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Hygienic Retention of Biochemical Toxic Compounds in Medicines and Hospitals

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Abstract

Sanitary disposal of toxic materials in medicines and hospitals, as the most important goal we always strive for in the proper management of medical waste is to reduce the danger of materials produced as medical waste from the patient's own care or resulting from the diagnostic medical departments in hospitals as much as possible, so that they do not result in diseases or damages It affects workers or individuals in the surrounding community. Among these risks are expired drugs or substances, many countries have issued special recommendations in the case of collecting and transporting these materials from pharmacies or residential communities for the purpose of disposal under the supervision of the state in the case of permanent centers or temporary centers.

Keywords: toxic; hospitals; medicine; removing; pollution

Introduction

Controlled Substances is a term used in most countries of the world, and its definition is as stated in several references as follows: They are generally medicines or chemicals that are manufactured, regulated in possession or used by governments only, such as illegally used drugs or medicines with potent effects on prescriptions designated as controlled drugs. In other words, they are pharmaceutical substances that have a strong effect on humans, such as anesthetics or drugs for the treatment of neurological diseases that have a strong impact on humans, and they are drugs that are given to the patient under the supervision of a specialized doctor and their storage must be done in safe and guarded ways and it cannot be left to dispense as happens in hospitals for medical drugs Others, because they have strong harms and effects on the health of individuals if they are taken in small or large quantities. However, not all controlled substances are illegal in all circumstances, many of which are prescribed to the general public and sold through pharmacies and dispensaries for legitimate medical treatment, but tampering with these substances or negligence in disposal methods may cause problems and harm to others.

What does a controlled substance look like in hospitals

Waste controlled substances are usually produced in hospitals in the form of two (1) forms:

1. Residual food and intended to be disposed of as pharmaceutical waste: It is the rejected food, which includes the remaining and unused pills, intravenous injections, oral fluids, or some preparations or mixtures that contain among their composition-controlled substances.
2. Expired foods: They are the controlled substances that have expired and are intended to be disposed of.

National Laws Regulating the Handling of Controlled Substances

Because of the importance and danger of these substances, many countries have organized dealing with controlled pharmaceutical substances and put in place strict laws and regulations for them in terms of

accurately defining their types and methods of dispensing to patients and collecting them for disposal. Some countries even enacted strict criminal laws and heavy penalties for those who possess these substances by illegal or manufactures them or trades them. Penalties include heavy fines, and sometimes more than that, and may reach detention and imprisonment for long periods of time. It enacted laws for offenses related to the possession of controlled substances that are punishable by the Public Security Law if they were seized in one of the following cases:

- In the event that raw materials were seized in an attempt by unauthorized persons to manufacture controlled substances.
- If these materials were seized at the time of distribution (import, export or traffic).
- Disposing of them with the intention of getting rid of them in easy and cheap ways that may cause environmental damage to the community.
- Those materials have the intent to manufacture, distribute (import, export, or traffic) or dispense with them.
- Attempting or conspiring to do any of the foregoing.

These laws and penalties and their severity may differ from one country to another, but all of them strictly forbid dealing with these substances except by an authorized government agency in order to limit their access to abusers who may trade them as narcotic drugs and others.

International protocols for handling-controlled substances

Several countries have established safety regulations and procedures when dealing with these materials in educational institutions and research centers, such as laboratories and departments in universities, which conduct laboratory research with materials containing controlled substances. Such protocols were intended to regulate the flow of these dangerous substances during their use and to the stage of their final disposal. An example of these regulations is the list of procedures issued by the College of Veterinary Medicine in the Canadian city of Ontario in 2014 for its employees when dealing with controlled substances.

Management and Disposal of Control Drugs Protocol

1. All those concerned with dealing with these materials must follow the protocol for obtaining controlled substances so that all orders, invoices and quantities supplied to scientific departments are recorded and compared with the quantities actually received.
2. There shall only be a consolidated register documenting all existing quantities of controlled substances and even other compounds that contain in their composition-controlled substances in all sections.
3. These records and the quantities in them must be checked, reviewed and verified over a period of time and regularly in order to track the flow and consumption of those materials and to discover cases of loss and theft quickly.
4. It must be ensured that all controlled substances are stored in a safe manner.
5. Access to controlled substances by other persons should be restricted to authorized persons only.
6. Reporting directly in case of loss or theft of a controlled substance to the concerned authorities or the police.
7. Special permits must be obtained regarding the final disposal of the controlled substances in the event of the expired or spoiled and unused substances.
8. The final disposal must be under strict environmental standards and under the auspices of a specialized security technical authority so that no damages occur to society and the surrounding environment and these materials do not leak into the hands of abusers through the disposal process.

In general, and due to the seriousness of these substances, several countries have designated special departments to deal with this problem and have been given strong legal powers. For example, in the United States of America, the Department of Justice of the American government has allocated a special department, the Drug Enforcement Administration, which has entrusted it with all the tasks and aspects that Controlled Substances, which among its tasks include issuing laws, regulations and procedures for dealing and using controlled substances until their final disposal, as well as following them up legally and criminally in the event of breaches, so that this department was given the status of judicial control and the possibility of referring the accused to the judiciary to consider their violations. This department is the one that determines the types of those controlled substances (3) and it is the one that issues

certificates and permits that allow people to legally deal with the controlled substances and it is the body that regulates all the procedures related to the controlled substances in the country.

Recommendations to be taken in the case of permanent centers for the collection of controlled substances:

- The services of collecting these materials from citizens must be free of charge in order to encourage everyone to hand over what they have of controlled materials.
- The collection places are parties that can deal with these materials and their danger, such as pharmacies or special stations of the drug control unit, or environmental agencies or some parties that collect hazardous materials or hazardous waste (Hazard Waste) so that they can deal with them, or perhaps even some health centers qualified for such this work.
- The entire collection program must have been previously approved by the relevant government agencies, as well as by the authorities responsible for transporting medical waste.
- All food, whether dispensed by prescription or non-prescription, as well as needles and syringes, must be collected, provided that the collection point is equipped with sharp waste collection facilities such as reinforced plastic containers (Sharp containers).
- Controlled substances are collected only in the event that there is a representative or employee with a legal capacity from the authorized authorities to monitor the process of collection and transportation and to ensure that there are no legal violations during the process.
- The absence of other waste with expired medicines that are intended to be disposed of. Pharmaceutical residues can be stored on site for 90 days, but once items are removed from the container, they must be taken for immediate disposal.
- The process of transportation and disposal must be very safe and under good safety and security conditions.
- Containers in which controlled substances are collected must be secure and have a two- key system, so that the waste carrier has one of the two keys.
- Data on the materials to be collected and transferred must be available at the place of collection.

Recommendations to be taken in the event that the country establishes temporary places for the collection of controlled substances

The same recommendations as above except for the cases indicated

- Access to the collection site is restricted only to the producers of such waste.
- The collection process must take place in the presence of a pharmacist, regardless of the location of collection. The pharmacist is familiar with the type of drug and its danger.
- The presence of a legally qualified person to monitor the process of collecting the controlled substances so that there is no leakage of these substances into the hands of abusers.
- Waste removed from the collection site on the day of the event can be stored securely for 90 days prior to disposal.
- Special equipment for the assembly process must be available, including gloves for all employees and face masks for some.

Recommendations to be taken in the event that controlled substances are returned and collected and sent by post:

- Use of sites approved by the state to deal with returned waste.
- Sites for the disposal of controlled substances must be authorized by state agencies and must provide information on the quantities received and the quantities disposed of.
- Use of pre-sealed, trackable, self-sealing envelopes approved by Central Post as well as the pharmaceutical waste carrier.
- The envelopes are distributed to pharmacies, doctors' offices, and post offices, free of charge, in order to encourage everyone to cooperate.

Proper final disposal of Controlled Substances

The most important part in dealing with controlled substances is the final disposal process. This process must comply with all sound environmental standards that will permanently eliminate the effects of these substances and prevent them from reaching the environment around us and our waters. In this paragraph, we will list recommendations for the proper final disposal of controlled substances. These

recommendations are collected from several references of interest as follows:

Recommendations for control of Anesthesia drug

1. The controlled substances must not be disposed of by discharging them into sewage or by throwing them in public garbage bags under any circumstances.
2. Final disposal of controlled substances must be carried out under the supervision of the state only, supported by the supervision of a specialized technician and pharmacist or the police in accordance with the national regulations of the state.
3. Under no circumstances should this material be allowed to reach the general public so that some individuals may misuse it.
4. It should be stored in safe places and locked cupboards away from other medicines until its final disposal.
5. It must be collected and picked up only from the authorities authorized in the country to deal with these types of hazardous waste, and it is this body that will arrange their transportation to the final disposal sites and will be responsible for the final disposal operations.
6. It must be permanently disposed of and rendered invalid by one of the scientifically known methods such as the encapsulation method or the inertization method.
7. It must be isolated from other municipal waste, whether in landfills or if transferred to incineration (Incinerated) by special incinerators with very high temperatures and under the supervision of a qualified technician.
8. It is absolutely not allowed to disintegrate the controlled substances, crush them into powder or dissolve them in water for disposal.
9. In the case of transferring controlled substances from their original cans to new cans or if they are dissolved with other compounds, special labels and information must be placed on the new cans showing the name of the controlled substance, manufacturing number, final concentration and expiration date.
10. In the event that the cans and containers containing controlled substances in the warehouse are damaged and broken and there is a great fear of their leakage to the surrounding environment, they must be disposed of immediately to prevent the spread of damage, and they must be disposed of in the presence of witnesses and a report of the incident and its date must be disposed of. The scuffs and rags must also be disposed of. Which were used to clean leaks in the proper way and are considered hazardous waste and must be dealt with as such.
11. In the case of disposing of empty glass bottles that contained controlled substances, they must be cleaned and washed with water and to ensure that they are free of residues and sediments of the controlled substances, then they can be disposed of through municipal waste. As for the water that was used in the cleaning process, if the sediments were Many of these waters are considered hazardous liquid waste (Hazard Waste Water) and are dealt with in this way, or if the sediments are few, it can be drained through the sewage water to the public network with sufficient water flow.
12. All information relating to the final disposal of a controlled substance must be documented, including:
    a. The date of receipt of those quantities to be disposed of and the date of final disposal.
    b. The size of the quantities to be disposed of.
    c. Describe the condition of those materials, are they pure, mixed or dissolved with other materials (Diluting/Combining).
    d. Write down the name of the company that transported these materials to the final disposal site.
    e. Information on the method followed in the final disposal of those materials and the party that did so.
    f. Documents in which all information is recorded must be kept for at least five years.

Reporting Loss or Theft of Controlled Material

In contrast to the strong effects of these pharmaceutical substances such as drugs, some people have become addicted to them, and sometimes some of them are stolen. The thousand cases of overdose of people during one year of opioid analgesics, with a total of 165,000 cases of overdose, were recorded only between 1999-2004. Most of these narcotic drugs were stolen from hospitals by nursing staff, so there is a great fear from tampering with such materials and their access to items that you may trade in., In cases of discovering the loss of quantities of controlled

substances from their storage places or suspecting theft, the following must be followed:

1. The police must be reported immediately in case of theft or in the event of loss of controlled materials from the place where you work and inform the relevant authorities.
2. Fill out a report on a case of loss or theft of controlled substances in a pre-prepared form.
3. Documenting the case of breaking the locks or breaking the containers containing controlled substances, mentioning the lost quantities, the date and circumstances of the breakage incident., figures (1-3).

Figure 1: Storage controlled substances

Figure 2: Types of Prohibited Substances

Figure 3: Types of Opium

Conclusion

In general, these materials are produced in abundance not only in hospitals, but also in research centers and research laboratories in universities and in the field of human and veterinary studies as well. Therefore, many faculties in universities in Western countries have developed a special protocol to deal with and dispose of the remnants of these materials in proper ways. In order to limit its access to the environment and also prevent the hands of abusers to reach it. The existence of a sound system to get rid of these

dangerous materials is enough to prevent these materials from reaching the hands of abusers of drug abusers and drug promoters, and everyone knows the volume of global trade and the profits that crime empires reap in the world from promoting and selling these materials, which have become one of the biggest problems facing modern societies in the world. All countries of the world bad developed and developing countries.

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