# Sustainable development: A mile stone for over all development in reference to environmental protection

# Anitha S. Pillai

National Institute for Research in Environmental Health, Department of Health Research, Kamla Nehru Hospital Building, Gandhi Medical College Campus, Bhopal, Madhya Pradesh, 462001, India, Email: pillai\_bhopal@yahoo.co.in

### ABSTRACT

The major environmental problems are in fact the demonstrations of the degraded environments at global level include – air, water, soil, and sound pollution, lose of biodiversity global warming and climate change, and ozone depletion. The sustainable development is a harmonization between economic growth and environmental preservation. The current scenario where the world is fast moving towards the competition of development for gaining the maximum with the lowest possible investment impacts polluting the purity of their own natural endowment. A major threat to the environment from rapid growing and poorly regulated industries not only causing environmental degradation and possible hazards vanish the fauna and flora of its grip. Man is far from perfect, but the system which he himself designs and operates under can be so organized that mistakes are less likely to occur and the consequences of these that do occur are contained or mitigated. Laws and Regulations are essential to civilized society to retain evil and protect the common man and his endowment. Each country has its own system of laws and these systems often differ radically. The differences that exist can lead to a lot of confusion, but they are a manifestation of the fact that law grows and develops to suit the needs, circumstances and national and natural characteristic of each country.

Keywords: environmental hazard, pollution, laws, regulations

## **INTRODUCTION**

The term environment has been originated from the French word "environnner" means "surround" [1]. Thus all the things which surrounded us e.g. air, water, land, vegetation, forest, microbes, man, animal, heat, light – they constitute our environment. Environment is complex and various several plain ecosystem types, aquatic as well as terrestrial within which exist many different biotic and abiotic components. Each ecosystem is thus a product of complex interactions of living and non living components. Nature has furnished the quantities of all to the scope that a balanced and peaceful life of the living organisms might continue on this earth. Environment concerns have been an integral part of Indian traditions and culture as reflected in 'the Vedas' (Four Holy Books), which first stressed the need for conservation and sustainable use of natural resources at three thousand years ago. The ancient sages, while doing their meditation heard the divine truth they revealed that truths as 'Vedas'. The Vedas are divine and eternal. Saint Atharva in his 'Prithvi Sukta' in Athaeva Veda (reveals related to earth) honored earth as mother and sky is our father and all living creatures as their children [1]. "Don't pollute our mother earth".

These concerns are testimonial in Indian constitution under the directive principles of the state policy, which provide that state shall attempt to protect the environment and to safeguard the forest and welfare of the country. Further the constitution provides that, it shall be the fundamental duty of every citizen to protect and improve the natural environment. The environment and environmental problems no more remained and restricted to a region, country or continent, but could become global concern. Environmental change may be driven by many factors, accelerated growth of economic activities, increase in global population, urbanization, ardent development in agriculture, industrialization, rising energy use and transportation resulted in increasing environmental degradation in almost all the countries. Environmental degradation is the result of the dynamic interplay of socio-economic, institutional and technological activates. The global problems of ozone depletion, depletion of natural resources, loss of biodiversity, poverty and deforestation are specimen for unnerve of environmental sustainability. The movement towards the safe regulation seems to be gathering momentum. The Millennium declaration by the world leaders in September, 2000, sustainable development aimed at making further progress in eradicating poverty advancing healthy and sustainable human development [2].

## SUSTAINABLE DEVELOPMENT

Sustainable development implies a change in all aspects of life in a way that cause little damage to environment. It is an attempt to a precise balance between the demands of economic development and the need for protection of the environment with leaving a similar or better legacy of resources, which was inherited for the next generation. It aims that using exhaustible resources wisely so that, as they are exhausted the profit from their use are reinvested in technology and other forms of capital wealth. It is active long term process including social and economic development as essential elements seen in prospects that may change over time, leading to improved quality of life for all human beings and to the eradication of poverty and the reduction of inequality. Several world level meetings were held and discussed on sustainable development, on the portfolio of UN and programmes public awareness were finalized and spread out for common man [3]. Implementation of sustainable development is therefore inevitable and incremental process, which needs to be reevaluated and reinforced.

## LIVELIHOOD SECURITY

In the case of livelihood security, millions of human beings survive as half starved, ill clothed, and disease prone livelihood security is no meaning to these people. As long as poverty and malnutrition, a large number of people denied necessities such as safe drinking water, food, house etc. They are denied right to life. UN conference on human environment at Stockholm (Sweden) in 1972 Late Smt. Indira Gandhi, then Prime Minister of India, emphasized at that conference "removal of poverty is an integral part of the goal of an environmental strategy for the world" [4]. The ever expanding population ate over forest for fulfill their needs, degraded land, surroundings and polluted water system. Now, it is our responsibility to manage growth and development in society with suitable strategies that meets the current human needs, conserving the natural resources for meeting needs of future generation as well to. Therefore, our first task should be to put an immediate halt to our ever increasing population. Family planning must be made compulsory and every couple must spontaneously offer for sterilization after second child. Natural resources like forest must be treated as national recourses of individual country and their use can be determine only by the country concerned. A complete ban on cutting of trees for next 15-25 years should be helpful, also provide awareness to the adult about importance of trees and tree plantation should be an integral part of school and college education. Soil and water degradation control, ecoregeneration including reforestation and other employment generation programs need more global support.

## **IMPACT OF CLIMATE CHANGE**

The most effective way to control climate challenge is to adopt a sustainable development pathway by shifting to environmental friendly technologies and promotion of energy efficiency, reforestation etc. "The issue of highest importance to developing countries is reducing the vulnerability of their natural and socio-economic systems to the projected climate change" [5]. Emissions and global warning continue for several decades and sea levels will continue to rise for several centuries paved way to natural calamities. Climate conservation has to be encouraged with reduce emissions by shifting renewable energy system. An appropriately designed and estimated mitigation and adaptation actions can reduce the effect of climate change. The Calamities are monsters, who dig tomb for sustainable development, is a curse for natural endowment and vanish the flora and fauna of its grip. Disaster may be natural or man oriented one is better than other causing hindrance to sustainable development and environment degradation. Natural disasters, we can say a great extent a reaction of earth and nature against human activities. But it played havoc with the lives of millions of people and destroy billions of dollars of habitat, property and related environmental degradation each year around the globe. That cannot be prevented, it is impossible to recoup the damage caused by the disaster is ever lasting startle. But we can minimize the impact by preparedness and long term risk reduction measures. Each nation need a plan and review the same in a regular manner, how to tackle the disaster [6,7]. An administrative response mechanism in terms of connecting centers, provide periodical knowledge and instructions for scientific technological solutions towards disaster management.

### **INDUSTRIAL HAZARDS**

It is believed that true economic progress lay in industrialization. In the eve of British departure from India on 14<sup>th</sup>August, 1947, India's first Prime Minister, Late Pandit Jawaharlal Nehru in his convocation address declared that "India's task in the future that the ending of poverty, ignorance, disease and inequality of opportunity" and he added "industrialization as the key to alleviating poverty" [8]. It is true but industrialization without concurrent evolution in safety regulations could have catastrophic consequences. it is estimated that chemical and pharmaceutical industries are growing enormously and several hundred chemical compounds are being synthesized every day. We know very little about the effect of these chemicals on ecosystem in either short or long term. Ardent development in the agriculture accelerated pesticide industries. Pesticides are designed to kill or harm pests, but pesticides are also harm or kill people and other animals both aquatic and terrestrial. The history of the chemical industry is replete with chemical accidents and devastating. The physical consequences of chemical hazards might spread to other countries through water, wind and food. The political and economic effects might also spread all over the world.

On Monday 19<sup>th</sup> November, 1984 LPG (Liquid Petroleum Gas) storage and distribution centre at San Ixhuatepec, a North – Eastern suburb of Mexico City, runs by Pemex (Petroleos Mexicans) had an accident. There were 542 people were killed and more than 4000 injured [9]. Research showed that with proper planning and safety provisions, the death would have been minimal and damage to property confined to the site itself.

On  $2^{nd}/3^{rd}$  December (00.15 a.m.) 1984 Methyl Isocyanides and Phosgene (MIC), poisonous gases were escaped from the Union Carbide Plant (UCIL) situated in the North-Eastern side of the city of Bhopal, Madhya Pradesh, India, a subsidiary of US based Union Carbide Corporation (UCC). It was estimated that, 520,000 persons were exposed to the gas, 8,000 died during the first week and more than 200,000 have suffering permanent injuries [9]. Single person is pray for three or more disease. The hazard was colossal and Bhopal city was the witnessed the dance macabre and

terrible social seismicity. The lanes, streets were littered with corpses and carcasses of buffalos, cows, dogs, cats and horses like a doomsday. Hospital personnel were not knew the antidotes or equipments to deal with such a poisonous calamity. Dr. V. M. Katoch, Director General, Indian Council of Medical Research explained that "The doctors were neither aware about the nature of "Killer Gas"....nor did they have any idea about antidotes to be administered" [10]. Those who escaped from house were like orphans in the hospital dying on bed, floor, lawns and compound, corpses were being piled one up on another. "People looking for their near and dear ones, were going from body to body and were lifting the pall from over head to identify was a heart rending scene all around" [11]. Dead bodies were filled in trucks and taken away for a mass burial. Now also thousands of people live in Bhopal with psyche and hemophilic heart.

The greater part of the town was affected by the heavy toxin gas cloud and many died in their sleep. Others woke to intense irritation in their eyes or a choking sensation in their lungs. Gasping for fresh air people rushed out into the street, they make matter worse for themselves. They were running helter-skelter and no one knew what had attacked them. The impact of disaster continuing to in these days, in terms of psychological and neurological disabilities, blindness, skin, vision, breathing and birth disorders [12]. My personal interview with victims they explained that "those who were passed away are lucky, we are moving dead bodies with diseases, no feeling, no working and walking capacity, more over no effect of medicines on gas affected disease". We know that small Bhopal's happens every day-the mechanisms and the affected organs seem to be the same as for the original Bhopal hazard.

In 1985 at Kerala, India, chlorine leakage from a textile mill 40 workers were hospitalized. In 1987 at Gujarat, India, 5,000 persons were injured because of gas leakage. In 1991 at Maharashtra, India, 100 persons were killed an explosion in a ship. In Union Carbide's Factory in USA and Europe more than 700 workers died, several had been injured and 17,000 had been evacuated because of accidents. In 1985 MIC plant at West Virginia, 135 peoples were injured by toxic gases [9].

## RELUCTANCE

It is quite usual that, companies dispute their own role in the accidents and deny the health effects of the accidents also reluctant to economic compensation of the victims. In the case of Bhopal Gas Tragedy, one side underdeveloped handicapped country India, poor illiterate collapsed victim slum! Other side UCC militated against the idea of multinational enterprise liability and had to be sued before the US court. The tragedy was national calamity and it was the right and duty of the Indian government indeed, to take care of their citizens in the exercise of 'parens patria' jurisdiction or on analogous thereto. According to the Indian concept the doctrine of 'parens patria' recognized King (Government) as the protector of all its citizens as parent [13]. The stand of the Indian government had been in consideration of economics advantages that, the Bhopal plant was established with defective and inadequate safety standard in comparison with the design of UCC's other plant in America. This difference manifested an indifferent and neglect for human safety, tragedy had been the result of a conscious deliberate action of UCC.

UCC weaved such a pattern on the Indian soil, which later becomes knot of vipers for the inhabitants of Bhopal. Workers and nearby residents of the plant had never received any training or information about the possible calamity or the toxicity of the chemicals. Up to till today, UCC has not released any information about the possible composition of the toxic cloud. The process that lead to the calamities, the devastation of the ecosystem, long term effect of the toxicity, callous indifference of the company, the government, the medical, scientific establishments has been documented numerous articles, but the history of this calamities repeating and create environmental degradation, challenges to the coming generations and sustainable development. After three decades

the Bhopal is still reeling under the trauma of the horrible nightmare, more over biodegradability, disease, handicapped, orphans, helpless and toxic air, water, soil even infants make toxemic with toxic breast milk [14]. Who is responsible for all these havoc? Whosoever may be the blameworthy? [15].

#### SAFETY

The knowledge about the Bhopal tragedy can be used, when we study other accidents or discuss, what measures should be taken to prevent exposure of toxic chemical substances? The need is for openness and full information, laws and regulations and a responsible regulatory authority. Companies are profit motive, but it has to be recognized that safety costs money. No amount of money will ever completely eliminate catastrophes, but risk can be diminished at a cost and the cost effectiveness must always be considered. As we shall see good design and forethought can be often fetch increased safety at less cost.

Each accident can and should have valuable lessons that can help us to avoid similar accidents. The longer a plant runs without major accident, the stronger this false confidence can become. All accidents result damage, loss and break on development. The damage to plant and property can be valued at a book value is replaced value. But what of those who suffer injury or die? Human value is depends up on his dependability or dependence. It is different from country to country and circumstances. A more academic approach is that compensation should be based on loss of earnings, taking the view that nothing can equally compensate the actual loss of life is a natural resource.

The use of high technology is usually associated with high risk and low level safety, it is not always true, but use and misuse of high technology have brought the subject of safety very much to the fore. A complex technology offers more opportunity for mismanagement and misjudgment. A well known and significant saying: 'A chain is no stronger than its weakest link'. Its full recognition is to the subject of safety. The safety consciousness of the person cannot be brought. It has to be cultivated. This culture is the sum total of all the persons, of all levels in the organization. There must be knowledge and undertaking of a high order and it would require a talented safety officer. Proper planning and safety provision, the death toll would have been minimal and damage to property and environment limited to the site itself. The review led to the installation of adequate safety equipment and formulation of tight procedure to ensure safe operations. Management has to recognize human nature and act accordingly. Mistakes are indeed an inescapable part of daily life. The cause of most of the accidents may well lie in error by workers, by management or by both and we might even assert, that the weakest link in this chain is really management, since it is the task of management to certain, that their workers do not make mistakes or that such mistakes as they do make do not lead to accidents. Accident prevention worldwide will profit materially from barter of information, transfer of technology and the standardization of information that such cooperation would make possible.

## LAWS AND REGULATIONS

Laws and regulations regulating to safety differ from country to country. The situations in the developing countries are much desirable. A mounting numbers of laws and regulations on safety are swamping the relevant organizations. A better approach might be need for the chemical industry to regulate itself, which not only pledge but experience. Reviews have shown that non regulatory methods of managing risk deserve serious consideration by local and Central Governments. There is a wide variety of chemicals and various situations in which they can be found and used. No any country has a single law covering all chemical substances and their related hazards. Their varying

Acta Biologica Indica 2014, 3(2):621-627

backgrounds, very considerable differences between the relevant laws from country to country in this area. The Toxic Substance Control Act (TSCA) is covering the regulations of manufacture, distribution and disposal of chemicals dangerous to environmental and health. Its authority extends from industrial chemicals through pesticide intermediate to consumer products. Its implications are far reaching and it requires industry to furnish the Environmental Protection Agency (EPA) with both technical and business information about production, distribution, use, exposure, health risk and bring in relation it to the manufacture of chemicals. As a result on potentially harmful chemicals have to be made and available with a pre manufacturing review for new chemicals. USA is the most regulated country in this respect and thus provides us most understandable examples. The companies are aware that a mere meeting of the laws and regulations is no insurance or excuse, if disaster occurs. It is far more likely to ensure that, its safety provisions are both adequate and being observed in practice and not only merely in the letters.

#### CONCLUSION

Prevention is always better than cure is the nutshell of my study. To provide resources for growing number of peoples, we have to modified cultivated, built on or degraded a greatly increasing population area of the earth's natural systems. Integrated with developing environmental education, in that individuals and social groups should acquire awareness, knowledge, develop attitudes, skills and abilities to participate in solving real life environmental problems by which, lead sustainable development. The community faces risk and hazards from day by day in home, roads and around. This continuing difficulty will overcome with reiteration of the truth and understanding our responsibilities, those who are involved in risk management must be honest and straightforward at all times. The governments have a responsibility to protect their inhabitants and property from the negative effects of development. Security and sustainable development furnished with defended environment should be achieved with constant human effort.

## REFERENCES

- [1] Rajput, A. (2006): Environmental Science. Quality Publishing Company, Bhopal, Madhya Pradesh, India.
- [2] Schirnding, Y. V. and Mulholland, C. (2002): Health and Sustainable Development: Addressing the issues and challenges, Geneva, WHO, pp. 1-30.
- [3] Goyal, M. K. (2013): Primary Environment India. Agrawal Publications, Agra, India.
- [4] Sharma, P. D. (2011): Environmental Biology and Toxicology (IIIrd revised edition, 1993). Rastogi Publications, Meerut, India, p. 147.
- [5] Sathaye, J.; Shukla, P. R. and Ravindranath, N. H. (2006): Current Science. 90 (3): 314.
- [6] Pillai, A. S. (2014): Disaster Management with Modern Technology. International Conference on Emerging Trends in Science and Technology, Impact on Environment and Society for Inclusive Growth, AISECT University, Bhopal, India, (208/b), p. 59.
- [7] Pillai, A. S. (2014): International Journal of Humanities and Social Science Invention. 3(6): 1-4.
- [8] Hambrock, J. and Hauptmann, S. (1999): Industrialization in India. Retrieved July 19, 2011, from Student Economic Review: University of Dublin.
- [9] Eckerman, I. (2005): The Bhopal Saga Cause and Consequences of the World's Largest Industrial Disaster. Universities Press (India) Private Limited, Sweden. pp. 9-10.
- [10] Katoch, V. M. (2010): Technical report on Pathology (1984-92), New Delhi, India. Indian Coll. of Med. Research. Bhopal Gas Disaster Centre, Medico Legal Institute, Mahatma Gandhi Medical College, p. 1.
- [11] Singh, M. (2008): Unfolding the Betrayal of Bhopal Gas Tragedy. B. R. Publishing Corporation, Delhi, pp. 44-45.

Acta Biologica Indica 2014, 3(2):621-627

- [12] Dwivedi, M. P. (1994): Health Effects of the Toxic Gas Leak from the Union Carbide Methyl Isocyanate Plant in Bhopal. Technical Report on Population based long term, Epidemiological studies (1985-1994). Bhopal Gas Disaster Research Centre, Gandhi Medical College, Bhopal (M.P.), India, pp. 12-13.
- [13] Sinha, R. C. (1997): Brief Note on Bhopal Gas Tragedy Relief and Rehabilitation India. Govt. of Madhya Pradesh, Bhopal. Directorate of Bhopal Gas Tragedy Relief and Rehabilitation, Bhopal, p. 9.
- [14] Amnesty International (2004): "Clouds of Injustice Bhopal Disaster 20 years on DOW clean up Bhopal Now" Amnesty International Publication, Alden Press, U. K., pp. 1-104.
- [15] Pandey, A. K. (1994): The ophidian and the orphans of Bhopal, Bhopal Gas Tragedy. Rajdhani Law House, Bhopal, p. 13.