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The Impact of Medical Waste on the Environment and Methods of Disposal

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Abstract: ***The person has the right to obtain the necessary health care, whether by providing the necessary medicine or whoever provides it. This service has known a great development throughout the ages until it reached its highest levels and is known today as these last medical services. Which despite the advantages they provide for the benefit of the human being, especially since medical waste is not like all waste, but rather consists of toxic chemical and metallic substance, as it may also contain tools and sharp metals that are dangerous to the environment and living organisms.***

Keywords: Medical Waste, Environment, Health Care, Hhospitals.

1. INTRODUCTION

How does medical waste affect the environment and what are the ways to distinguish it?
Human life and its developments have led to an impact on the environment. Human development in the various fields of life, industrial, chemical, and medical, has been accompanied by a group of harmful repercussions and effects on the environment, leading to air and water pollution, heat retention, and the impact on fish wealth.

Medical waste occupies an important part in environmental pollution, as it is considered one of the dangerous pollutants of the environment and negatively affects human life and health due to the serious diseases it causes and spreads rapidly among people, becoming a major challenge facing elements of the contemporary environment in general and health institutions in particular.[1]

The large quantities of medical materials used in hospitals and health centers, which are made from plastic materials, pose a great danger to the environment. Conferring to previous studies, 85% of single-use medical supplies are made of plastic materials and thus have a negative impact on human lives. [2]

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Medical waste poses the first danger to the lives of health workers and health care providers doctors, nurses, etc., as they deal with it on a daily basis as required by their profession, and it also poses a danger. On the environment, especially if it is not disposed of improperly, thereby contributing to the pollution of environmental settings (air, water, or soil).
What is medical waste?

Medical waste means all waste produced by health facilities such as hospitals and pharmacies Medical clinics, surgery clinics, dental clinics, medical analysis laboratories, and scientific research laboratories. Medical waste is also defined as consisting of liquid or gaseous medical waste resulting from cases Diagnosing, preventing, treating, and conducting research on human or animal diseases. They are also substances whose use, depending on their quantity, concentration, and physical chemical properties, affects public health and increases the death rate among people.

Individuals and the negative impact on the environment, if it is treated, stored, transported or disposed of improperly. As defined by the World Health Organization, it means all waste produced by health institutions. It includes waste arising from secondary or dispersed sources, as well as resulting from the treatment of people at home Kidney dialysis (dialysis), insulin injections, etc.

Medical Waste Classification Standards
Ordinary Medical Waste
This type does not pose a threat to human health, such as empty, unfilled papers and bottles Dangerous materials and non-hazardous drug residues.[3]Hazardous medical waste Waste generated from examination, diagnosis, treatment, surgery, autopsy, laboratory examination, etc., which causes serious risks to humans and the environment in the event of unsafe handling, and constitutes 10-25% of all medical waste. [3] Biological waste It is extremely dangerous, as it includes the remains of surgical operating rooms from surgeries, including removed human organs that contain the disease, of course, and bodily fluids from the effects of operations as well, and blood resulting from operations as well, which may contain many diseases. This also includes laboratory remains of analysis fluids and the remains of samples that are used. In the analyses. In addition to the products of chemical reactions that are thrown away after the results of the analyzes are known, all of which are extremely dangerous wastes.[4] Radioactive waste They are ionizing rays, the most important of which are X-rays emitted from radioactive materials (ray-X) and gamma rays(Y-rays).[5] Radioactive materials cause several problems, the most important of which is the effect on genetic material, and this is through the use of radioactive sources. Highly radioactive, such as some personal devices, which may sometimes lead to tissue destruction, Which requires cutting or amputating the affected part. The severity and danger of exposure to radioactive waste ranges from simple symptoms such as dizziness and headaches. Serious symptoms include their effect on the genetic and hereditary content of the cells, and this depends on the amount and type of radiation exposed to them. Therefore, medical waste may have a significant and serious impact on humans in general and on caregivers health in particular, by causing them many serious diseases and injuries that may lead to death, after being infected

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with many diseases, including diseases of the reproductive system, which are caused by some samples. Contaminated with secretions of venereal diseases, or intestinal infections resulting from handling Salmonella and Shigella bacteria present in medical waste contaminated with the feces or vomit of patients, meningitis after exposure to contaminated waste from Spinal cord fluid and many other diseases caused by medical waste also pose a threat to his life as a living being in this environmental situation.[6]

Infectious Medical Waste

It is expected to contain pathogens (bacteria, viruses, parasites, fungi) in concentrations and quantities that cause disease infection.[6] The impact of medical waste on the environment
Medical waste is a problem facing workers in the medical field, due to the dangers of this waste, which requires special methods to deal with it to prevent infection and avoid its dangerous effects on humans and the environment.[7] With the great expansion of health services of all kinds and the advancement of the level of modern technologies used in all health treatments, medical waste resulting from hospitals and health centers has become the focus of great attention on how to treat it, dispose of it, and avoid its side effects, because it may pollute the environment in general or have an impact on The health of an individual or community through transmission by infection or in any form. .[8] It must be noted that the health risks resulting from this medical waste are not limited to health sector workers, but may extend to the rest of the community members who are exposed to this waste or its effects. Also, the increased attention paid to medical waste in general and medical waste in particular has drawn more attention to the environmental risks of medical waste and its impact on environmental health. .[9] Methods of waste disposal in hospitals

Sorting Stage

Sorting: It means isolating or separating normal waste from hazardous medical waste from an area that generates it in designated containers so that each type is treated in the safe manner specified for it and to avoid collecting the two types of waste.

Color Sorting: It is a color-coding system for all types of containers (bags, containers, etc.) designated for collecting a type of waste (for example, black is designated for regular collection bags and containers, and yellow is designated for collecting medical waste Pathogenicity).

Incineration: It is the most common method for treating hazardous medical waste. It is a dry oxidation process that takes place at very high temperatures, so that organic waste and burnable waste are reduced and their size and weight are reduced to a large extent, while killing the pathogens present in them. The burning process produces gases such as carbon and nitrogen oxides and toxic gases. With ash remaining that contains toxic substances, incinerators with different technologies are used for this process, designated for specific types of hazardous medical waste, at different temperatures and capacities. Storage (isolated collection): It is a means of collecting and reserving waste before it is treated or disposed of. It may be in surface depressions or geological warehouses (for radioactive waste or those mixed with hazardous waste), which are caves dug deep below the surface of the earth.

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Recycling: Reusing waste that should be disposed of. Recycling may include introducing waste into processes to produce another product.

Packaging: It is the process of burying waste in high-density, tight plastic containers or in metal drums, then filling it with foam plastic materials, cement mortar, or solid clay materials, thus making it possible to bury it in landfill sites. It is usually used for pharmaceutical and sharp waste. Chemical sterilization: It is the process of adding disinfectant chemicals to waste to kill the pathogens it contains. It is used for some types of pathological waste, such as blood, urine, and patient secretions. As for sharp waste, it requires crushing before performing the chemical sterilization process. Sterilization by heat, wet, or steam (autoclaving): This is the process of exposing waste to high temperatures and pressure and is used for sharp waste and laboratory waste (bacterial culture dishes). Microwave sterilization: It is the process of exposing waste after crushing and moistening it to waves with high frequencies sufficient to rapidly heat the waste liquids in a way that leads to killing pathogens with high heat. It is used for acute infectious and pathological waste. Passivation: It is the process of mixing waste with cement or lime before final disposal. Its purpose is to reduce the risk of toxicity. It is used for pharmaceutical waste and incineration ash containing heavy metals. [10]

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