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Impact of environmental pollution on health: A sociological study in Tuticorin industrial town, TN, India

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Abstract

The paper highlights impact of environmental pollution on Health. The present study has been taken up in Tuticorin industrial town area. Major industries numbering 12 established in the district. They are engaged in the production of cotton, staple yarn, caustic soda, PVC Resin, fertilizers, soda ash, carbon-di-oxide gas in liquid etc., The important major industries are sterlite, SPIC, Tuticorin Alkali Chemicals, Dharangadhra chemicals work, Madura coats, Kilburn chemicals industries. The public sector undertakings are the Thermal power unit (620mm), Heavy water plant, and port trust. The district contributes 70% of the total salt production of Tamil Nadu and meets 30% of salt requirement of our country. Aside from deficiencies in the life support system, men is subjected to a variety of environmental Hazards. Some of these are natural, but increasingly environmental hazards result from mans activities and numbers. Some times manmade hazards are direct in their impact on other man. But they may be indirect in their influence, acting through other biological systems or overburdening the capacity of natural systems for renewal, dispersion, or assimilation. The following factors can be used in categorizing environmental hazards. (1) Biological (2) chemical (3) Physical (4) Psychological and (5) Sociological. Hence more than 12 major industries have established in and around Tuticorin. This becomes one of the source of air pollution, water pollution, Noice pollution, in this area. Air pollution may be broadly defined as the presence of one or more contaminants like dust, smoke, must and odour. The atmosphere which are injurious to human beings, plants and animals which unreasonably interfere with the comfortable enjoyment of life or property. Air pollution seriously damages human beings.

1. Introduction

Environmental sociology in the study of the reciprocal interaction between the physical environment, social organization, and social behaviour. Within this approach, environment encomposses all physical and material bases of life in a scale ranging from the most micro level to the biosphere. An important development of this sub discipline was the shift from a sociology "of environment" to an "Environmental sociology" While the farmer refers to the study of environmental issue through the lands of traditional sociology", the later encomposses the societal environmental relations."

A major challenge for the 21st Century is not the creation of wealth, but the management of health. Concern over the rapid depletion and degradation of the World's biological resources and the implications of this loss on the global biosphere and human welfare have been mounting in recent years. Loss and modification of ecosystems and habitats are occurring at an alarming rate, although it is much difficult to quantity or estimate on a global scale. The continuing loss of the biological wealth may leave us with a smaller and less 'varied' stock of global biological resources. The result may leave the human livelihood and the future of the biosphere at risk. Development efforts along with modern warfare have created an uneasy and irreparable environmental consequences, the world over. Human life and health are at great jeopardy and the burden of diseases and ill health raise questions on the development efforts in the pursuit of global prosperity and wealth.

The environmental pollution and degradation may rise in step with such a rise in output, the result leading to an appalling environmental pollution and damage. Tens of millions more people may become sick or die each year from environmental causes. Water shortages may become intolerable and tropical forests and other natural habitats may decline to a fraction of their current size. The earth's 'sources' are limited and so is the absorptive capacity of its 'sinks'. Whether these limitations will hinder the growth of human activity will depend on the scope for substitution, technical progress and structural change.

1.1. Environmental Health

Environmental health can be defined as "the aspect of public health that is with all external conditions such as all forms o life, substances, forces, problems and challenges and any other condition in the surroundings of man that that may extent an influence on man's health and well-being". Disease in this sense represents maladjustment of the human being to his environment.

This rapid industrial growth has made water pollution, air pollution, and hazardous wastes pressing environmental problems in many areas of the developing world. Industrial emission's combine with vehicle exhausts to cause air pollution, while concentrations of heavy metals and ammonia loads are often high enough to cause major fish kills down- River from industrial areas. The lack of hazardous waste facilities compounds the problem with industrial wastes.

The physical environment has a major influence on human health not only through temperature, precipitation and composition of air and water but also through its interaction with the type and distribution of the flora and fauna (the biological environment). The biological environment is a major influence on the food supply and on the reservoirs and transmission mechanisms of, many diseases. The following gives the simplified illustration of these relationships.

The scale and nature of human activities including agricultural, industrial, and energy production, the use and management of water and wastes, urbanization, the distribution of income and assets within and between countries, the quality of health and other public services and the extent of protection of the living, working, and natural environment.

Environmental hazards to health fall into two broad categories. On the one side is the lack of accessibility to basic environmental resources like sanitation, water, fresh air, shelter and the like. On the other side is the exposure to hazardous environment. These hazards include biological agents viz., micro-organisms such as bacteria and viruses and parasites which contribute to the global burden of infectious disease, chemical pollutants, ultra violet radiation and the like which cause birth defects and damage the body immunity system and which render people susceptible' to a variety of health risks.

Environmental Problem	Effect on Health
Water pollution and water scarcity	More than 2 million deaths and billions of illnesses a year attributable to pollution, poor household hygiene and added health risks caused by water scarcity.
Air pollution	Many acute and chronic health impacts excessive matter levels arc responsible for 300,00 - 70,0,000 premature deaths annually and for half of childhood chronic diseases; women and children in poor rural areas affected by smoky indoor air.
Atmospheric disasters	Possible shifts in vector-borne diseases; risks climatic natural: diseases attributable to ozone changes depletion (perhaps 300,000 additional cases of skin cancer a year worldwide; 1.7 (million cases of cataracts).

Among the environmentally-based diseases water, food and oil borne diseases affect a majority of the world population. Diarrohea, Cholera and Hepahtis A and E have the clearest link to the environment and spread by both bacteria and virus. According to a WHO study, Diarrohea deaths were around 2.5 million in 1996. Around 4 billion cases of diarrohea cause widespread debilitations each year.

The nuclear development and use, the world over is a major threat to human health today. The radiation hazard arising from Extra Low Frequency (ELF) magnetic fields of between one and one hundred hertz (HZ) as well as the very High frequency fields of 147 MHZ, which can alter the outflow of calcium ions from the brain tissue of children, in particular with steadily weakening resistance causes tumour formation in the human body.

Health is a fundamental resource to individual and community and is a pre-requisite for their social, spiritual and physicalwell-being, the protection and preservation of which is dependent on the ecological status i of the environment and sustainable development.

1.2. Review of Literature

Any systematic scientific inquiry has its foundation built up studies conducted in the Past. The main objective of this chapter is to review the

theoretical and empirical information available from similar or atleast related studies, such recapitulation could some as a basis for delineating an ideal conceptual framework for the present study and it enables one to identify the past trends in any particular branch of science. Also it helps the researcher to get more clarity on the subject to be studied.

1.3. Studies on Environmental Issues

Mitch William (1993) describing the emerging field of ecological engineering, define it as "the design of human society with its natural environment for the benefit of both." The concept pertains more to managing the natural environment rather than the typical engineering domain of the built environment. Gives examples such as the Biosphere project, constructed wetlands sewage treatment systems, water hyacinth river pollution control, and fish production and wetlands systems are examples of ecological engineering.

R.R. Barthwal (2002) reports that environmental degradation depends on the nature of the industrial development projects and the technology involved its size location and the time taken to implement them. All industrial projects need not be taken as producers of equal beneficial or negative results. Some industries produce only beneficial results only with limited adverse impact. In contrast some produce adverse living conditions but beneficial economically also.

Holmes Hannah (1991) describes the environmental effects, including resource use and pollution, and of meat consumption. He, also mentions human health effects and notes that vegetarianism is more environmentally beneficial, promotes better health, and is less expensive than meat eating. This paper gives general recommendations to preventing pollution by eating less meat and more plant products. It includes charts and sources for more information.

Hawken Paul (1993) claims that the socially responsible corporation is a have-your-cake-and-eat-it-too myth. The author's agenda for reform includes: adjusting the price of goods to reflect true environmental and other social costs; incrementally replacing the present U.S. tax system with revenue-neutral "green fees"; rearranging the linear industrial economy into a nature-mimicking cyclical system [industrial ecology]; designing for decomposition, closed-loop reuse/recycling, and toxic materials stewardship; restoring the balance between commerce (business sector) and the guardian (government); and shifting from electronic literacy to biologic literacy.

1.4. Studies on Health

Andersson and Marks (1989) looks at ways in which state, class and health may be related in Southern Africa. The region provides useful comparisons because of the starkness of the relationships between class, race, disease patterns and health care in much of the sub-continent; the different types of state and class structure and the changes in ideology and to some extent health practice came with the political independence of some of its component parts.

Balasubramanian (1995) analyses the data on the health of the people and the economic conditions in several developing countries. This paper calls attention to the urgent need internationally for a new approach to mobilize the interests, commitments and resources of a broader constituency of support for the poor.

Schindler, Kunzli, Bongard, Leuenberger, Karrer, Rapp, Monn, Ackermannliebrich, (2001) made a study on 3,900 nonsmoking adults from eight areas of Switzerland that represent a range of urbanization, air pollution, altitude, and weather conditions. In this study, researchers obtained three different measures of lung function and compared the results with prior days measurements of ozone, total suspended particulates, and nitrogen dioxide. Daily average concentrations of ozone were significantly associated with mean respiratory function measures during the summer months.

1.5. Research Design

The objectives of the study from the wider socio-economic perspective focusing on environmental hygiene practices among the selected in Tuticorin town. Based on the framed objectives some appropriate hypotheses are formulated. It is also discussed the methodology and frame work of study in terms of the nature of study variables used, sampling method, data collection process, data analysis procedure operational definition of key concepts and limitations.

1.6. Objectives

The following objectives are framed for the purpose of the present study:

- To study the socio-economic life of the respondents in Tuticorin town
- To analyse the problems of environment in the study area;
- To study the respondents' behaviour on household sanitation and environmental hygiene practices in the study area.
- To study the respondents' behaviour on environmental and common property resource management practices in the study area
- To find out the defects and problems in the existing environment hygiene and discomfort at their life;

➢To put forth suitable suggestions to improve the respondents' environment protection for healthy life.

2. Methodology

This study attempts to examine the respondents' behaviour on environmental hygiene and sanitation practices by making an experiment in Tuticorin town, Tamil Nadu. This study deals with environmental hygiene issues relating to environmental pollution and its impact on land, water, health etc., this study analyses the extent to which urban people have knowledge of environment and awareness. It analyses their behaviour on environmental conservation and preservation. It outlines the respondents' awareness of various environmental hygiene and sanitation issues and measures.

It is generally an exploratory framework of identifying the awareness of among urban people about environmental issues along with their action-oriented activities to preserve and conserve rural environment in particular. Thus, this study is partly exploratory in nature. Thus it constitutes the analytical aspect of the study. Hence, this study is partly exploratory in nature and partly analytical in nature.

2.1. Pilot study

The researchers have conducted a pilot study in Tuticorin town. The pilot study was conducted by employing an interview schedule in the month of October 2005. Also, the result of the pilot study has enabled the researcher reframe the tools for data collection.

2.2. Sampling

The area was selected on a clustered basis, but the data was collected by using of simple random sampling method. The sample size of this study is 400 respondents.

Among the several area of Tuticorin town the researcher selected six areas such as Spic Nagar, Thermal Nagar, Mattakkadai, Threshipuram, New Bus stand, Old Bus stand and Harbour in Tuticorin town. The selection areas were quite relevant from the point of view of the studying environmental hygiene practice among the households. These areas were located in and around river belts and also has the concentration of a large number of highly dangerous and polluting industries. Further, people of this area have traditional customs and practices.

2.3. Data collection

The data collection was carried out December, 2009. The researcher has revisited the study areas in the month of March 2010 with view to collect supplementary data as required by foreign examiner. Besides, secondary data relating to the district profile and other data in Panchayat Raj are collected during field study visits.

2.4. Concepts

The following concepts are operationally defined for the purposes of the present study.

2.4.1. Environmental Degradation

It refers to the occurrence of various forms of land degradation, various forms of water pollution, occurrence of noise pollution and occurrence of air pollution and their consequence on the well being of the local people.

2.4.2. Socio-Economic Status

It refers to caste status, occupational status, educational status and income status of the respondents and they are taken as independent variables for the purpose of the present study.

2.4.3. Environmental Awareness

It refers to knowledge of the rural households on pollution and pollutants and their effects on life support system. It includes knowledge of hygienic practices, sanitation practices, environmental health care measures and so on.

2.4.4. Environmental Issues

It refers to ways and means of undertaking environmental preservation and conservation measures like sanitation, health care activities, solid waste management, maintenance of environmental resources.

2.4.5. Limitations

The findings of this study are applicable only to selected areas only mid it is not applicable to the entire areas of Tuticorin. This study covers only environment related aspects and studying of all aspects of hygiene and sanitation is not possible at the level of an individual researcher due to constraints imposed by money, time, energy and efforts.

3. Results and Discussion

The actual process of research findings, data analysis, data interpretation and logical arguments are discussed. This chapter starts with the socio-economic background of the households followed by information seeking behaviour, information use pattern, information sharing behaviour, data search behaviour and so on for statistical analysis. All tabular data and statistical analysis are presented in this chapter.

Table 1. Sex wise distribution of the respondents.

S. No.	Sex	No. of Respondents	Per cent
1.	Male	301	72.25
2.	Female	99	24.75
Total		**400**	**100**

The above table shows that the majority 301 (72.25 %) of the respondents were male, the remaining 99 (24.55%) of them were female. It inference that the majority of the male were ready to replay for the problem of environmental pollution.

Table 2. Impact of environmental pollution

S. No.	Name of the Disease	No. of Respondents	Per cent
1.	Skin diseases	371	93.00
2.	Eye irritation	380	95.00
3.	Asthuma	153	38.00
4.	Deftness	298	75.00
5.	Allergy	312	78.00
6.	Unhygienic conditions	390	98.00
7.	Respiratory problems	393	98.00
8.	Cancer	9	2.00
9.	Hypertension	91	23.00

The above table prove the impact of environmental pollution an account of establishment of hazard industry such as Kilburn chemical industries, Sterlite Copper Plant, Thermal power plant, Spic Industries, Heavy Water Plant and Madura Coats, in this regard they replayed that an account of the establishment of the above hazardous industries, the majority 371 of the respondents faced the problems of skin diseases, 380 of them were facing the problem of eye irritation, 153, of the faced the problem of Asthuma 298 of them were facing the problem of deftness 312 of them facing the problem of allergy, 390 of the facing the problems of unhygienic conditions, 393 of the facing problem of respiratory problem, 7 of the were facing the problem of cancer and 91 of them were facing the problem of hypertension.

The inference drawn from above discussion is that the majority of the respondents facing the problem likes in diseases, eye irritation, deftness, allergy, unhygienic condition respiratory problems and diarriah.

4. Conclusion

Industrial disposals and other chemical contaminates that enter waterways through agricultural runoff, storm water drains, and industrial discharges may persist in the environment for long periods and be transported by water or air over long distances. They disturbed the function of the endocrine system, resulting in reproductive, developmental, and behavioral problems. The endocrine disrupters reduced the fertility and increased the occurrence of still births, birth defects, and hormonally dependent Cancers such as breast, testicular, and prostate cancers. The effects on the developing nervous system can include impaired mental and psychomotor development, as well as cognitive impairment and behavior abnormalities and pharmaceuticals such as antibiotics and synthetic sex hormones from contraceptives. The GOs and NGOs should take effective steps to clean and green the streets, schools, public safety, etc. Even though it's obvious that society stands to benefit from such things, people have always struggled to find some sensible, acceptable way to pay for them. This perennial wrangle. Far on the right, they tell us that self-interested private ownership is the fairest and most efficient way to assign resources.

The developing countries like India should be instrumental in raising societal concerns about environmental problems. The scientists should contribute in ways to increasing scientific input in public policy. The governmental agencies, as members of organized scientific bodies such as the National Academy of Sciences, and as researchers in universities and environmental nongovernmental organizations or, conversely, in industries. There are some debates about whether too much or too little science is reflected in actual policy making; few will deny that significant human and institutional resources are expended in an effort to make scientific analyses responsive to policy needs. Therefore, an appropriate forum like scientists, academicians, policy makers and panchayat raj

institutions should take effective step to protect environment in all aspects.

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