
ENVIROMENTAL MANAGEMENT AND BIOMEDICAL WASTE DISPOSAL

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ABSTRACT

The generation of waste is one of the major urban issues that the contemporary society deals with, as the unbridled usage has been generating several externalities that capitalism cannot solve. Thinking of ways/actions to solve waste's issue is urgent. Biomedical waste is a kind that brings a load of toxic components that must be observed during the disposal, since it causes many losses to public health and environment. Therefore, the purpose of this study/research is to verify if Brazil has legal rules related to biomedical waste and, if they exist, to check if they are effective concerning public health and environment sustainability. The conclusion is that rules can give the legal protection needed, however, there is also a need for supervision procedures to assure their effectiveness. The method used for this study is the deductive, and the research is by bibliographic means, based on legislation, doctrine and jurisprudence, and as for the purposes, the research is qualitative.

Keywords: Biomedical Waste; disposal; collection; management.

*GERENCIAMENTO AMBIENTAL E DESCARTE
DO LIXO HOSPITALAR*

RESUMO

A geração de resíduos é um dos grandes problemas urbanos, que a sociedade contemporânea enfrenta; pois o consumo desenfreado tem gerado diversas externalidades que o capitalismo não consegue resolver. Pensar mecanismos de resolver o problema do lixo é urgente. O lixo hospitalar é um lixo que traz uma carga de componentes tóxicos que devem ser observados no momento do descarte, vez que trazem muitos prejuízos à saúde pública e ao meio ambiente. Nesse sentido o objetivo dessa pesquisa é verificar se o Brasil possui regras jurídicas no tocante ao tratamento do lixo hospitalar e, em existindo, se são eficazes no tocante à saúde pública e sustentabilidade ambiental. Conclui-se que as regras conseguem dar a proteção jurídica necessária, entretanto, carece-se de procedimentos de fiscalização para garantir sua efetividade. O método utilizado nesta pesquisa é o dedutivo e, quanto aos meios a pesquisa é bibliográfica, com base na legislação, doutrina e jurisprudência e, quanto aos fins, a pesquisa é qualitativa.

Palavras-chave: *Lixo hospitalar; descarte; coleta; gerenciamento.*

INTRODUCTION

The environmental issues the planet is facing currently are qualitatively and quantitatively different from those in the past: the changes brought by modernity, mainly by the unbridled consumption of goods and services, transform the environment and thus threaten the life on planet Earth.

In this sense, the environmental question evokes the problematic consequences of modernity and the capitalist dynamics. There are several environmental problems that we face currently, and the way in which this confrontation happens, its instruments, policies and all the dynamics move in the search of their confrontation, and are part of the great issues of our time.

Environmental problems arise because people demand increasingly higher living standards and cheaper technologies, even if involuntary by-products include soil degradation, toxic pollutants to the animal species or climate change.

Thus, we realize that currently the whole globe is involved in this tangle of problems and difficulties in maintaining life on the planet. The problem has assumed such enormous proportions that several International Conferences have already been held in order to discuss and find solutions to the planet's environmental issues.

Among these Conferences it is worth mentioning the Conference held in Brazil, in the city of Rio de Janeiro in 1992, which had great relevance, becoming internationally known as Rio / 92.

The specific commitments adopted by the Rio / 92 Conference includes the conventions as follows: one on Climate Change and the another on Biodiversity and a Declaration on Forests.

In this 1992 convention more comprehensive and objective documents were adopted: the Rio Declaration and Agenda 21, which endorsed the fundamental concept of Sustainable Development, combining the aspirations shared by all countries for economic and material progress with the need for an ecological conscience. Rio / 92 was also a response to the efforts of the signatory countries made since the Stockholm meeting in 1972.

The Rio / 92 Declaration contemplated innovative principles that

began to guide the relationships between the rich and poor countries, with the support of the Agenda 21, which established, with a view to the future, concrete objectives of sustainability in several areas, stating the need to seek new and additional financial resources for the complementation of the sustainable development at global level.

In addition, the Rio / 92 Conference allowed the participation of Non-Governmental Organizations (NGOs) that began to play a controlling role and to pressure governments to comply with Agenda 21.

The Declaration contains 27 Principles, which are extremely important for the sustainability issues, aiming at bringing “mother” rules to guide the production of environmental rules for the entire planet.

Resolution 44/228 of the United Nations General Assembly mentioned that the objectives of the Conference included the development of the international environmental law and, in this context, the elaboration of generic rights and obligations of States. Such command is of fundamental importance and is urgent.

Within this context of environmental pollution, we find that climate change has caused new diseases, new viruses and science has sought to combat them, using more efficient medicine.

However, if they are more efficient, they bring with them side effects, especially in relation to the environment, such as residues of contaminating drugs, disposable vials and syringes, etc. But on the other hand, another problem arises: how to discard these waste after use? Where to accommodate it in the environment?

Hospital waste is composed of drugs, human remains (including aborted fetuses), contaminated syringes, wound dressings, antibiotics, contaminated blood, and other potentially infectious materials.

Such components may pose a risk to the environment and to those who come into contact with it, especially when the waste disposal is not properly performed.

The lack of information and professional training in the units that generate hospital waste, as well as the incorrect segregation of such wastes, is a major problem, since it implies the potentialization of direct risks to the health of several professionals and patients of that unit, and when displaced to the external environment, they can cause environmental problems and also becomes an exponential risk factor to the health of the

population living close to the final disposal area.

Therefore, the disposal of this waste must be done responsibly, as this will avoid the human being contamination and also the environment contamination: if discharged without previous treatment, in contact with the soil it can contaminate the soil, the water table, the superficial waters, the food plantations and, also, the air. And it is not yet known how long this garbage takes to decompose naturally.

To ensure that all hospital waste is collected, treated and disposed of properly, it is necessary for hospitals to have a well-defined waste management plan; otherwise, the disposal of this waste will generate many losses.

These plans should include protocols, systems, and disposal procedures from segregation (patient bed) up to the exit from the facility for final disposal.

The training on the collection and destination of this waste should involve all from the professional who attends the infection treatment up to the disposal outside the hospital.

To develop the waste management plan, hospitals should conduct a safe collection, observing municipal, state and federal waste disposal legislation, developing lists of the infectious wastes generated at their facilities and the sites where they are generated.

In this sense, the responsibility for hospital waste, in the Brazilian system, is shared by the Public Power and by the hospital waste producer.

Thus, the problem that arises in the present study is: in what way can waste and hospital waste be disposed of without causing damage to the environment and to the human being?

The present study is justified, since the damages caused by the bad management of hospital waste, has consequences not only for the environment, but also for the public health.

The matter is controversial and the environmental damages are evident, and the Public Power must find mechanisms to minimize the effects of this kind of garbage, on the environment and Public Health.

Thus, the purpose of this research is to highlight the damages that this type of garbage can cause, as well as to highlight the importance of observing the Prevention Principle and to check who is competent to legislate on the matter, highlighting the legal guidelines for waste

management.

In this way, due to the serious risks to the environment and human health, it is necessary to analyze one of the most important Principles of Environmental Law, the Prevention.

1 THE PREVENTION PRINCIPLE

The word principle designates beginning, origin, starting point. Thus, principle, as a basis of law, has the utility of assessing the validity of laws, assisting in the interpretation of norms and integrating gaps.

Principles are foundation rules, which precede the legal norm; they are the basis, the structure of the norm itself, since they reflect the yearnings of the society that originated it, in the sense of the just, the honest, the correct and what must be fulfilled by the society.

The purposes of the Environmental Law are to set the rules in order to prevent future damages. In this sense, environmental law acts in the educational field, preventive and not in the repairing environment. The rules are put in the sense that actions are taken before the damage is consolidated.

As the environmental crisis ravages the planet as a whole, generating many disasters, environmental law is consolidated through its own Principles, in the sense of invoking them in the face of the threats of harm to public health and the environment.

As environmental issues have consequences not only on an ad hoc basis, but are reflected across the globe, the emergence of Principles of International Environmental Law has consolidated the need for States to incorporate these principles into their internal systems to give them applicability and to achieve effective results.

In this case, the United Nations Conference on the Environment, Rio / 92, held in 1992 in the city of Rio de Janeiro, Brazil, consolidated 27 principles of Environmental Law to give legal force to the preservation of the Environment and its maintenance in a balanced way and that could generate health to all, according to the Federal Constitution of 1988:

Article 225. Everyone has the right to an ecologically balanced environment, a good of common use of the people and essential to the healthy quality of life, imposing on

the Government and the community the duty to defend and preserve it for the present and future generations. (Gn)

Thus, the Environmental Law uses the principles that are proper to it, to inhibit a given conduct that is harmful to the environment

Thus, established within the society, a given legal principle, it acts as the genesis of the legal norm itself, and must be respected in its elaboration. Otherwise, the legal rule may be revoked if it breaches legal principles, since its genesis has not been observed. Once the genesis is stained, the whole norm becomes vitiated.

In this way, the Rio / 92 Convention established 27 Principles of Environmental Law and within the matter we are dealing with, hospital waste, the Prevention Principle is of great relevance, since it obliges the private and public authorities to carry out educational and effective actions, that seek the treatment and management of hospital waste, given their dangerousness and the risk of environmental and sanitary contamination.

The Principle of Prevention is one of the most important Principles of Environmental Law, its fundamental goal is to prevent degrading actions, to inhibit them. It was launched in the category of *mega* Principle, contained as the Principle n. 15 of ECO-92:

Principle 15. In order **to protect the environment**, the precautionary principle should be widely observed by States according to their capabilities. Where **there is a threat of serious and irreversible damage**, the absence of absolute scientific certainty should not be used as a reason to defer effective and economically viable measures to prevent environmental degradation. (Gn)

The Principle of Prevention is related to the actual danger of an injury, that is, it is known that it should not be expected to happen, and therefore it is necessary to adopt measures capable of avoiding it, as it knows in advance that the act will harm the environment.

Avoiding the incidence of environmental damage is the key idea of the Prevention Principle, since the consequences of environmental damage are often serious and irreversible. This Principle is characterized as follows, since it acts more towards prevention than repair.

The Principle of Prevention relies on the scientific certainty of

the environmental impact on a particular activity. If there is no scientific certainty, the Principle to be applied will be that of Precaution.

In the case in question, it is already known that hospital waste causes damage to the environment and public health; therefore, effective measures must be taken in advance to avoid such damage.

According to the Principle of Prevention, it is necessary to take the necessary measures to avoid environmental damage because the consequences of starting a particular act, proceed with it or suppress it are known. The causal link is scientifically proven.

Although some authors understand that the Precautionary Principle and Prevention Principle are synonymous, there is no way to confuse them; as while the first is limited to the effects not known, still, scientifically, the second concerns the damages already known, as is the case of hospital waste, where we already know that they cause irreversible damage to the environment.

The Principle of Prevention is also present in the National Environmental Policy Law, Law No. 6.938 / 81:

Art 2º - The National Environmental Policy aims to preserve, improve and recover the environmental quality conducive to life, aiming at ensuring, in the country, the conditions for socio-economic development, national security interests and protection of the dignity of life following the principles: (gn)

(...) omissis

Art 4 - The National Environmental Policy will aim at:

I - the compatibility of economic and social development with the preservation of the quality of the environment and ecological balance; (Gn)

(...) omissis

IV - the development of national research and technology oriented towards the rational use of environmental resources;

V - dissemination of environmental management technologies, the dissemination of environmental data and information, and the formation of public awareness of the need to preserve environmental quality and ecological balance; VI - the preservation and restoration of environmental resources with a view to their rational use and permanent availability, contributing to the maintenance of the ecological balance conducive to life; (Gn)

Art. 5 - The guidelines of the National Environmental Policy shall be formulated in norms and plans, intended to guide the action of the Governments of the Union, the States, the Federal District, the Territories and the Municipalities as it relates to the preservation of environmental quality And maintenance of the ecological balance, observing the principles established in art. 2 of this Law.

Sole Paragraph - Public or private business activities shall be exercised in accordance with the guidelines of the National Environmental Policy. Gn

The Environmental Crimes Law - Law No. 9.605 / 98 - also contemplates the Prevention Principle when it establishes:

Art. 54. To cause pollution of any nature at levels that result or may result in damages to human health, or that cause mortality of animals or the significant destruction of the flora - Penalty of imprisonment of one to four years, and fine.

(...) omissis

Paragraph 3 - incurs the same penalties provided for in the previous paragraph who fail to adopt, when required by the competent authority, precautionary measures in case of risk of serious or irreversible environmental damage. (Gn)

Due to the evil that hospital waste can cause, when poorly managed, art. Article 27a of Law 12305/10 provides that in the case of health care waste, the Municipality is responsible for: I - maintaining a regular collection and transportation service; II - to give appropriate final destination to the collected wastes “.

The Law n 12.305/2010 within the justifying cause, assigns to the generators of health waste the responsibility for the final, environmentally adequate disposal of these wastes and creates the obligation to elaborate a specific management plan, which must be strictly followed, since the mere referral of hospital waste without any care can generate unpredictable consequences, with the spread of serious diseases.

In this way, Brazil already has specific legislation that contemplates the Principle of Prevention, and the Public and Private Power must pay attention to these legal provisions, enforcing them.

2 CONSTITUTIONAL PROVISIONS THAT RULE THE MATTER “HOSPITAL WASTE”

It is important to emphasize that the issue related to hospital waste is a matter of public health, and of Environmental Sustainability.

Both public and private entities, when exercising hospital activity, must observe the legal rules, otherwise they will face responsibilities that will bring them losses that may even render their activities.

Let us see what is set in the Constitutional text on the matter:

Art. 196. Health is the right of everyone and the duty of the State, guaranteed through social and economic policies aimed at reducing the risk of disease and other diseases and universal and equal access to actions and services for their promotion, protection and recovery. (Gn)

Article 197. The actions and services of health are of public relevance, being the responsibility of the Public Power to dispose, under the terms of the law, its regulation, supervision and control, and its execution must be done directly or through third parties and, also, per person Physical or legal form of private law. (Gn)

The Constitutional text is even more emphatic in establishing the competence of the SUS - Unified Health System - to carry out actions aimed at curbing the practice of illicit practices in relation to Public Health:

Art. 200. In addition to other attributions, under the terms of the law, the single health system shall:

I - **control and supervise procedures**, products and substances of health interest and participate in the production of medicines, equipment, immunobiological, blood derivatives and other inputs;

II - **to execute the actions of sanitary and epidemiological** surveillance, as well as those of health of the worker;

(...) omissis

VII - participate in the **control and inspection of the production, transportation, storage and use** of psychoactive, toxic and radioactive substances and products;

VIII - **collaborate in the protection of the environment**, including the work

Therefore, it is seen that SUS is responsible for several control and inspection actions regarding hospital waste. This body must then impose efficient rules for the management of hospital waste to be effective, without its disposal in the environment causing harm to public health and the environment.

3 HOSPITAL WASTE: BAD DESTINATION, LOSSES, ENVIRONMENTAL AND SOCIAL INJURIES.

There is no universal definition for hospital waste. Hospital waste is composed of several microorganisms, which are potent sources of contamination of human and environmental health, since they can survive for a considerable time.

According to Fernandes (2013, page 28), hospital waste is:

All that results from medical activities carried out in health care units, in prevention, diagnosis, treatment, rehabilitation and research activities related to human beings or animals, in pharmacy, in medical-legal, teaching and any other activities involving invasive procedures such as acupuncture, piercing and tattoos.

Sharing the same opinion, Nagashima, Junior and Fontes mentioned by Camponogara (2012, p. 37), say that:

From 1987 onwards, hospital wastes received the name of Solid Waste of Health Services (RSSS), by the Brazilian Association of Technical Standards (ABNT), thus encompassing all waste generated in any medical, sanitary or establishments in this area, such as: hospitals, veterinary clinics, outpatient units, clinics, doctors' offices and dentists, among others.

Rampelotto (2012, p. 55) emphasizes:

In our country, the National Sanitary Surveillance Agency (ANVISA Resolution 306/04) and the National Environmental Council (CONAMA Resolution 358/05), assigning specific responsibilities to the various segments involved as: generators, sanitary and environmental authorities And disposing of norms that regulate the handling of Health Services Waste (SSR), regarding the segregation, collection,

treatment and final destination of these wastes produced and released to the environment.

In this sense, hospital waste can be considered as everything that is produced in health care units, including medical activities for the diagnosis, treatment and prevention of diseases, whether in humans or animals.

Thus, these wastes deserve special attention in all phases of management; Because they present chemical, biological and radioactive risks.

According to Morel, quoted by Fiorillo (2003, p. 65):

studies have identified several microorganisms present in the health care waste mass, such as coliforms, salmonella typhi sp, pseudomonas sp, streptococcus and candida albicans. In addition, the possibility of virus survival in the mass of solid wastes for polio type I, hepatitis A and B, influenza, vaccinia and enteric viruses was verified.

For public authorities and the scientific community, such waste poses a huge risk to health and the environment and, if left untreated, will cause enormous damage; as the failure of packaging, transport and final destination will cause incalculable damage, such as contamination of soil, surface water and groundwater, damage to garbage collectors (mainly in relation to sharp objects), damage to insects and animals transmitting diseases.

Thus, the disposal of such hospital waste must be regulated and closely monitored by public authorities for the good of the community and the environment.

In this sense, Guerra (2012, p.39) said that:

The removal and final disposal of hospital waste are, in the United States, a problem for hospitals themselves and not an allocation of public cleaning services. Here, the general idea is that the problem is only the public service of urban cleaning, but it is not so. Those who work in the sector in question have their own responsibilities, and may even affect the practice of crimes against public health

The Brazilian Federal Constitution sets:

Art. 30. It is the responsibility of the Municipalities:

(...) omissis

V - to organize and provide, directly or under a concession or permit system, **public services of local interest, including collective transportation, which are essential;**
(Gn)

Thus, it is the responsibility of the Municipality, the federated entity that is closest to the community, to establish rules for the collection, treatment, disposal and / or incineration of hospital waste.

But due to their meager resources, the Municipality ends up not being able to treat this waste and they end up going, for the most part, to the common trash, without proper treatment.

Therefore, with regards to the biosecurity and accidents prevention, the urban cleaning, orientation and supervision of these activities are assigned to ANVISA – Agência Nacional de Vigilância Sanitária (National Health Surveillance Agency), to the Ministério do Meio Ambiente (Ministry of Environment), through the SISNAMA – Sistema Nacional de Meio Ambiente (National System of Environment), with the support of the Vigilância Sanitária dos Estados e Municípios (Sanitary Surveillance of States and Municipalities), as well as to the local environmental organs.

Therefore, that there are several responsible organs to act in the management of hospital waste. This competence ultimately allows these various bodies to neglect in their power / duty to control and regulate the treatment of hospital waste and, instead of optimizing, the measures necessary for the implementation of treatment and disposal of this hospital waste.

Thus, recognizing the responsibility of health facilities in the management of hospital waste, ANVISA, through RDC No. 306/04 combined with CONAMA Resolution 358/05, established and defined classifications, competencies and responsibilities, as well as rules and regulations for procedures concerning the management of hospital waste, from the generation up to the final disposal:

2. It is the responsibility of the RSS generating services:

2.1. The elaboration of the Health Services Waste Management Plan (PGRSS), following the technical criteria, environmental legislation, norms of collection and transportation of the local services of urban cleaning and other orientations contained in this Regulation.

2.2 – To keep a copy of the PGRSS available for consultation at the request of the competent sanitary or environmental authority, employees, patients and the general public.

(...) omissis

2.4 - To provide training and initial and ongoing training for personnel involved in waste management, the subject of this Regulation.

2.5 - To include in the terms of bidding and contracting on the services related to the subject of this Resolution and its Technical Regulation, the requirements of proof of training and of the employees' training for the firms that provide cleaning and conservation services that wish to work in health facilities, as well as the transportation, treatment and final disposal of these wastes.

(...) omissis

2.7 - Require from the public agencies responsible for the collection, transportation, treatment or final disposal of health service waste, the documentation that identifies compliance with the guidelines of environmental agencies.

(...) omissis

3.1 - Holders of drug registration must also keep updated with the General Management of Medicines / GMED / ANVISA, a list of their products that, due to their active principle and pharmaceutical form, do not offer risks of handling and final disposal. They must indicate the trade name, the active principle, the pharmaceutical form and the respective registration of the product. This listing shall be available at ANVISA's electronic address, for consultation of waste generators. (Gsn)

Thus, it is seen that there are legal rules at our disposal, so that to minimize the effects of hospital waste. However, as the State is unable to exercise control, the environment and public health agonize, because Public Policies to cope with environmental damage are not effective.

4 THE IMPORTANCE OF HOSPITAL WASTE MANAGEMENT

To ensure that all waste generated inside the hospital is properly treated and disposed of correctly, the hospitals need to have a well-defined waste management plan.

Such plans should include protocols, systems and waste disposal processes, from their generation until leaving the hospital for final disposal..

In addition, hospitals should develop lists of infectious wastes and specific waste disposal procedures, as contained in the hospital waste management plan. Let's see how this management should be done.

4.1 Segregation

The segregation is nothing more than the separation of the garbage, checking its specificities and components, as well as degree of recycling.

According to Meldau (2012, page 45), “the process of segregation is done by separating waste at the time and place of its generation.”

In order to comply with Resolution 306 of ANVISA - National Health Surveillance Agency, the hospital waste must be separated according to the following classification: group A; Group B, Group C and Group D.

In Group A are Biological Hazardous Waste - they include the components with the possible presence of biological agents that, due to their characteristics of greater virulence or concentration, may present a risk of infection. Examples: laboratory plates and slides, carcasses, tissues, transfusion bags, among others (BIONURSING, 2008, p.32).

Group B refers to chemical residues that are those containing chemicals that may present a risk to public health or the environment, depending on their flammability, corrosive, reactivity and toxicity characteristics. Ex: seized medicines, laboratory reagents, residues containing heavy metals, among others (BIONURSING, 2008, p. 33).

In group C are materials resulting from human activity containing radionuclides in amounts exceeding the limits of elimination specified in the standards of the National Commission for Nuclear Energy (CNEN), such as nuclear medicine and radiotherapy services etc. (BIONURSING, 2008, p.35).

And in group D, the common wastes that do not pose biological, chemical or radiological risks to health or the environment are disposed of and can be assimilated to household waste. Eg. food leftovers and food preparation, waste management areas etc. (BIONURSING, 2008, p.35).

In group E, puncturing or scarifying materials such as razor blades, needles, glass ampoules, diamond tips, scalpel blades, lancets, spatulas and the like are put up in rigid containers filled only up to 2 /3 of their capacity (BIONURSING, 2008, p.36).

4.2 Packaging and identification

The packaging of wastes classified in group “A” shall be packed in a white, opaque, resistant and impermeable plastic bag. The residues of group A are identified by the symbol of infecting substance, with labels of white background, design and black outlines.

Those classified in group “B” must be packed in their original packaging in an unbreakable container, involved in bags and identified by the associated risk symbol and with discrimination of the chemical and risk phrases.

Those classified in group “C”, must be packed in armored containers. Group C tailings are represented by the international symbol of presence of ionizing radiation on yellow labels and black outlines, plus the expression “radioactive material”.

The waste from group “D” may be destined for recycling or re-use. When recycling is adopted, its identification should be made in the containers and in the containers shelters, using color coding and their corresponding indication, based on CONAMA Resolution N. 275/01, and symbols of recyclable material type.

For the other group “D” residues, the gray or black color should be used in the containers. It can be followed by color determined by the City Hall. If there is no segregation process for recycling, there is no requirement for the color standardization of these containers (BIONURSING, 2008, p. 37).

The products of group “E” are identified by the symbol of infecting substance, with labels in white, design and outlines in black, plus the inscription of puncture-etching residue, indicating the residue risks.

4.3 Temporary Storage

According to the MGRSS - Manual de Gerenciamento de Resíduos Sólidos de Saúde / Solid Waste Management Handbook (2011, p. 2), the temporary storage consists of:

In the temporary storage of the containers containing the already conditioned waste, in a place close to the generation points, in order to speed up the collection inside the establishment, and to optimize the transfer between the generating points and the point destined to the presentation for external collection.

And the Handbook (2011, p. 3) also disposes that certain rules should be observed, such as:

1. Temporary storage cannot be done with direct disposal of the bags on the floor.
2. If the volume of waste generated and the distance between the point of generation and final storage warrants, temporary storage may be waived.
3. The storage room for internal waste transport containers shall have smooth, washable floors and walls.
4. The floor must still be resistant to the collecting containers traffic.
5. There must be artificial lighting and enough space to store at least two collecting containers for later transportation to the external storage area.
6. When the room is exclusively for the storage of waste, it must be identified as "WASTE ROOM".
7. In the case of temporary storage, it is not permissible to remove the bags of waste from the containers stored there.
8. The room for temporary storage can be shared with the utility room. In this case, the room must be added at least 2 m², enough space to store at least two collecting containers, for later transfer to the external storage area.
9. Easily putrefactive wastes that are to be collected over a period of more than 24 hours should be stored under refrigeration, and where this is not possible, they should be subjected to a different method of storage.

According to Ordinance No. 282 of November 17, 1982 of the Ministry of Health, it is mandatory to set up a room or a service for the preparation of medication and the material used in patient care, and also provides the utility room or purges, intended for the cleaning, disinfection and storage of utensils used in patient care.

4.4 External storage

The MGRSS (2011, p.3) states that external storage “consists of the storage of waste containers until the collection of external waste in an exclusive environment with easy access for collecting vehicles” and the following rules must be observed :

1. External storage of waste should be done in separate and exclusive shelters, one for infecting or chemical waste and another for common waste.
2. External storage, called a waste shelter, must be built in an exclusive environment, with external access facilitated to collection, having at least separate environments to meet the storage of waste containers of GROUP A and GROUP D.
3. The shelter must be identified and restricted to waste management employees, with easy access to transport containers and collection vehicles.
4. Inland transport containers may not be transported by external public road to the building to gain access to waste.
5. The floor must be lined with a smooth, waterproof, washable and easily sanitized material.
6. The closure shall consist of masonry lined with smooth, washable and easily sanitized material with ventilation openings of a size equivalent to at least 1/20 (one-twentieth) of the floor area, with a protective screen against Insects.
7. The waste shelter must have a specific area of sanitation for simultaneous cleaning and disinfection of the collection containers and other equipment used in the management of RSS.
8. The area must have coverage, dimensions compatible with the equipment that will be subjected to cleaning and sanitation, smooth and waterproof floor and walls, washable, provided with lighting points and electrical outlet, water point, preferably hot and under pressure, gutters Of drainage of wastewater directed to the sewage network of the establishment and drained drain with a lid that allows its sealing.
9. Propose, if applicable, the RSS recycling policy used within the company.
10. Propose how many containers will be needed for each segmented RSS group, each differentiated from the other, and its storage capacity - 660 liters, 800 liters or 1100 liters.
11. Propose the structure of external temporary storage construction, if necessary.
12. Propose how the routine of receiving the RSS from internal collection 1 or 2 will be given.
13. Propose the routine cleaning of these internal collecting cars and the containers, which should be made in the temporary storage.
14. Determine specific personnel, without access to the interior of the health facility, who will be responsible for the external storage and cleaning of cars and containers.
15. Inform the need for

personal protective equipment: gloves, masks, to carry out the internal collection of the residue. 16. Describe the risk associated with a lack of material resources and personal protective equipment. (Gn)

It is important to highlight that the storage purpose is to keep the residuals in safe conditions up to the moment appropriate for the external collection and later final disposal.

4.5 Internal and external Collection and Transportation

Regarding the internal collection, the MGRSS provides that it is divided into two phases:

- A) The first is the collection of waste from the containers, their removal by suitably trained employees from the generator department or from the waste room (intermediate storage) to the external storage shelter;
- B) While the second is the operation of transferring the containers from the waste room to the waste shelter (external storage) or directly to the treatment.

Taking into account, where applicable, the following rules:

1. The internal transport of waste must be carried out in a single direction, with a defined itinerary and at times that do not coincide with the distribution of clothing, food and medicines, visitation periods or greater flow of people.
2. The internal transport of waste must be done separately and in specific containers to each waste group.
3. Containers for internal transport shall consist of rigid, washable, impermeable material, fitted with a hinged lid to the body of the equipment, rounded corners, and be identified in accordance with these Technical Regulations.
4. Containers shall be fitted with wheels covered with material which reduces noise.
5. Containers of more than 400 L capacity shall have a drain valve on the bottom.
6. The use of containers without wheels must comply with the load limits allowed for transport by workers.
7. Propose how many internal collection cars will be needed for each segmented RSS group, each differentiating itself from the other.
8. Propose how the internal collection routine will be given; If the car will be exclusive to the unit / sector; Whether it will be exclusive to the floor or whether it will meet the demand of any establishment; If there will be reserve cars for internal collection.
9. Determine the

capacity of each car depending on the volume of RSS generated by group of waste - 120 liters or 240 liters. 10. Determine the routine and frequency of internal collection for each unit or sector of the health facility. 11. Determine the internal collection route, according to the volume of waste generated by type of group. Remembering that as a rule of thumb, the internal collection route must obey the normal flow of the sterilized / clean material, not allowing in any way an inverse route, since the risk of cross contamination increases exponentially. 12. Determine the collection flow per residue, if possible by identifying on the floor plan of the establishment. 13. Inform the need for personal protective equipment: gloves, masks, boots to carry out the internal collection of the residue. D 14. Write the risk associated with lack of material resources and personal protective equipment.

Internal transport consists of the transfer of the waste from the generation points to the place destined for temporary storage or the presentation for external collection.

In relation to external collection and transportation, the MGRSS (2011, p.8) norms are:

The external collection and transport consists of the removal of the RSS from the waste shelter (external storage) to the treatment unit or final destination, using techniques that ensure the preservation of the physical integrity of the personnel, the population and the environment, and must be According to the guidelines of the urban cleaning agencies.

In line with what the MGRSS describes (2011, p.9), two situations have to be differentiated:

A) The first collection is performed by the establishment itself. 1. Propose the methodology of external collection of this RSS to the treatment plant or its final disposal - cart, closed truck, utility, properly identified and flagged. 2. Propose how the external collection routine will be given; If the car s is exclusive to the unit / sector; If it is exclusive to the floor or if it will meet the demand of the whole establishment; If there will be internal collection car reservations. determine how many trips will be necessary to meet the demand of the health establishment, according to the transportation model chosen by the establishment. 3. Individual: gloves, masks, boots to carry out the internal collection of the residue. 4. Describe the risk associated with a lack of material resources and personal protective equipment.

B) The second collection is carried out by the public cleaning company: 1. Require of the public cleaning company, a document on the company's letterhead, with a signature of the technical responsible, informing the methodology of external collection, also informing the routine, frequency and Route, which the truck follows to collect its waste. 2. This characterizes the partial transfer of responsibility to the public cleaning concessionaire.

It is indispensable the daily collection or at least three times a week of the hospital waste, since prolonged storage of this waste, even if separated, increases the risk of environmental contamination and the spread of infections (MGRSS, 2011, p. 9).

4.6 Destination and supervision of hospital residuals

The final destination of solid waste, unfortunately, in the vast majority of Brazilian cities is still the open dump.

However, the biggest problem is the so-called "infectious garbage - class A", which poses a great risk of contamination, besides polluting the environment. Most health facilities do not separate this material, which ends up going to landfills along with normal garbage or to the cesspool. (BRASIL AMBIENTAL, 2013).

The Solid Waste Act established a deadline for Brazilian municipalities to end garbage in the open. However, the deadline has already been extended, as municipalities can not finish with these dumps: they lack resources and there is a shortage of skilled labor to offer alternatives.

Another problem is the so-called "hazardous waste - class B", whose final disposal is currently under the responsibility of hospitals. The material collected in the hospitals, must be conditioned according to standards that vary according to the degree of dangerousness of the products, is usually taken to a proper landfill (BRASIL AMBIENTAL, 2013).

The "class C garbage" of the hospitals - also properly separated - is subject to the same collection system of the rest of the city, going part for recycling and part for the normal collection, which includes only the organic material destined to the sanitary landfill (BRAZIL ENVIRONMENTAL, 2013).

Most hospitals take little or no action on the tons of waste

generated daily in a variety of activities within a hospital.

Many simply refer all of their waste to special collection systems of Municipal Cleanup Departments, when they exist, or throw them directly into open dumps, or they also burn waste (BRASIL AMBIENTAL, 2013).

Regarding the burning, incineration of hospital waste, it has been found that it is incorrect to burn the infectious garbage turning it to ashes. It is a politically incorrect attitude because the by-products released into the atmosphere like dioxins and heavy metals have great potential contaminants.

Another process of hospital waste treatment is the Auto-Clave: infective garbage sterilization process, but as it is too expensive is not widely used. Alternatively, infectious litter can be placed in aseptic ditches, but space for all litter produced is still a problem in many cities.

The CONAMA Resolution No. 05/93 defines final disposal systems for solid health wastes, such as the set of units, processes and procedures that aim at the release of the soil residue, guaranteeing the protection of public health and Environmental risk (FERNANDES, 2013, p.33).

According to Fernandes (2013, p. 33):

This is the last step of the Solid Waste Health Service (SSR). In Brazil they are willing (1) open skies; (2) leaks; (3) animal feeding; (4) landfills and (5) septic tanks. It is recommended that measures be taken to isolate and render the landfill undeveloped and to protect surface and groundwater, as well as gas and liquid control, and rainwater drainage

It is mandatory that every health service unit has its Solid Waste Management Plan (PGRSS), as established by ANVISA RDC No. 358/05. This Plan is composed of stages, elaborated by the waste generators, according to their diagnosed characteristics. According to Fernandes (2013, p.34) “one should consider an infra-establishment phase and an extra phase”.

The most important stage is the infra-establishment. In these stages are involved: (1) Initial diagnosis; (2) Basic Content of the Management Plan and (3) Complementation and expected procedures. The basic content of the plan should contain the following classification: (A1)

Biological material; (A2) Blood and blood products; (A3) Surgical; (A4) Shear punching material; (A5) Contaminated animals and (A6) Patient care and food surplus (FERNANDES, 2013, p.35).

The destination of the waste generated by the health services is a matter of Public Health and, for that reason, the responsibility of each State. It is the responsibility of the Municipality, in its sphere of action, to take responsibility for the collection, supervision and final destination of solid waste, especially as it is risk material, which requires an adequate treatment by the Public Power.

CONCLUSION

Waste generated in health activities, especially in hospitals, generates numerous environmental and public health problems, reflecting on the quality of life of the people living in the vicinity of these health facilities, as well as those working within these units.

It is necessary, therefore, that the Public Power be firmly expressed in relation to the production and inspection of environmental and health standards, both for the private sector and for the public health sector, in order to prevent, *in concreto*, the environmental impacts losses.

The objective of this research was to analyze whether Brazilian legislation contemplated legal mechanisms to protect the environment and public health against the incorrect disposal of hospital waste. It has been found that, within the scope of environmental law, the Prevention Principle has sufficient legal force to inhibit the deliberate conduct of the agents, imposing on them the duty to treat their hospital waste effectively to avoid committing crimes under the Law of Environmental Crimes.

It was also verified that the Federal Constitution emphasizes the powers of the federated entities, to impose rules and to supervise the performance of public and private power, regarding the production, treatment and disposal of hospital waste. In addition to the constitutional norms, it was also verified that Ministries, Sanitary Agencies and the National Council of the Environment have specific and clear rules on the management of hospital waste, so that these are not disposed of indiscriminately in the environment; Thus avoiding environmental and health damage.

Finally, as a result of the research, it was verified that there is a need for more investment in personnel training, implementation of techniques for the safe management of materials within the hospital unit, the provision of licensed landfills and a strong control of the environmental agencies, as well as Implementation of local public policies, aimed at the correct management of hospital waste. Only in this way, that is, only through a safe management and effective supervision, we will be able to give to the hospital waste, an appropriate treatment and commensurate with its dangerousness, protecting the environment and public health.

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Artigo recebido em: 05/12/2016.

Artigo aceito em: 31/05/2017.

Como citar este artigo (ABNT):

POZZETI, Valmir Cesar; MONTEVERDE, Jorge Fernando Sampaio. Gerenciamento ambiental e descarte do lixo hospitalar. *Revista Veredas do Direito*, Belo Horizonte, v. 14, n. 28, p. 195-220, jan./abr. 2017. Disponível em: <<http://www.domhelder.edu.br/revista/index.php/veredas/article/view/939>>. Acesso em: dia mês. ano.