

Review Article


Laws Related to Environmental Protection vis-a-vis Hospital Induced Environmental Toxicity

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Abstract

Hospitals are reservoir of infected organisms and toxins. It is must to ensure minimum exposure to patients, public and staff to avoid spread of toxicity. Hospitals are also generating solid, liquid and gaseous waste which in turn produces environmental toxicity if not dealt with properly. To manage hospital and to avoid hospital induced environmental toxicity, it is necessary to know and follow various laws of environmental protection like The Environment Protection Act, 1986; The Environment (Protection) Rules, 1986; Bio-Medical Waste Management Rules, 2016; Manufacture, Storage and Import of Hazardous Chemical Rules, 1989; Municipal Solid Waste (management and handling) Rules, 2000; Environmentally Sound Management of Mercury Waste in Healthcare Facilities Rules, 2008; Water (Prevention and Control of Pollution) Act, 1974; The Air (Prevention and Control of Pollution) Act, 1981; Manufacture, use, import export and storage of hazardous microorganisms, genetically engineered microorganisms or cells rules, 1989; etc. Brief knowledge about above laws and consequences of violating such rules are important for every health sector like clinics, nursing homes, pathology laboratory, forensic laboratories, AYUSH hospitals, camps, research laboratories etc. In this review, we just touch upon various rules and its importance in relation to hospital set up. Green and clean environment is our necessity and health sector has to comply it.

Key words

Hospital, Toxicity, Environment, Protection, Law.

Introduction

Hospitals are reservoir of infected organism and toxins which can be a source of spread if dealt negligently. Health set up must ensure minimum exposure to patients, public and staff as its primary objective to safeguard the community. Hospitals are also generating solid, liquid and gaseous waste which in turn produces environmental toxicity if not dealt with properly. Hospital induced pollutants are also hazardous to various aspects of health like free radicals [1]. To manage hospital and to avoid hospital induced environmental toxicity, it is necessary to know and follow various laws of environmental protection.

Laws related to environment protection in India

- The Environment Protection Act, 1986
- The Environment (Protection) Rules, 1986
- Bio-Medical Waste Management Rules, 2016
- Environmentally Sound Management of Mercury Waste in Healthcare Facilities Rules, 2008
- Water (Prevention and Control of Pollution) Act, 1974
- The Air (Prevention and Control of Pollution) Act, 1981

The Environment Protection Act, 1986 [2]

It aims to provide protection and improvement of environment.

Section 5 of the act stated that Central Government has power to close, prohibit or regulate any industry, as well as stoppage or regulate supply of electricity and water to industry to protect environment.

Section 6 of the act stated that Central Government can make rules for quality of air, water and soil, maximum allowable limit for various environmental pollutants, procedures and safeguard handling of hazardous substances and prohibition or restrictions of location of industry.

Section 7 stated that no person or industry should emit any environmental pollutants in excess of permitted limit to protect environment.

Section 8 stated that no person is permitted to handle hazardous substances without proper procedure and safeguard.

Section 9 stated that if discharge of environmental pollutants are in excess by industry then they must inform the authorities and liable to pay expenses.

Section 10 stated that person empowered by Central Government has right to enter and inspect premises, seize equipment, record, register, etc. of industry.

Section 11 provides power to take sample for analysis from industry by authorized person.

Penalty for contravention of provisions of the act is imprisonment for 5 years and fine up to Rs. 1 lakh. If continues such violation then additional fine up to Rs. 5000 per day. If contravention continue for more than 1 year then imprisonment up to 7 years can be awarded.

The Environment (Protection) Rules, 1986 [3]

Rule 3: It deals with standards for emission of environmental pollutants from industries as specified in Schedule I to IV of the rules.

Rule 4: Government may issue direction for stoppage of electricity and water to industry for prevention of pollution.

Rule 5: It deals with prohibition or restriction of location of industry in populated area.

Rule 6: It describes procedure for taking samples from industry by authorized person.

Rule 13: It elaborates on prohibition and restriction on the handling of hazardous substances to protect the environment.

Role of Hospital

Clinics, nursing homes, diagnostic centres, pathology laboratories, etc. are generating solid, liquid, chemical, microbiological toxin, pollutants, etc. They required to neutralize such

biohazards before releasing into the environment and must follow Bio-Medical Waste Management Rules, 1986. For liquid waste, Effluent/ Sullage treatment plants are required to be established in hospital premises. Usually centralized waste disposal arrangement is done by licensed agencies and hospitals need to do submission of category wise annual report. Various accreditation agencies are emphasizing on quality services provided by hospitals along with focus on waste disposal policies.

Bio-Medical Waste Management Rules, 2016 [4]

Bio-medical waste means any waste generated during diagnosis, treatment, immunization, research activities, health camps, etc.

It is must to do collection, segregation, processing, treatment and disposal of bio-medical waste in environmentally sound system. Hospitals, nursing homes, clinics, dispensaries, animal houses, pathological laboratories, AYUSH hospitals, vaccination camps, blood donation camps, forensic laboratories, etc. must follow the guidelines of waste disposal.

This act doesn't cover

- Radioactive waste – Atomic Energy Act, 1962 [5]
- Hazardous chemicals – Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 [6]
- Solid waste – Municipal Solid Waste (management and handling) Rules, 2000 [7]
- Lead acid batteries – Batteries (Management and Handling) Rules, 2001 [8]
- Hazardous waste – Hazardous waste rules, 2008 [9]
- Hazardous microorganism – Manufacture, use, import export and storage of hazardous microorganisms, genetically engineered microorganisms or cells rules, 1989 [10]

Failure to properly dispose of medical waste as per the new rules will lead to imprisonment of five years or fine of Rs 1 lakh or both.

Radiation Protection in Hospital: Disposal of Radioactive Waste

It is required to be followed by hospital with nuclear medicine department and by those generating radioisotopes and radionuclides. They must follow Atomic Energy Regulatory Board (AERB) norms and use of personal protective equipments (PPE) for safety. Patients' relatives are not allowed in such premises with risk. Accidental spills should be handled by Radiation Safety Officer.

Atomic Energy (Safe Disposal of Radioactive Waste) Rules, 1987 [11]

It is for safe storage and disposal of radioactive waste.

Rule 3: It deals with restrictions on disposal of radioactive waste unless authorized.

Rule 4: It gives authorization for disposal of waste to institutions.

Rule 15: It provides special provisions for installations in hospitals and Tracer Research Laboratories

Rules 6: Institute must maintain record of waste disposed.

Section 24(1) deals with certain offences punishable with imprisonment extending to 5 years and fine, or both.

Environmentally Sound Management of Mercury Waste in Healthcare Facilities Rules, 2008 [12]

Mercury based equipments in health care set up are frequently used like thermometers, sphygmomanometers, esophageal dialators, feeding tubes, urinometers, X-ray machines, X-ray films, chemical processing solutions, vaccines, eye drops, herbal medicines, veterinary chemicals, dental amalgam, stains, reagents, preservatives, fixatives, fluorescent lamps, thermostats, etc.

Hospitals must follow guidelines for safe storage of mercury, protocols for safe handling and

disposal of it, protocols for handling and management of accidental spillage, Standard operating procedure for safe collection, labeling and storage of mercury waste, guidelines for reporting of accidental mercury spills to State Pollution Control Board or Pollution Control Committee, proper post exposure remedial measures and rotation of staff, maintenance of stock inventory and records of purchase along with education and training of staff.

Water (Prevention and Control of Pollution) Act, 1974 [13]

It deals with prevention and control of water pollution, maintenance and restoration of wholesomeness of water, establishment of board for prevention and control of water pollution. Hospital must ensure to have Effluent Treatment Plan or Sullage Treatment Plan as well as mechanism for regular periodic testing of water sample. Person who leads to fouling of a public reservoir or a public spring voluntarily shall be awarded imprisonment of three months or fine of Rs. 500 or both.

The Air (Prevention and Control of Pollution) Act, 1981 [14]

Air pollutants means any solid, liquid or gaseous substances including noise in atmosphere in such concentration which is injurious to human/ living creature/ Plants/ Property/ Environment. Air pollutants are of various types like gases, particulates, biological molecules, etc. No person without previous consent of state board can establish or operate industrial plant in air pollution control area.

Failure to comply sections like 21, 22, 31A leads to imprisonment up to 1 year and 6 months to 6 years with fine. If failure continues then fine up to Rs. 5000 per day will be awarded. If contravention continues for more than 1 year then imprisonment will be extended up to 2 to 7 years with fine. Fail to give information under the act leads to imprisonment up to 3 months and fine up to Rs. 10,000.

Noise pollution (Regulation and Control) Rules, 2000 [15]

Sec 89 of Factories Act, 1948 stated that noise induced hearing loss is notifiable disease to Chief inspector of factories. Noise is loudness of sound in excess of the limits of human tolerance which may leads to hearing loss which can't be corrected medically or surgically. It is responsibility of District Magistrate, Police Commissioner, Deputy Superintendent of Police to ensure implementation of Noise Pollution Regulation and Control in public area. Area in and around hospital up to 100 meter is silence zone. According to the Central Pollution Control Board's (CPCB) revised penalties, Rs 10,000 fine will be awarded to person who causes noise violation by a loudspeaker or at a public place without permission or during night.

Legal Provisions for Environmental Toxicity

IPC 269 – Negligent act likely to spread infection of disease dangerous to life leads to imprisonment of 6 months and fine.

E.G. Throwing away soiled or blood soaked bandages, plaster casts, used syringes, needles, anatomical body parts, placenta, etc. at public place.

IPC 278 – Making atmosphere noxious to health leads to fine up to Rs. 500.

Conclusion

Effective use of nature without deteriorating it is the best way to serve human kind [16]. Not following optimum standards and non compliance with various guidelines to maintain environment is also considered as negligence at of hospital authority [17]. There is need to establish poison information centres which can help medical staff in handling cases of poisoning or hospital induced toxicity [18]. Various newer teaching methods can be used to enhance knowledge of healthcare workers via google site [19] or via education on social media [20] to update on laws related to environmental protection. Research in this field is very much necessary and for the same attempt can be made from various funding agencies [21].

References

1. Rathod GB, Parmar P, Rathod S, Parikh A. Hazards of Free Radicals in Various Aspects of Health – A Review. J Forensic Toxicol Pharmacol, 2014; 3(2): 1-7.
2. The Environment Protection Act, 1986. Available from: https://www.indiacode.nic.in/bitstream/123456789/4316/1/ep_act_1986.pdf. Accessed on 22 March, 2022.
3. The Environment (Protection) Rules, 1986. Available from: <https://parivesh.nic.in/writereaddata/ENV/THE%20ENVIRONMENT.pdf>. Accessed on 22 March, 2022.
4. Bio-Medical Waste Management Rules, 2016. Available from: https://dhr.gov.in/sites/default/files/Bio-medical_Waste_Management_Rules_2016.pdf. Accessed on 22 March, 2022.
5. Atomic Energy Act, 1962. Available from: <https://legislative.gov.in/sites/default/files/A1962-33.pdf>. Accessed on 21 March, 2022.
6. Manufacture, Storage and Import of Hazardous Chemical Rules, 1989. Available from: <http://nagarikmancha.org/images/MANUFACTURE,%20STORAGE%20AND%20IMPORT%20OF%20HAZARDOUS%20CHEMICAL%20RULES,%201989.pdf>. Accessed on 23 March, 2022.
7. Municipal Solid Waste (management and handling) Rules, 2000. Available from: <https://www.mpcb.gov.in/sites/default/files/solid-waste/MSWRules200002032020.pdf>. Accessed on 20 March, 2022.
8. Batteries (Management and Handling) Rules, 2001. Available from: [http://www.mppcb.nic.in/proc/Batteries%20\(Management%20and%20Handling\)%20Rules,%202001.pdf](http://www.mppcb.nic.in/proc/Batteries%20(Management%20and%20Handling)%20Rules,%202001.pdf). Accessed on 18 March, 2022.
9. Hazardous waste rules, 2008. Available from: [https://thc.nic.in/Central%20Governmental%20Rules/Hazardous%20Waste%20\(Management,%20Handling%20and%20Transboundary%20Movement\)%20Rules,%202008.pdf](https://thc.nic.in/Central%20Governmental%20Rules/Hazardous%20Waste%20(Management,%20Handling%20and%20Transboundary%20Movement)%20Rules,%202008.pdf). Accessed on 22 March, 2022.
10. Manufacture, use, import export and storage of hazardous microorganisms, genetically engineered microorganisms or cells rules, 1989. Available from: <http://www.indiaenvironmentportal.org.in/content/453231/rules-for-the-manufacture-use-import-export-and-storage-of-hazardous-micro-organisms-genetically-engineered-organisms-or-cells/>. Accessed on 12 March, 2022.
11. Atomic Energy (Safe Disposal of Radioactive Waste) Rules, 1987. Available from: [https://dae.gov.in/writereaddata/AE\(SDRW\)Rules%201987.pdf](https://dae.gov.in/writereaddata/AE(SDRW)Rules%201987.pdf). Accessed on 2 March, 2022.
12. Environmentally Sound Management of Mercury Waste in Healthcare Facilities Rules, 2008. Available from: https://cdn.cseindia.org/attachments/0.03944600_1499399128_Guidelines_For_Mercury.pdf. Accessed on 22 March, 2022.
13. Water (Prevention and Control of Pollution) Act, 1974. Available from: https://www.indiacode.nic.in/bitstream/123456789/15429/1/the_water%28prevention%29and%29control%29of%29pollution%29act%291974.pdf. Accessed on 22 March, 2022.
14. The Air (Prevention and Control of Pollution) Act, 1981. Available from: <https://legislative.gov.in/sites/default/files/A1981-14.pdf>. Accessed on 20 March, 2022.
15. Noise Pollution (Regulation and Control) Rules, 2000. Available from: http://cpcbenvi.nic.in/noisepollution/noise_rules_2000.pdf. Accessed on 21 March, 2022.

16. Pragnesh Parmar, Gunvanti B. Rathod, Sangita Rathod, Ashish Parikh. Nature helps to solve the crime – Diatoms study in case of drowning death. *International Archives of Integrated Medicine*, 2014; 1(3): 58-65.
17. Parmar P, Rathod GB. Knowledge and awareness among general population towards medical negligence. *IAIM*, 2016; 3(7): 250-254.
18. Parmar P, Rathod G. Knowledge and awareness regarding poison information centre among medical students. *Journal of Forensic Toxicology and Pharmacology*, 2017; 6:1.
19. Pragnesh Parmar, Swapnil Patond, Gunvanti Rathod, Sudhir Ninave. Google site as a tool for teaching undergraduate students in Forensic Medicine. *Indian Journal of Forensic Medicine and Toxicology*, 2020; 14(4): 479-483.
20. Parmar P, Rathod G. Current trends of social medial in medical education. *IAIM*, 2021; 8(3): 55-56.
21. Akram M, Egbuna C, Riaz Z, Kaladhar DS, Elkhateeb WA, Swargiary A, Adumanya OCU, Amare Y, Rathod G, Mbaye EHS, Parmar P, et al. Global research funding and development. *IPS Interdisciplinary Journal of Biological Sciences*, 2022; 1(1): 11-18.