful protein conversion ratio speaks in favour of a vegetarian diet. A balanced diet with lots of grains, legumes and nuts with small amounts of animal protein to satisfy our appetite can go a long way to reduce food demand. This means less fuel, less chemicals, less pollution and as a bonus, polyculture will check loss of biodiversity.

People in developed countries are now living in a chemical world. Unnecessary chemicals are used for larger productivity. Even antibiotics are used in animal feed to such an extent (estimated amount of 70% used for agriculture and animal feed, and 30% for human health) that strains of common pathogenic microbes have developed resistance to almost all antibiotics. To combat the ill effects of microbes and chemicals, people are using (as prescribed by industries) varieties of chemicals, detergents and cosmetics, each of which contain 20 to 30 chemicals which are now religiously sanctified by adding a trace of Aloe (our known Ghritakumari, advertised separately in bold letters on the products- from soaps to baby creams) as if Aloe is holy Ganges water. All processed foods-cereals, drinks, meat

preparations, fast foods—contain numerous added chemicals of unproven benefits. The increasing lifespan of people in developed countries are not without their other effects. Incidence of age-related diseases including cancer, major depression and other psychological maladies are on the rise. The incidence of allergy in children and adults alike, and incurable diseases like autism, bipolar disease etc. are also in high frequencies that can not be explained. With the emergence of genomics, scientists are tracing (stretching too much) almost all maladies to inherent genes, thus shirking off the responsibility of government or industries. Environmental hazards in the form of pollution by non-biodegradable wastes can be minimized by recycling. Legal obligations imposed on manufacturers in some countries for using cleaner technology and to recycle certain percentage (say 30%) of the finished products. This additional burden for environment protection does not affect the profit of the manufacturers, but is put on the customer's shoulders in the form of increased price or tax. Also, the recycling law is such that once the manufacturer legally hires a contractor for recycling disposal, his responsibility ends. There is no provision for subsequent monitoring to see what the contractor does with the waste. In practice, the contractor shiploads the waste to sell to third world countries like China, Thailand or India. Thus, huge quantities of junked computers and electronic goods are dumped in these countries where unaware poor people, mostly child and women labours, salvage little precious metal wires and parts, burning the plastic, generating huge air pollution. These hapless people not only make their living from the garbage, but also they are born, sheltered and ultimately die in the garbage heaps. Thus, laws enacted with good intention unwittingly does no more than transfer the pollution from one country to another.

The disposal of solid and liquid wastes in a dumping site even in one's own country is tricky when the government is federal and democratic. A less populated state with more space is usually selected for dumping the wastes. Now, many states of USA are not allowing their grounds for dumping. Recently, US congress had to pass a resolution with presidential ratification to dump wastes in Nevada. Think of India Government deciding to dump all toxic wastes in Madhyapradesh or Rajasthan. Definitely, these states will object.

Similarly, one may set up an industry with proper legal and environmental clearance in a sparsely populated area today. In a few years, residences come up around the

industrial area, people go to court to shift the polluting industries, which might not had enough time even to break even to raise the cost, forget about making money. Even, the same people who welcomed the industry to get employment for their kids and keens now may be against the site of the industry. All these are tricky socio-economical issues that are difficult to foresee even by well-intentioned planners.

Talking of environmental hazards, we generally think of the larger outside environment. But, equally important is the microenvironment in our home or workplace. You may think that a large air-conditioned computer assembly facility with hundreds of white-collared technicians/engineers working in cramped spaces in a large hall, repeating mechanically monotonous operations for eight hours a day are in good work environment. They may have humidity, dust and temperature-controlled atmosphere. Even one can provide them with music and fragrance in the air. But the "biological space" is not sufficient, leave aside the psychological environment. As we are advancing more and more technologically, we have less and less time to be with nature, to see a raindrop fall, to get soaked in the rain or just to sit idly on the ground in the woods.

The recent advances in genomics, bioinformatics and the gene chip technology have led to the discovery of how genes determine the human susceptibility to disease, apparently to minimize human suffering. But the potential of misusing the genetic information raises many ethical concerns regarding particular races or ethnic groups. In the area of gene-environment interaction, scientists are now gathering information that the same toxicants can affect different people differently. This is not an unexpected great discovery. People may have different susceptibility, ability to detoxify and eliminate from body such toxic materials depending on food habits, nutritional status, life style etc. The scientific information, however encourages industries to shake off responsibility and shift focus "from the polluters to the victims of pollution". The mere fear of discrimination may keep people away from seeking medical advice and genetic counselling, the very benefits this advanced genetic information was expected to provide. Different groups including government, employers, health and insurance agencies and sociologists can work together to address these difficult issues. □

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