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Bio Medical Waste a Threat to Environment

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Abstract
Environmental issues can be defined as the harmful effects of human activities on the earth's environment. Environmental issues include many types of human activities which cause pollution, waste disposal, climate change, global warming, greenhouse effect etc. The current article deals with effects of bio medical waste on environment, various treatment methods of disposal and our responsibility in reducing the environmental effect. Waste produced in the health sector is highly hazardous. If it is not treated, these bio medical waste contribute to various infections and problems in environment. The effects of biomedical waste on environment is severe, so the importance of biomedical waste management is high. For reducing the effects of bio medical waste on the environment, it is necessary to create awareness among the people to dispose the bio medical waste in the correctly, educate the health workers on the bio medical waste and to implement the rules strictly.

Keywords: Bio-medical waste, environmental pollution, hazard to human beings, hospital waste, waste management etc.

Introduction

Producing waste is the inevitable part of every end procedure. In healthcare, the quantity of waste generated is huge and requires secure disposal of waste to prevent biohazardous and environmental pollution. Bio medical waste is tremendously generated from clinics and the hospitals.

The hospitals are known for the treatment of ill individuals but we're unaware of the unfavorable effects of the garbage and grime generated by them. Today it is well known fact that the health center waste is dangerous to the health center workers, the community, plant life and wild life of the surrounding area. The generated waste contains harmful swabs saturated with infections, hypodermal needles and saline bottles. These should be disposed following strict measures with minimal human contact. The bio clinical waste carries potentially infectious and harmful materials which cause an undue damage to the community and surroundings. The bio medical waste may comprise potential dangers like drug resistant microorganisms which can also spread within the surrounding environment and effect the environment.

Clinical products used for therapeutic functions get disposed after single use. These contain cotton, plastic needles, catheters, syringes, broken scalpels and glass utensils. Besides, anatomical discards like amputated frame elements, organs, and blood-soaked cotton bandages are also considered as Biomedical Waste, which should be disposed of at utmost care.

Hospitals and clinics additionally generate expired general medicinal drugs, which have no return policy and therefore get dumped on the health facility premises. These discarded items have excessive infection and drugs may have a damaging effect if allowed to combine with the atmosphere.

Biomedical Waste Meaning

Biomedical waste is any waste that includes blood or tissue eliminated from operational rooms, morgues, laboratories, or different health center facilities. It could also consist of anything that was used when treating a patient, bedding and Hospital gowns which might be thrown away.

- Hospital waste: Refers to all waste, biological or non-organic that is discarded and no longer intended for further use.
- Bio-Medical waste: Any waste, which is generated at some point of the analysis, treatment or immunization of people or animals or in any research activities.

Types of Bio Medical Waste

Types of biomedical waste fall underneath the class of biomedical waste in step with WHO and include:

- Infectious waste, which is anything infected with body fluids which include blood, shares and cultures of infectious means from lab work and waste from patients with infections.
- Sharps including disposable scalpels, needles, blades and syringes.
- Pathological waste such as human organs, fluids and tissues, body elements and animal remains which are infected.
- Pressurized bins.
- Pharmaceutical waste inclusive of drugs and vaccines which are unused, expired or contaminated.
- Chemical waste including disinfectants, heavy metals in medical appliances which includes mercury, solvents and reagents which might be utilized in lab arrangements and batteries.
- Radioactive waste inclusive of radiotherapeutic substances, radioactive diagnostic products which might be contaminated.
- Cyctotoxic waste includes the cycto toxic drugs that are used in the cancer treatment. Improper disposal of this waste is hazardous and causes health risks.

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- General waste, the waste generated from households that is not be recycled. This waste may include plastic bags, oil packets, diapers, food containers, broken glasses etc.

Sources of Bio Scientific Waste

The primary means of bio-medical waste are government and private hospitals, nursing houses, dispensaries, and primary fitness centers.

Other than these, diverse medical faculties, research centers, paramedical services, blood banks, morgues, autopsy centers veterinary clinics, dispensaries, and diverse biomedical educational institutions additionally generate big quantities of biomedical waste.

Further to the above, some biomedical waste is likewise generated from widespread practitioners, dental clinics, animal houses, slaughterhouses, blood donation camps, acupuncture experts, psychiatric clinics, funeral offerings, vaccination centers, and disability academic institutions.

Objectives

- To create awareness on Bio Medical Waste.
- To study the effects of bio medical waste on the environment.
- To study the importance of Bio Medical Waste management in reducing the effect and minimizing the waste.

Methodology

Descriptive method of research both qualitative and quantitative type of research. Observation, opinions of field level health functionaries also collected. Both primary and secondary data also gathered besides own experiences recorded.

Need of the Study

Improper management of waste generated in health care facilities causes a direct health impact on the community and on the environment. Waste segregation is an essential element in any sustainable waste management strategy. Effective segregation of waste implies the hazardous waste treated in the environmentally sustainable way. The effects of bio medical waste on the environment and on human health is highly dangerous. The animals can get hold of material contaminated with bacteria and could spread to humans. If someone has illegally disposed the medical waste in a land fill deadly microbes could get into the water supply and infect the water. The bio medical waste if disposed in the water causes water pollution, if disposed in an open area pollutes the air, if disposed in any land fill causes the land pollution.

Effects of Bio Medical Waste on the Environment

The improper disposal of bio medical waste causes adverse effects on the environment, which in turn effects the communities. This shows its impact on air, water, land, which affect the health of the public.

- The trash disposed and dumped in the landfills are releasing the methane gases. The burning of the waste in the open areas releases very harmful carbon dioxide, a greenhouse gas that is increases the heat on the planet. This results in the climate change.
- The burning of the medical waste releases the toxic gases like black smoke, toxic flue gas, fly ash which lead to the atmospheric pollution which effect the health causing respiratory diseases, skin diseases.
- More exposure to air pollution causes diseases like asthma, lung cancer, and pre mature deaths in human.
- The BMW also effects the water quality as different pollutants from dumping sites reach the ground water bodies.
- The contaminated ground water, polluted water in the streams and rivers effects the aquatic life, wild life, agriculture and irrigation.
- The humans are also affected where many of them depend on agriculture and aquatic sources.
- The polluted may also contain metallic waste generated from the hospitals and clinics, which may cause neurological diseases, heart diseases, skin diseases, in humans, and it also leads to death of the marine animals.
- The medical waste disposed in the open areas also effects the land. The chemicals in the medicines and other disposed products, when not buried for longer time lead to land pollution.
- The medical waste on the land when mixed up with soil changes the fertility of the soil.
- Improper disposal of bio medical waste in open areas, ends up in transmission of the diseases in all living things in the environment by carrying the parasites and bacterial infections.
- Stray dogs and other stray animals, rodents, birds may consume the disposed, chemical waste or pharmaceutical waste, which is dangerous and lead to death.
- The bio unsafe waste that isn't always disposed nicely can turn out to be in lakes, parks, and different wild lifestyles habitats. It is stated that the wild lifestyles habitats get interested in the fragrance and color of the pills and the liquid medicinal drug. This outcomes within the injure or may additionally kill the animal.
- The medical waste leads to spread of HIV, hepatitis B, C and other viral infections, parasitic infections and lung infections.
- The harmful gases emitted through the waste result in the depletion of ozone layer, which increases the heat levels, which may lead to melting of ice, which effects the human and animal life at arctic zones and the entire world.

Segregation and Disposal of Bio Clinical Waste

Table 1: Segregation and disposal of bio clinical waste

Category	Type of Waste	Type of Bag	Disposal
Yellow	Human tissues, organs, body parts. Animal anatomical waste such as animal carcasses, body parts, organs, tissues, waste generated from animals used in testing at veterinary clinics, laboratories and animal houses. Soiled waste such as items contaminated with blood, plasters, cotton swabs, bags containing blood. Expired or discarded medicines like antibiotics, cytotoxic drugs, other chemical	Yellow coloured non chlorinated container	Incineration or deep burial.

	waste.		
Red	Contaminated waste generated from disposable items such as tubes, bottles, catherers, urine bags, syringes, gloves etc.	Red coloured non chlorinated containers.	Auto claving or Micro waving
White	Needles, syringes fixed with needles, scalpels, blades, any other sharp objects that may cause cuts. This includes both discarded and contaminated metals	Puncture proof or leak proof containers	Auto claving or Dry heat sterilization
Blue	Broken or contaminated glass including medicine, vials, ampules.	Cardboard boxes with blue color marking	Auto claving, micro waving and then sent to recycling.

Dispose of Bio Clinical Waste

The bio medical waste should be properly segregated and should be disposed in the right way, so that the disposed waste should not cause harm to the Environment. The different methods in disposing the medical waste are;

Incineration: It is a manner to treat waste products which encompass the combustion of materials containing waste substances. Incineration of waste materials convert the waste into ash, flue gasoline and warmth.

Chemical Disinfection: Chemical disinfection of bio scientific waste kills the microorganisms in clinical waste. It is the fine way to deal with liquid medical waste.

Autoclaving: auto claving is every other technique of scientific waste treatment in which steam, moisture, warmth is used with a purpose to kill microorganisms.

Microwave Irradiation: Microwave irradiation is used to deal with clinical waste using warmth supply. It works handiest when there's water inside the waste because radiation without delay works on water.

Land Disposal: The most conventional way of disposing the waste product is by using land disposal. All the bio scientific solid waste is buried within the land.

Inertization: The inertization system minimizes the chance of the poisonous substances spreading into surface water or floor water by blending waste with cement and different materials before the disposal.

Suggestions

All of us have an essential position to play inside the proper disposal and management of bio-medical waste. We can keep ourselves and our surroundings from getting polluted through this biomedical waste via adopting the following matters:

- Waste must be carried in closed vehicles. Blended waste ought to be segregated and disposed of as in line with the prescribed technique.
- In place of burning and destroying the waste, there should to be a system for recycling it.
- Biomedical and industrial waste should now not be mixed with urban waste.
- Dustbins need to be saved in those places from wherein there's a gadget of normal garbage collection.
- Cognizance applications need to be prepared for know-how of strong waste management.
- The technique of lifting and dumping garbage with the aid of people must be absolutely banned.
- Do not throw biomedical waste on the landfill. If the waste is to be dumped at the landfill itself, a 10 mm layer of soil ought to be laid immediately after the rubbish is dumped.
- Hospitals have to also strictly observe the laws of biomedical waste disposal.
- Disposal of infectious waste is expensive, so effective sorting is effective.
- Hospitals and other health care centers should develop a properly developed waste management plan. The staff should also be educated on this periodically.
- Boost up using of reusable products whenever possible, than using single used products.
- Proper and right usage of colured containers for the waste disposal.
- Periodic check of waste management system at the health centers should be implemented, to check if the staff are aware of the bio medical waste rules. If not training the staff on BMW management would reduce the generation of medical waste.

Conclusion

Bio Medical waste is the rising problem in the world. Every human and animal needs the health care service for a better and healthy living. This results in the generation of more medical waste from the hospitals, clinics, dispensaries, veterinary clinics, laboratories, house-holds, pharmacies etc. the generated waste contains many harmful chemicals, products which may effect the life on earth. The medical waste is effecting the entire eco system, causing environmental damage. The chemicals, medicines, all other bio medical wastes like syringes, gloves, blood bags, saline's, cotton swabs etc., if these are not disposed in the right way they lead to adverse effect on the human and the environment causing air pollution, water pollution, land pollution, effect the aquatic life also. Implementation and application of the disposable rules in all the health centers and places where medical waste is generated helps in reduction of medical waste which creates a safer environment to live in.

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