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## 50. ECONOMIC VALUATION OF HOSPITAL WASTE MANAGEMENT

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### ABSTRACT

**B**io- Medical Wastes have become one of the most widespread and important environmental and public health issues and present day concern throughout the globe and as such, the problem has been recognized as one of the important issues towards abatement of pollution in the country along with the rest of the world. The main thrust of the present study is to evaluate the willingness to pay with specific reference to solid waste management in Hospitals. The study has analyzed three hospitals in the Chennai area, in Tamil Nadu. The main method of disposal of hazardous wastes is through incineration and this has been studied with regard to the Government and Private Sectors through the selected hospitals, by way of life expectancy of equipment probable use per day/per kg, cost of operation per day/kg and ultimately the WTP by those availing of these facilities have all been carefully researched.

**KEY WORDS:** Hospital Waste, Contingent Valuation Method, Willingness to Pay.

### INTRODUCTION

Bio- Medical Wastes have become one of the most widespread and important environmental and public health issues and present day concern through out the globe and as such, the problem has been recognized as one of the important issues towards abatement of pollution in the country along with the rest of the world.

Hospital Waste Management is and important subject that needs urgent attention. It is appropriate to consider an incremental approach realizing that an improvement is of great value even if resources do not allow achievement of highest standards immediately ( S.Chandrashekarshetty, 2001).

There are many examples and ample evidences that improper and unscientific disposal of hospital and bio-medical wastes can cause serious damage to health and environmental. Protection of health and environment is a challenging problem of this county. Environmental pollution is detrimental to human health as people and environment are interconnected (David. W. Pearce, 1993). Hospitals and dispensaries are rapidly

increasing due to continuously degrading environment. However, hospitals themselves generate large quantities of Bio-Medical Waste which is a complex mixture containing infectious, chemical, pharmaceutical and radioactive wastes that can pose health and safety hazards due to its infective and toxic characteristics. As a result there is a growing concern among public and civic bodies about storage, treatment, transportation and ultimate disposal of BMW (WHO, 1999) (A. Pruss, et al., 1999).

All producers of waste are legally and financially responsible for the safe and environmentally sound disposal of the waste they produce as per the polluter pays principles. This principle also attempts to assign liability to the party that causes the damage. The costs of separate collection, appropriate packaging and on-site handling are internal to the establishment. The cost of off-site transport, treatment, and final, disposal is external and paid to the contractors who provide the service. The cost of contraction, operation and maintenance of system for managing health-care waste can represent significant part of the overall budget of a hospital or health-care establishment (A.Pruss et al., 1999). However several hospitals are generally small or medium sized and cannot afford to install expensive treatment plants due to various economic constraints.

Bio-Medical Wastes Management has been a neglected subject in India. Recently, the government of India (GOI) has promulgated the Bio-Medical Waste (Management and Handling) Rule in July 1998. As per the GOI Rules, Bio-Medical Wastes have been classified into 10 categories (Ministry of Environment Forests Notification 1998).

Most importance is medical waste to be managed in an environmentally sound manner. Environmentally sound management of the medical waste requires proper understanding of risks associated with the disposal of such wastes, and methods of proper segregation, storage, handling treatment and disposal. Collection, transportation and final disposal of large volumes of wastes require a high level of management and technical expertise. There is also a rising public awareness about the need for an environmentally acceptable

management of solid wastes. The final disposal of solid wastes can be carried out by several methods incineration, composting, land filling and recycling certain hazardous wastes such as hospital wastes which of course, should be positively incinerated (P.R. White, et al., 1995).

### STATEMENT OF THE PROBLEM

In recent years the mismanagement of hospital waste has become critical in urban areas. In addition to transmission of communicable diseases such as gastro-enteric infections, respirator infections through air, water, direct human contact with the blood and infectious body fluids could be responsible for transmission of hepatitis B and C and AIDS in the metropolitan cities (P. Rushbrook, 1999). The waste generated in these institutions essentially comprises solid and liquid waste estimated to be 80-85% of the waste generated in the hospitals and are not hazardous, while the rest is hazardous or likely to cause infections (Lakshmi Raghupathy, 1998). The waste generated in any hospital will be in the range of 1 to 4.5 kg per bed per day (R.Murali, 1999). The wastes generated from hospital and medical health institutions are a major source of environmental and public health problems thus requiring safe handling and secure disposal.

### SCOPE OF THE STUDY

The study is an attempt to have a close look at the hospital waste management and also the need to protect the environment. It is broadly based on people's participation and promotion of Chennai Hospital Waste Management Systems. This study also attempts 'Valuing the Environment' to measure the individual's preference for environmental improvement and hospital waste management for the future. The study also suggests a constructive view on social choices in the context of economic development

### MATERIALS AND METHODS

The methodology used in this study has been the survey method through an interview schedule which has been pilot tested and administered to 300 respondents selected through random stratified method of sampling i.e. 100 respondents have been stratified as patients in owed out staff including nurses, doctors, attendees, and relatives and who those living in and around the surrounding locality all have been included for testing.

The economic value of hospital waste management is measured by the summation of many individuals willingness to pay for environmental preservation or bargains for

immediate monetary needs. Thus this WTP reflects individuals' preferences for the good in question. So economic valuation in the environment context is about 'measuring of preferences' of people for an environmental good or bad. The resulting valuations are in money terms because of the way, in which preference revaluation is sought i.e., by asking what people are willing to pay or by inferring their WTP through other means. Moreover the use of money as the measuring rod permits the comparison i.e., required between 'Environmental Values' and 'Developmental Values'. It can be used to derive values for almost any environmental changes and the pestering needs.

The Contingent Valuation method is a widely used economic valuation method especially in the area of non-market valuation of environmental services and damages (Mitchell and Carson, 1989; Cummings et al., 1986). Its application includes estimation of non-use values. (Walsh et al., 1984; Brookshire et al., 1983), non-market use values (Choe et al., 1996; Loomis and du Vair 19993; Altaf et al., 1992; Whittington et., 1990; Coursey et al., 1987; Grenley et al., 1981; Schulze et al., 1981; Randall et al., 1974) or both (e.g. Niklitschet and Leon 1996; Desvousges et al., 1993) of environmental damages.

The main thrust of the present study is to evaluate the willingness to pay with specific reference to solid waste management in Hospitals. The study has analyzed three hospitals in the Chennai area, in Tamil Nadu, India and has interviews 300 respondents, 100 from each area, of Government General Hospital (GH) Park Town, Govt. Kasthuriba Gandhi Hospital, Triplicane and Malar Hospital, Adyar. These hospitals contain a total number of 2029, 700 and 250 beds respectively. The study has revealed that both GH and Malar Hospital have installed incinerators with cost effect of Rs. 1.24/kg/day and Rs. 13.6/kg/day respectively. The Malar Hospital seems to have installed an incinerator of 15 kg/h capacity for cost of Rs. 15 lakhs. The main method of disposal of hazardous wastes is through incineration and this has been studied with regard to the Government and Private Sectors through the selected hospitals, by way of life expectancy of equipment probable use per day/per kg, cost of operation per day/kg and ultimately the WTP by those availing of these facilities have all been carefully researched.

### RESULTS AND ANALYSIS

The study has shown that there is willingness to pay up to Rs. 250/- starting from Rs. 50/- i.e.

a range of Rs. 200/- the mode rests with the Rs. 100/- category. Those interviewed in a majority were willing to pay 228 persons (76%) for infrastructure facility and their improvements. Years ago, the practice in hospitals was to collect a certain amount towards bed charge/room rent, which would include the nursing service charges. But at present the hospitals are levying separate nursing charges etc. Hence a comprehensive policy on what amount should be charged for each of the facilities offered should be formulated. This could be done through committees especially constituted for this purpose, having economic and cost accounting experts as also lawyers, doctors and other professionals, and should include at least a couple of members of the general public. This democratic approach to problem solving would go a long way in eradicating the various skills that seem to besiege official planning especially with regard to hospital waste management.

### CONCLUSION

The study has shown immense scope for innovation and improvement. There are ancillary topics such as liquid and other waste which need to be studied with regard to WTP. There are other organizations such as hotels, air, rail and bus terminals, cinema halls and other places where the public congregate and where wastes generated. The economic valuation of these areas provides further scope for research. WTP itself could be further researched from the angles of toll/tax/service charge/donations with tax exemptions. All experience is an arch, where through gleams the untraveled world, whose margin fates for ever and ever as one moves on.

In conclusion the following points are stated as possible guidelines for hospitals to bear in mind for future action.

- 1.The government authorities have to assume more responsibilities for regulating waste generated from health facilities. In addition to formulating guidelines and rules and regulation the focus should be on enforcing the guidelines.
- 2.The health care facilities should increase the cooperation with professional medical associations and MoEF, CPCB municipalities for the development and implementation of environmentally responsible standards for medical waste treatment and disposal.
- 3.Encouraging recycling efforts leading to the segregation of infections and hazardous waste from the conventional waste streams with the goal of reducing the amount of medical waste that need to be incinerated.
- 4.Encourage the phasing out and elimination of medical supplies made of PVC plastics or

containing mercury where alternatives are available.

5.Consider the entire issue of medical waste disposal in the overall public health perspective. A total new integrated approach is required.

6.Look into the possibilities of better product purchasing and substituting the hazardous materials that are currently used.

7.Assume greater responsibility for decreasing environmental toxicants principally dioxin and mercury components and exposure from medical sources.

8.Waste containers must be secured to deny access to unauthorized individuals, and must be marked with warning signals in local language.

9.Sharps must be contained in secure, leak proof, rigid puncture resistant containers. Hypodermic needles and syringes must be separated and stored to prevent reuse.

10.All disposable bags must be conspicuously labeled "Infectious Wastes" or "Biohazard" with the international symbol.

### REFERENCES

- 1.Dr. S. Chandrasekarshetty – "Environmental Pollution" (International News Magazine) "Safe Management of Health Care Waste, March 2001. Vol.No. 1 P.No.7.
- 2.David w. Pearce – Valuing the Environment: pact practice, future prospect" proceedings of the first Annual International Conference on Environmentally Sustainable Development. The world Bank, Washington D.C.Sep – Oct 30, 1993.
- 3.A. Pruse, E. Giroult and P. Rushbrook, "Safe Management of waste from Health care activities", WHO, Geneva, 1999 .No.36.
- 4.P.V.Nath, "Bio Medical Waste Management and handling through integrated COMMON TOTAL MOBILE MEDICAL WASTE TREATMENT FACILITY – CTMWTF., Chennai,1999.
- 5.Environmental Legislation updated issue 08, Development in Environmental revolutions in India, July-Sep 2000.
- 6.P.R. White et al. "Integrated Solid Waste Management A LIFE CYCLE INVENTORY, Blackie Academy and Professional 1995 P.No. 11-12.
- 7.Sivsaraman & Mini Hari "A compendium compiled by first conference of Exnora International, "Environmental issues and the common man", 6-7, July 1996. P.No.21-27.
- 8.Dr. LakshmiRaghupathy, "Medical Waste Management and Approach", Industrial Safety Chronicle, Oct-Dec 1998, P.No.69.
- 9)Dr.Murali, "Hospital Waste Disposal in Tamil Nadu Government Hospital" proceedings of Southern Regional Conference, Feb 10-12, 1999, Chennai P.No.29.