

## Chemical Pollution and Human Health

There seems to be a common misconception that the best way to dispose off garbage is to set fire to it. Not only municipalities but also local communities as well as individuals have started piling up all kinds of hazardous wastes and simply setting fire everywhere. Perhaps many think that clearing garbage this way is a great act of social service. Burning plastics, electrical and electronic wastes and other hazardous materials leads to chemical poisoning of the air, water and soil system. Normally we think of air pollution only in terms of dust, smoke or smell. A lot more dangerous is chemical pollution. Toxic gases released into the atmosphere at some place on earth spreads all over the globe at the speed of the wind. Rains bring some of these harmful chemicals back to the earth's surface, poisoning the soil and the water bodies as well. Any polluting activity carried out by anybody anywhere in the world will affect all human beings, in fact all life forms.

Toxic chemicals get into the body through the air we breathe, water we drink, food we eat and even through the skin. Mothers pass on chemicals to the babies too. The body has no way of throwing out all harmful chemicals. Many chemicals are slow poisons and may remain undetected for decades. Scientists believe that every human being living anywhere on earth today has at least 700 contaminants in his/her body. Most of these chemicals have not been well studied. There is no known safe way of reducing the body burden of all harmful chemicals. The only way is to prevent pollution in the first place.

Plastics have become so popular because they are cheap, light-weight, water-proof, easily formed into any shape, can be made transparent or given bright and attractive colours. Today we use plastics everyday for practically everything. Plastics are not bio-degradable. They have very large volume to weight ratio and so occupy large volumes when dumped after their life is over. Many plastic articles have a very short useful life and we end up creating mountains of these waste materials. The petroleum used to make plastics generates dioxins due to the use of chlorine catalysts in the production process. Burning of these plastics generates formaldehyde and acetaldehyde, both suspected carcinogens. Burning PVC releases dioxin, a persistent bio-accumulative toxin which can lead to Cancer etc. Thermocol contains polystyrene. It makes the soil infertile, releases poisonous gases on burning, causing respiratory problems, even death. Other plastics, sometimes argued to be safe, contain harmful additives such as brominated flame retardants, fluorinated hydrocarbon (teflon-like) coatings, metal paints, dyes, other metals, etc.

Everything you can see, touch or feel is a chemical substance, some natural, many man-made. An estimated 80,000 man-made chemicals are used commercially today - in industries, in the agricultural farms, in the hospitals, even at homes and offices. Artificial substances including plastics, PVC, thermocol, artificial leather, rubber and sponge, chemical fertilizers, pesticides, insecticides, drugs, industrial and house-hold cleaning agents, disinfectants, soaps, detergents, cosmetics, paints, etc. are all poisonous. Electrical, electronic, communication and entertainment equipment, computers, mobile phones etc. contain some of the deadliest chemicals including Mercury, Lead, Cadmium, Hexavalent Chromium, Antimony, Brominated Flame-Retardants, Poly-Vinyl Chloride (PVC), Poly-Chlorinated Biphenyls etc. which are all dangerous if they find their way into our bodies. Today we routinely use lithium, nickel-cadmium, alkali-manganese and lead-acid batteries. TV, Radio, Cell Phone, Refrigerator, Scooters and Cars, Pens, Tooth Brush, Comb, practically all man-made gadgets contain poisonous chemicals. In addition, toxic chemicals such as dioxins and furans have been created unintentionally through various human activities. Only those substances which do not release toxic gases or residues even when heated,

burnt, exposed to radiation or otherwise allowed to react with other chemicals are safe.

Once the atmosphere is contaminated with poisonous chemicals, there is no way to clean the whole atmosphere. Trees will not do. Trees only reduce Carbon Dioxide and replenish Oxygen. Trees cannot remove poisonous chemicals from the air. Once the water bodies are chemically contaminated, there is no way to get safe drinking water. Filtering or ozonation, UV exposure or reverse osmosis, there is no water purification method that can actually remove all toxic chemicals effectively. Distillation is the only way to remove all chemicals but distilled water is unsafe for drinking. Distilled water is hyper active, it starts absorbing gases from the air and turns acidic in no time. It also absorbs useful nutrients in the body and accelerates death. We cannot drink distilled water. Water pollution therefore signals sure death of human life on planet earth.

Some chemicals directly attack and damage or kill cells or tissues in the body. Others attack the genetic material in the nucleus of a cell, causing damage directly to the DNA, which may create an inheritable defect that is passed on to the next generation. This can lead to gene mutations, leading to cancer, birth defects, developmental and reproductive disorders. Toxic chemicals can cause direct damage to the lungs, liver, kidney, bones, blood, brain, nerves and the reproductive systems, and also lead to cancer, high blood pressure, asthma, deficits in attention, memory, learning, and IQ, Parkinson's-like diseases, infertility, shortened lactation, endometriosis, genital malformation, and dysfunctional immune systems. Foetal exposures to dioxin interfere with normal development, including the immune system. Foetal exposure to polychlorinated biphenyls is related to behavioral and cognition problems. DDT exposure has been related to women's inability to produce sufficient breast milk. The immune systems get impaired. Foetal exposure to mercury causes attention, memory, and learning problems later in life. Brain development is also impaired in fetuses/infants exposed to lead. Developing or immature tissues are far more susceptible to chemical exposures than adult tissues. The developing foetus, infant, or child may suffer harmful impacts from relatively small exposures that have no measurable impacts on adults.

Hormones play extremely important roles as they help to direct the development of the foetus, infant, and child. Hormones are also important in adults, as they are crucial for normal functioning of many bodily systems. Hormones are present and active in only tiny amounts, yet they produce major effects. The developing foetus may mistake a foreign chemical for a hormone, and this may, in turn, cause an incorrect 'signal' to be sent to developing tissues. These early mistakes can permanently damage the baby's developing immune, reproductive or nervous systems.

Diseases like Plague, Cholera, Malaria, Typhoid are caused by microbes but Diabetes, Cancer, Heart Attack, Kidney Failure, Genetic Disorders and Birth Defects, Developmental and Reproductive Disorders, Paralysis and Nervous Breakdown, Obesity, High Cholesterol, Hypertension (High Blood Pressure), Respiratory Disorders such as Asthma, Bone and Teeth problems, Leucoderma and Allergic Skin disorders etc. are not caused by microbes. Presumably all these diseases are caused by chemical pollution.

The balance of chemicals in the human body is extremely delicate. Nerves communicate through subtle electrical and chemical signals. Glands get minute chemical signals from the brain and secrete other chemicals called hormones which in turn control all the complex metabolic processes in the body. Even slightest disturbance of chemicals in the body can cause disease, suffering and death. Microbes cause disease when they attack us in Millions and Billions. Chemicals cause disease and death even in extremely small quantities. Many chemicals are slow poisons.

They accumulate in the body and remain unnoticed until they cross a threshold. Our body has evolved a fantastic immune system and learned to live with microbes for Millions of years but is completely helpless and defenseless against the onslaught of artificial chemicals. Tens of thousands of chemicals are present within human bodies and they react with other chemicals in extremely complex and unpredictable ways. All man-made materials are potentially dangerous. Microbes also affect only the weak and the vulnerable. Chemical pollution makes us weak and vulnerable. It is unfortunate that commercial advertisements and vested interests continue to brainwash people into believing that microbes cause diseases and we have to kill microbes with chemical poisons to remain healthy.

Cities have become large, population densities are very high in many modern cities, transportation and labour costs have escalated, land has become an extremely precious and coveted resource and so it is no longer practicable to segregate and transport hazardous solid wastes and use them as landfill. Tonnes of solid wastes including hazardous materials are being routinely burnt daily. A number of fire accidents happen every year and terrorist bombings and war also lead to burning of hazardous substances leading to large scale chemical pollution. Many species of life have become completely extinct and many more are becoming extinct every day. Even the survival of the human species on planet earth has now become doubtful. It is already very late but hopefully not too late. Let us wake up and change our life styles. Else, the living generations will be guilty of having completely destroyed the entire life system on the Earth.

We need to put an immediate end to this callous practice of burning garbage, of offering oblations of poisonous substances to the Fire God, so to say. A rape or a murder affects one life but burning hazardous wastes kills all life forms and must therefore be made a serious, punishable offense. The best solution is not to produce any hazardous wastes at all as there is no completely safe method of disposing them off. If at all some wastes have to be generated, it is perhaps the safest to bury them deep inside the earth. This prevents stinking, reduces health risks and most importantly, precludes accidental burning.

We need to develop alternative, safe, natural, harmless strategies. It is not realistic to expect people not to use things that are cheap, readily available and convenient. We must stop producing hazardous items in the first place. We can use drinking water fountains so that water gets directly into our mouth without need for any packaging. Mineral water bottles, packets, disposable cups etc. must be completely banned. We can resort to vending machines, dispensers, direct-to-home delivery and other such strategies and ban all packaging including food and beverage items, milk and milk products and house hold utility items. We need to stop manufacturing and using all kinds of carry bags, whether made up of plastic or paper. Thermocol should be completely banned.

Health is Wealth. Perfect health is our fundamental right. Let us not accept disease, suffering, pain and premature death as normal. Let us all demand, not merely sit back and wish or hope, that we all live a hundred long years without ever going to doctors or taking any medicines. Let us all live, live well, and enjoy life but let us not harm others. Causing chemical pollution is an attempt to murder by slow poisoning. Convenience, comfort and pleasure are no valid excuses. We have no right to do anything that can potentially lead to poisoning of the earth system, no right to produce any waste other than purely natural wastes such as urine and stools. Let us all change our life style today. Let us enjoy life, let our children and future generations enjoy life too.

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