DISPOSAL OF HOSPITAL WASTE – AN ENVIRONMENTAL HAZARD THREATENING PUBLIC HEALTH

By

—**Y.S. KIRAN KUMAR**, M.B.A. (HM), LLM,
Research Scholar (Department of Law),
Telangana University, Nizamabad, A.P.

Concept of Hospital Waste

A Modern Hospital is a complex, multidisciplinary system which consumes thousands of items for proper medical care to the patients at large forming part of physical environment. All these products consumed in the hospital leave some unusable leftovers *i.e.*, hospital waste.

History of Hospital Waste Management

Waste management is one of the important public health issues, if we go into the historical background, before the discovery of bacteria and other micro-organisms as cause of the disease, the principle focus was on sanitation, thus provision of potable water, disposal of odour from sewerage and refuse were considered as important factors causing epidemics. The invention of water closet by *John Harrington* (1561-1612) facilitated flushing away human waste to keep the human dwellings clean, but the drain water from individual houses created cesspools and ultimately into waterways and wells. In 1848 *Edwin Chadwick* gave a clear illustration of the sanitary conditions and health of English workers thereby impacting the upper class and the governing bodies gave an impetus to the Government of Britain to create standards for removal of sewage and protection of water supply. *Rudolph Virchow* also advocated on removal of sewage and protection of ware supply and public health measures in Germany. The great glories of roman hygiene were the water supply and sanitation system. In several areas of Europe, public health remains primarily the responsibility of the citizen, laws were created and Inspectors were assigned for enforcement. Scavengers were appointed to collect the garbage and space outside was assigned for dumping. In Indian context in 1946 Sir *Mortimer* wheeler worked at Harappa where a burial site and a grave was found, far away from the living areas based on pottery and personal belongings excavated at the site.

In the last century there is a mushrooming development of hospitals in Government and private sectors, basing on the needs of increasing population. Thus, hospital related wastes also have increased manifold, with the advent of the concept of disposable materials, the hospital waste has increased considerably in the present situation. Hospital waste is a potential health hazard to the health care workers, public and to the external environment of the area. Hospital acquired infections, transfusion transmitted diseases, rising incidences of Hepatitis B and HIV, increasing land and water pollution lead to increasing prevalence of epidemics. Air pollution due to emission of hazardous gases such as furan, dioxin, and hydrochloric acid from incinerators; have compelled the authorities to think seriously about management of hospital waste and the diseases transmitted through improper disposal of hospital waste. The threat to public health due to improper handling of hospital waste awakened the Government and to ensure proper handling and disposal of hospital waste, Biomedical Waste (Management and Handling) Rules were introduced in 1998.

The issue of improper hospital waste management in India was first highlighted in a writ petition before the Hon'ble Supreme

Court which gave landmark decision on 1st March 1996 in connection with safe disposal of hospital waste to stream line hospital waste management. The ratio of the said judgment provided the necessary guidelines too which mainly gave emphasis that all hospitals with 50 beds and above should install either an own incinerator or an equally effective alternative method and that the incinerator or the alternative method should be installed conforming to the standards laid down by the Central Pollution Control Board (CPCB) and further that hazardous waste management should be segregated at source and disinfected before final disposal.

Pursuant to the directives of the Hon'ble Supreme Court of India, the Ministry of Environment and Forests, Government of India notified the Bio-medical Waste (Management and Handling) Rules 1998, invoking the provisions of Sections 6, 8 and 25 of the Environment (Protection) Act 1986, and the same was published in the Gazette of India Extraordinary, Part-II, Section 3, sub-section (ii) New Delhi, July 27, 1998. These rules have been framed to regulate the disposal of various categories of hospital generated waste and biomedical waste as envisaged therein, so as to ensure the safety of the health care workers, staff, patients, public and the external environment at large.

The principle that there is need for proper permission from competent authority for disposal of biomedical wastage and that the convenience of the residents of the locality at which a hospital is to be constructed are to be given prime priority has been appreciated in the judicial pronouncement rendered by Hon'ble High Court of Andhra Pradesh in *C.S. Prakash and others v. The HUDA and others*, reported in ILR (2001) 2 AP 323.

The Biomedical Waste Management policy envisages the broad objectives covering newer and sophisticated technologies adopted in the modern health practice. It has become essential to ensure safety to patients, health care providers, waste handlers and the environment in and around hospital settings. This demands collective commitment right from the products the hospital choose to deliver health care till their safe and appropriate disposal. Thus strategic planning and innovations are awaited for simpler and sustainable solutions for managing the health care waste.

The clear objectives on the following points need to be emphasized for better hospital waste management and the health care. There is the necessity for changing an age old mind set and attitude through knowledge and training of the concerned personnel. It is also necessary to define the various categories of waste being generated in the hospital. Segregation and collection of various categories of waste in separated coloured containers is to be promoted so that each category is treated in a suitable manner to render it harmless. Identifying and utilizing proper treatment technology depending upon the category of hospital waste is also to be adopted. Proper accountability of various designated staff to ensure proper waste management protocols are to be adhered to without fail. It is also to be recognized that usage of patterns are changed from single usage to multiple usage wherever possible. Health hazards should be looked into wherein improper hospital waste management risks are associated such as injuries from sharps to all categories of hospital personnel and waste handlers; Hospital induced infections due to improper infection control mechanisms in the hospitals; Risks of infection being carried by hospital workers to the general public. There is the need to identify the measures to control and eradicate environmental hazards due to improper hospital waste handling and management results in air, water and soil pollution, due to improper treatment and wrong disposal methods causing severe inconvenience to the public health.

The statutory legal obligations as envisaged as per the Rules of Biomedical Waste (Management and Handling) Rules 1998 must be implemented and followed with strictly, failing which action can be initiated against erring Health Care Institutions.

In order to be able to comprehend and implement the Biomedical Waste (Management and Handling) Rules 1998, it has now become mandatory to provide training to all categories of staff *i.e.*; resident doctors, nurses, paramedical staff, hospital and sanitation attendants, patient and their attendants, canteen staff about the operation of the hospital waste management treatment facilities by conducting frequent weekend programmes on the awareness and interactive sessions on the hospital waste management techniques thus preventing an environmental hazard.

In continuation to the said above facts, following aspects are to be given credence as per the rules which includes bringing awareness of different categories of waste and potential hazards, waste minimization, reduction in use of disposables, segregation policy of different types of hospital wastes, proper and safe handling of sharps, use of protective gear, colour coding of containers, appropriate treatment of waste management of spills and accidents, occupational health hazards respectively.

The Statutory Rules require strict protocols to be adhered for better hospital waste disposal:

(A) Coordination between, hospital and outside agencies such as municipal authorities as quite a large percentage of hospital waste generated in Indian hospitals, belong to general category (non-toxic and non-hazardous) hospitals should have constant interaction with the municipal authorities so that the non-toxic and non-hazardous waste is regularly taken out of the hospital premises for landfill or other treatment.

(B) Coordination with the Pollution Control Boards; search for better methods technology, provision of facilities of testing, approval of certain models for hospitals use in conformity with the standards laid down by the authorities.

(C) To search for cost effective and environmental friendly technology for treatment of biomedical and hazardous waste, so also to search for suitable materials to be used as containers for biomedical waste requiring incineration/autoclaving/microwaving.

(D) Development of non PVC plastics for substituting plastic material in disposable items.

The Biomedical Waste (Management and Handling) Rules is gaining importance in recent times. These Rules have provided not only the various categories of waste (*viz*) human anatomical waste, animal waste, microbiology waste and biotechnology waste, discarded medicines and cytotoxic drugs, waste sharps. Soiled waste, solid waste, liquid waste, incineration ash and chemical waste but also has provided the treatment and disposal options of the said various waste. In keeping with the various biomedical waste incidents in India, there appears the lack of awareness and proper implementation of the Biomedical Waste (Management and Handling) Rules to the society at large.

The importance of the Biomedical Waste (Management and Handling) Rules has been recognized in a landmark judgment reported in 2001 (5) ALD 522 (LB) rendered by the Hon'ble High Court of Andhra Pradesh constituting of Chief Justice and four Hon'ble High Court Judges on 9.8.2001 in the case of *M. Vijaya v. Chairman and MD, Director, Singareni Colleries Co. Ltd.* In this judgment speaking for the Bench His Lordship *S.B. Sinha*, CJ., held among various aspects that all the Hospitals and Nursing Homes should be directed to dispose of their biomedical

waste in terms of Biomedical Waste (Management and Handling) Rules 1998 and they shall strictly comply with the norms specified therein.

The need of the hour is to eradicate or at least control and remove the environmental hazards threatening public health owing to the improper biomedical waste disposal by the health institutions at large. The present article is a small initiative on study relating to disposal of hospital waste and its environmental hazards and an effort to publicize and bring to practical light the usefulness and importance of the Biomedical Waste (Management and Handling) Rules 1998 to the legal community on the whole.

LEGAL RELEVANCE OF FORENSIC ODONTOLOGY IN MODERN INDIA

By

—**Y.S. KIRAN KUMAR**, M.B.A. (HM), LLM,
Research Scholar (Department of Law),
Telangana University, Nizamabad, A.P.

Forensic odontology is the branch of science which deals with the knowledge of dentistry required for solution of cases by the police and the Courts. Forensic odontology helps in identification and assessment of severity of injuries involving teeth. Study, comparing and evaluation of the bite marks is another important area in forensic odontology which helps in the identification of the criminals from the bite marks.

Identification by teeth is not new. It goes back as far as 66 A.D. at the time of *Nero*, as the story goes, *Nero's* mother *Agrippina* had her soldiers kill *Lollia Paulina*, with the instructions to bring back her head as proof that she was dead. *Arippina*, unable to positively confirm and identify the head, examined the front teeth and on finding the discoloured teeth front tooth confirmed the identity of the victim. During the U.S. Revolutionary War, none other than *Paul Revere* (a dentist) helped identity war causalities by their bridge work. Teeth are highly resistant to destruction and decomposition, so dental identification can be made under even in extreme circumstances. It was used on *Adolf Hitler* and *Eva Braun* at the end of World War II, the New York City World Trade Centre bombing, the Waco branch davidien siege, and numerous airplane crashes and natural disasters. The USA has fairly well developed system of dental records system (the universal system), so it is not surprising to find it used for the identity of the remains or "Jan doe" victims. You can also tell age solely on analysis of teeth-the Gustafson Method (looking for six signs of wear) or the Lamendin Method (looking at transparency of roots). With the universal system, each tooth is assigned its own number from 1 to 32 and the five surfaces of each tooth are also classified.

All dental records are based on a universal numbering system, and contain an amazing amount of information. For example, they note:

1. Fillings
2. Extractions
3. Surface structures/root configuration
4. Adjacent teeth
5. Twisted/tilted teeth