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Diagnosis of solid waste management of public health services in a city of North Mato Grosso

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Abstract. This study aimed to describe the entire trajectory, from the production to the final disposal of waste from public health services (RSS), of a municipality in the northern of Mato Grosso state. Data collection was conducted from an interview applied to the representative of the Secretariat of the City, and also visits were held to some units that produce RSS, as the Family Health Strategy Units (ESF), and at the landfill, local used to dump such waste. The images, recorded in photographs were taken by the researcher. Data analysis was performed considering the steps of RSS management, determined by Resolutions of the National Council of Environment (CONAMA) N º 358 of 29 April 2005 and Board Resolution No. 306, of December 7, 2004 from the National Health Surveillance Agency (ANVISA). Through data collection it was possible to observe that there is no a treatment step, all other steps being performed, although they are at odds with the laws of CONAMA and ANVISA.
Keywords: Management, Waste Services Health, Nursing.

Introduction

Currently, most people live in urban environments. Data shown by the Brazilian Institute of Geography and Statistics (IBGE 2004) indicate that in Brazil more than 80% of people are living in urban areas.

The increasing urban population causes environmental, physical and biological changes over time, changing the landscape and endangers the ecosystem, increasing the production of urban waste. The problem involving the final disposal problem of such waste, most of the time still remains unsolved, despite being one of the main points of sanitation in big cities. Since the systems designed to promote the collection, transportation and disposal of urban waste, the municipal administrations are engaged.

In this context, one of the most challenges faced by municipalities is where to dispose these wastes safely, since the available areas become increasingly scarce, further away from the trash centers and have a higher cost. As a result, several solutions have been adopted, some of them without careful preliminary assessment (Sisinno et al., 2006).

According to Ferreira (1995), in addition to domestic and industrial waste, there is medical waste, consisted of waste produced in health institutions, such as basic health units, hospitals, clinics of medical specialties. They are composed by common waste (paper, garden waste, cafeteria food and kitchens waste, etc.), by infectious waste, also known as biological risk (blood, gauze, bandages, needles, among others) and by special waste (pharmaceutical chemicals and radioactive).

And if such waste is disposed improperly in the soil or near crowded environments, they can cause complications for the health of the community as well as the contamination of the environment. Regarding the health of the population, the diseases that most affect according to Philippi (2005) are “beyond diarrheal and dysenteric diseases, there are tuberculosis, anthrax, conjunctivitis, plague, trichinosis, meningitis, typhoid, cholera, leptospirosis, polio”.

In an attempt to find out what happens with solid medical waste (RSSS), this research aimed to identify which process and destination of public RSSS produced in the a municipality in northern of Mato Grosso state. This study is important because from the results, it was possible to create actions and measures to improve the management of RSS, to then help minimizing the risks that people and the environment are exposed, for example, indicating appropriate forms to the final disposal of RSS and emphasizing the need for waste going through some

kind of treatment before being discharged into the environment.

Methods

This research was conducted in a city of the northern region of Mato Grosso state, with approximately 3206.86 km^2 extension area, located at about 505 km from Cuiabá, being one of the main cities in the state, with a population estimated of 111,643,000 inhabitants (IBGE, 2010).

This research was a descriptive study with a qualitative approach.

To obtain data a non-structured interview was applied that according to Marconi et al. (2007), the "interviewer is free to develop each situation in any direction he considers appropriate." It is a way to widely explore a situation.

In the script used to interview, there were twenty-three questions both subjective and objective, applied to the environmental responsible of the municipal government, highlighting that the script was developed in order to cover the main information about management and operational procedures, providing data regarding the RSS and obtaining data regarding its management process.

On the other hand, visits were made in the landfill, place used to leave waste and of twenty units producing RSS: hospital (one unit), Family Health Strategy units - ESF (nineteen units), in which two visits were conducted during the study period, the first in June 2010 and the second in November 2010. These visits were made specifically in septic ditch that lies within the landfill. This is located approximately 09 km from the 163 Highway and having 78 hectares of extension area.

Throughout the data collection, the technique of observation was used to obtain additional data. The study was developed from March to November 2010. The analysis and presentation of data were made covering aspects related to all stages of the management process: segregation, packaging, internal and external storage, internal and external transportation, treatment and final disposal of all RSS, according to the theoretical reference attached: CONAMA Resolution number 358 of April 29, 2005 about treatment and final disposal of health services waste and ANVISA Resolution number 306 of December 7, 2004 about Technical Regulation for the management of health services waste.

Results and discussion

Data of the speeches will be shown according to the RSS management phases, according to CONAMA Resolution.

The speeches will be presented in the following steps of the management process are from the representative of the responsible body for collecting all kinds of waste in the city (Secretary of Cities of the northern city of Mato Grosso), represented by the RL pseudonym.

Regarding the team working in the RSSS collection:

> *"There are three professionals, one driver and two assistants who work in the RSSS collection, they undergo into a training only when they are admitted. They do not use all types of PPEs. They only use boots, gloves, uniform, mask and reflective belt. They do not use jumpsuit that is required. There is a project to request them". (RL)*

The RSSS daily production is approximately half a ton, the city government is responsible for the collection in 163 establishments producing these waste, including hospitals, health units for the family, dental and veterinary clinics, pharmacies, among others.

According to the laws mentioned above the RSS management steps are as follows:

Segregation

Waste does not go through all kinds of segregation according to ANVISA legislation number 306/04, the general waste is separated from contaminated or infectious sharps waste.

> *"No, the common waste is just separated like: disposable cups and paper, contaminated and sharps, they used to be together, there was no separation". (RL)*

Segregation is the first step of the whole management process and should begin at the time and place of its generation, according to the physical, chemical and biological characteristics and risks involved, quite different from the way it was evident that just common waste is separated, contaminated and sharps waste.

Packaging

The waste is not packed properly after segregation; existing packages are only black bags for common waste and for contaminated in all units of the Family Health Strategy (ESF). In the hospital, there is a white bag for medical contaminated waste and a black bag for common waste, and in all establishments there are descarpacks for sharps waste.

> *"There are only packaging for common waste, contaminated waste and packaging for sharps waste". (RL)*

The correct thing to do that all waste would be packed in bags or packaging to prevent leaks and resisting the actions of puncture and rupture. Each type of waste must have its specific packaging respecting their classification and risk.

Identification

Regarding the identification, both the plastic bags as the boxes for sharps waste have only medical waste identification with biohazard and infectious waste symbols.

> *"Only the white bag and boxes for sharps waste have identification". (RL)*

According to ANVISA legislation number 306/04, the identification must be in the packaging bags, in internal and external transportation packaging, and in storage locations, in easy viewing sites, indelibly, using the symbols, colors and phrases given the parameters referenced in the form NBR 7500 of ABNT, and other requirements related to the identification of content and the specific risk of each waste group. Taking into account the above legislation, it is perceived that the form of identification used in this city is incomplete.

Internal transportation

The 19 ESF units do not have this type of transportation for being small and because they produce small quantities of waste daily. In institutions (hospitals) where waste production is in greater quantity, the waste is usually transported in pre-established schedules (end of the duty). It is used a manual cart with lid and identifying in the side as biohazard, infectious waste. The way the internal transportation is done in the units producing RSSS is inadequate.

> *"In some places the collection is daily, in others the collection is weekly or fortnightly, this will depend on the amount of waste produced per day". (RL)*

Temporary storage

In most establishments, there is no specific location for temporary storage of waste.

> *"There is no specific location, sometimes there is waste in the bathroom". (RL)*

External storage

There is no specific location for storage of waste in family health units, only in hospitals. In some establishments there are two baskets for storage, one for common waste and one for medical waste.

> *"In most collection points, there is no specific place to store waste." (RL)*

According to the legislation, this storage is place to keep waste packaging to the external step in an exclusive environment with easy access for collecting vehicles. In the external storage the maintenance of waste bags outside the packaging are not allowed. It was found that there were suitable locations for temporary storage of RSSS.

External transportation

In most establishments, transportation is carried out daily between 6 a.m. to 12 p.m. Depending on the amount of waste produced per day in the establishment, in some places the collection is carried out once a week or every two weeks.

> *"A white Fiorino vehicle is used, only with identification (Medical waste) on the front of the vehicle". (RL)*

Treatment

> *"Waste does not undergo any treatment; waste is discarded into the environment without any preliminary evaluation. It should be incinerated; there is even a waste management project which it will be implemented autoclaving process". (RL)*

The application method, technique or process change the characteristics of the risks inherent to waste, reducing or eliminating the risk of contamination, occupational accidents or damage to the environment. The treatment can be applied in their own generator establishment or other establishment, being observed in these cases, the safety conditions for the transportation between the generator establishment and the place of treatment. Waste does not undergo any treatment, it is discarded into the environment without any preliminary evaluation.

Final disposal

According to the legislation, the final disposal is placing waste in the soil, previously prepared to receive them, obeying the technical criteria for construction and operation, and with environmental licensing according to CONAMA Resolution number 237/1997. The place used for RSSS final disposal is a waterproof ditch in the middle of the landfill.

This waste is placed in a septic ditch constructed as follows:

> *"An opening in the soil was performed, and in the bottom there was cement over a black inner bag for protecting the ditch, and in the upper part there is a timber covered with a black plastic. According to reports of the interviewed, the purpose of this waterproof ditch is to prevent water in the middle of waste and increase the risk of soil contamination. This sealing was necessary due be no drainage system to drain the water. The quantity of waste that the ditch supports is filled in a year, after filling the ditch, it is covered with cement and earth, and it will be*

opened another ditch just like it. This ditch goes through inspection of SEMA. With regard to the liquid effluents produced in the establishment with RSS, waste also does not undergo to any treatment and is discarded in a septic tank." (RL)

According to CONAMA legislation number 358/05 for RSSS final disposal, if the method chosen by the municipality is approved by the current environmental agency in the state, in this case the State Secretariat of Environment (SEMA), the municipality will agree to the legislation concerning the waste final disposal.

For liquid effluent produced in establishments that generate RSSS, it is noteworthy that they do not undergo any kind of treatment, and its disposal is in a septic tank on the establishments, causing a serious problem due to contamination risks of groundwater table.

Taking into account the legislation, it is observed how much RSSS management needs to be improved, maybe, because the city have mostly only small generators and they do not have this awareness and knowledge required, or also because they are lack of infrastructure to properly conduct RSS management. On the other hand, Mato Grosso is a state that still has not adopted a Solid Waste Management Plan of Health Services (PGRSSS), this project is being voted in the Senate. From the moment this project is implemented and become mandatory, municipalities will be required to adapt this plan to the conditions and needs of each city, to not be fined, and maybe there will be a suitable PGRSSS.

However, there is a resolution changed this year, Resolution number 12,305 of August 2, 2010, establishing the National Policy on Solid Waste; changing Law No. 9605 of February 12, 1998, which states that all municipalities must build within four years a landfill to deposit all types of waste generated in each municipality. By this resolution be mandatory, the governments will have to adjust, and then the RSSS of this municipality will possibly have an appropriate destination.

Considering all phases of management, from production to final disposal of medical waste produced by the public health systems of this municipality, it is observed the inefficiency of public collection services.

According to the legislations of CONAMA and ANVISA some steps of the management process do exist, but they are not performed correctly, such as waste treatment, which is one of the main stages being held.

The results of this study indicate the absence of a health service waste management plan in the public area of the city.

It was observed that the greatest difficulty for this structure are issues related to municipal public administration, since Mato Grosso has not yet a Solid Waste Management Plan of Health Services (PGRSSS), which is in being voted in the Senate, and will become mandatory after its implementation being approved.

While the PGRSSS is not approved, the population and the environment will continue exposed to the risks related to the incorrect management and disposal of RSS.

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