



Analysis of the current overview of solid waste management in the municipality of Sousa-PB

Análisis de la situación actual de la gestión de residuos sólidos en el municipio de Sousa-PB

Jéssica Ruana Lima Mendes¹

Abstract: The main objective of this article is to analyze the current scenario of solid waste management in the municipality of Sousa-PB. Such an approach proves to be of paramount importance given the need to adapt to environmental standards and deadlines, for the correct disposal of solid waste generated, therefore, a study of this nature is necessary in order to understand the reality of the locality and rethink solutions to that problem. The research will be used as an approach method, the inductive method, starting from particular data, sufficiently verified, a general or universal truth is inferred. Regarding the research technique, bibliographic and documentary research will be used, through the main legislation and documents, as well as bibliographic research on doctrines and scientific articles on the subject, and also, a field study is carried out, in the sanitary landfill. UTR SOUSA/PB. And it starts with the following problem: What is the panorama of solid waste management in the municipality of Sousa-PB? Thus, although the analyzed Municipality directs the generated MSW to the UTR SOUSA sanitary landfill, the operationalization in practice presents latent deficiencies that make it impossible to effectively comply with the PNRS, and the new basic sanitation framework. What can be concluded that the theme cannot be kept in the background, or only when the money is left over by the federated entities, given that the garbage problem is relevant, which above all requires cooperation from all those involved, from the Public Power to the citizen, from the public to the private sector.

Keywords: *Management; Waste; Municipal; Souza.*

Resumen: Este artículo tiene como objetivo analizar el escenario actual de la gestión de residuos sólidos en el municipio de Sousa-PB. Tal abordaje es de suma relevancia dada la necesidad de adecuación a las normas y plazos ambientales, la correcta disposición de los residuos sólidos generados, siendo necesario, por lo tanto, un estudio de esta naturaleza con el fin de comprender la realidad de la localidad y repensar soluciones a este problema. La investigación utilizará como método de abordaje, el método inductivo, a partir de datos particulares, suficientemente comprobados, se infiere una verdad general o universal. En cuanto a la técnica de investigación, se utilizará una investigación bibliográfica y documental, a través de las principales legislaciones y documentos, además de la investigación bibliográfica en doctrinas y artículos científicos sobre el tema. Se planteó el siguiente problema: ¿Cuál es el panorama de la gestión de residuos sólidos en el municipio de Sousa-PB? Assim, embora o município analisado direccione os RSU gerados no aterro sanitário UTR SOUSA, a operacionalização na prática apresenta deficiências latentes que impossibilitam o efetivo cumprimento do PNRS e do novo quadro de saneamento básico. O que se conclui que, a temática não pode ser mantida em segundo plano, ou apenas quando o dinheiro sobra pelos entes federados, tendo em vista que, o problema do lixo é relevante, que necessita acima de tudo uma cooperação de todos os envolvidos, do Poder Público ao cidadão, do setor público ao privado.

Palabras clave: *Gestión; Residuos; Municipal; Sousa.*

*Author for correspondence

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¹Lawyer. Graduated in Law from the Federal University of Campina Grande. Master from the Federal University of Campina Grande. ruana_mendes@hotmail.com. ORCID: <https://orcid.org/0000-0002-6513-0987>.*

INTRODUCTION

The problem related to the environmentally appropriate disposal of solid waste is one of the major obstacles in the country, especially for municipal entities. The high rate of generation of solid waste on a daily basis, the need to adhere to the dictates and deadlines of the National Solid Waste Policy (PNRS), the local challenges to implement sustainable practices and measures for all involved, and the high costs for building landfills, maintenance, and proper operation, are some of the real situations in the country.

Twelve years ago the Federal Law 12.305 was instituted, providing a set of objectives, principles, guidelines, management instruments, and solid waste management, in order to guide the entire Brazilian state to extinguish the disposal of waste in open dumps, and consequently, to inhibit the degradation of the environment, in all its spheres. On the other hand, in 2020, Federal Law No. 14.026 was instituted, bringing important changes to PNRS, regarding the deadlines for implementation of the final disposal of environmentally appropriate waste, from 2021 to 2024, according to the number of inhabitants, which for 10 years had been neglected to the second plan by the administrations of the country.

The city of Sousa, located in the state of Paraíba, would not demonstrate a reality so different from the general one, since the solid waste in general for many years was dumped without any protection to the environment, in open air dumps. The final disposal in landfills is a recent measure, and imperative, in order to comply with the Brazilian National Policy. Thus, this study starts from the following problem: What is the current situation of solid waste management in the municipality of Sousa-PB?

Thus, this work aims to analyze the panorama of solid waste management in the municipality of Sousa-PB. Specifically, it will address the legal history of the municipality of Sousa regarding the management of municipal solid waste, present the contents of the Municipal Plan, and finally, analyze the current situation of the final disposal in the municipality of Sousa-PB.

This approach is highly relevant, since this study aims to highlight the problem of mismanagement to the municipal government regarding the compliance with the legal dictates as the environmentally appropriate disposal of MSW generated, identifying shortcomings and failures in the current system in order to rethink solutions and new strategies, as well as, to make clear to all civil society, especially the academic community, the current scenario of solid waste in the city, the latter which has a key role in the promotion of ideas, research, studies, debates, and dissemination of knowledge, for a systematic action in favor of improvements to existing management.

THEORETICAL FOUNDATION

Legal history of the municipality of Sousa regarding the management of urban solid waste

Regarding the legislative productions in the municipality of Sousa related to urban cleaning, as well as solid waste management, we identified the issue of some legal instruments, in consultation with the collection available on the website of the Municipal Legislative Chamber.

It is registered, initially, the year 1979, with the edition of Law 918, which establishes the municipality's Code of Posture and other provisions, which disciplines in Title II, Chapter II, art. 25: "The cleaning service of streets, squares and public places will be performed directly by the City Hall, by concession or through contract."

Still, provides that residents are responsible for cleaning the sidewalk bordering their residences, while, prohibits sweeping garbage and solid debris of any nature for the public streets or rainwater galleries.(SOUSA, 1979)

Furthermore, they establish in their art. 29, other prohibitions in order to preserve in general the public hygiene, such as: conduct, in the proper concerns, any materials that may compromise the access of public roads; burn, even in their own backyards, garbage, material or debris in quantities capable of harassing the neighborhood; land on public roads with garbage, old materials or any debris, among others. (SOUSA, 1979)

In this sense, the art. 33 determines that, in case of infraction of any article of the referred chapter, a fine corresponding to the value of 20 to 100% of the reference salary in force in the municipality would be imposed. (SOUSA, 1979)

It is noted that the provisions of that Code for the time, already reflected the concern with the collection and disposal of materials on public roads, as well as addressed the institute of shared responsibility, the duty of the municipal government and society to preserve the urban cleanliness. In addition, the prohibition of burning garbage and materials represented an important point, due to the impacts on the population's health resulting from the contamination of the atmospheric air.

As for the urban cleaning services, the Code expressly states that they would be performed by the City Hall, directly or indirectly, as occurs until today. This is because the services still performed directly by the City Hall are the sweeping and weeding of public roads, tree trimming, garbage collection in the streets, among others. Others are done through concession contracts, as will be discussed later.

In 1990, the Organic Law that governs the municipality was instituted, which foresees, in its 4th article, section XVIII, the competence of the municipality to provide for the cleaning of roads and public spaces, removal and disposal of household waste and other waste of any nature, giving them the appropriate destination. (SOUSA, 1990)

The aforementioned law also establishes in its article 153 that:

Everyone has the right to the ecologically balanced environment, an asset of common use of the people and essential to a healthy quality of life, imposing on the Public Power and the collectivity the duty to defend and preserve it for present and future generations.

Still in this article, it determines in the first paragraph, item IV, that in order to ensure the effectiveness of this right, the Public Power is responsible for requiring, in the form of the Law, for the installation of work or activity that may cause significant degradation of the environment, a prior environmental impact study, which will be publicized. (SOUSA, 1990)

Next, it cites §3 of the article in question, which states that the conduct and activities considered harmful to the environment, will subject the offenders, individuals or legal entities, to criminal and administrative penalties, regardless of repairing the damage caused.(SOUSA, 1990)

According to Wedy (2018), the duty to repair environmental damage is extracted from the constitutional text itself. As established in article no. 225, paragraph 2 of the Magna Carta, the one who "exploits mineral resources is obliged to recover the degraded environment, according to the technical solution required by the competent public agency, in the form of the law."

And still according to the author, the requirements for civil liability for environmental damage are basically: the existence of risk activity to health and the environment; the damage or risk of damage, actual or potential; the causal link between the activity and the harmful result. It should be emphasized that liability exclusions, which would be mere conditions of the event, are not accepted, nor is the clause not to indemnify.

Thus, it is clear that municipalities have the duty to protect such an important right as the environment, a right considered to be of the third generation or dimension, and especially to ensure that natural resources are preserved for present and future generations. Despite the fact that many municipal entities do not understand the relevance of this right to the community, and often neglect the care and actions to this segment, it is necessary a change in vision and performance of the government, for this type of theme, and especially to make the population aware of its role in this endeavor.

Furthermore, as for the need for environmental licensing by the municipal authority, the LOM determines that the construction, installation, expansion and operation of establishments, equipment, industrial, commercial and tourist centers and the activities that use environmental resources, as well as those capable in any way of causing environmental degradation, without prejudice to other licenses required, will depend on prior licensing by the competent local agency, to be created by law, a member of the National Environmental System - SISNAMA. (SOUSA, 1990)

Regarding the policy of afforestation, it is also provided as a duty of the municipal entity in that Organic Law, either at the headquarters, districts and towns, planting preferably native trees. It is known, the importance of the implementation of the afforestation both in urban and rural areas, in order to allow the stability of the climate, improving the quality of atmospheric air and quality of life of people, preventing problems in public health.

In 1998, the Complementary Law nº 11 was issued, which deals with acts harmful to public cleaning, and adopts other measures. At first, it establishes which acts are harmful to urban cleaning: depositing or throwing papers, cans, leftovers, or garbage of any nature, outside the appropriate containers, on streets, sidewalks, squares, and other public places, which cause damage to the conservation of urban cleaning; depositing, throwing or throwing, in any public areas or land, built or not, solid waste of any nature; to dirty public areas or public roads, as a result of construction work or deforestation; to deposit, throw or throw in streams, creeks, lakes and rivers or on the banks, residues of any nature that cause damage to urban cleaning or the environment. (SOUSA, 1998)

As for the competence for the collection, transport and final destination of garbage, the aforementioned Law determines that it is the exclusive responsibility of the Municipal Secretary of Urban Planning and Environment, through the Department of Public Cleaning, or a specialized company contracted by the Public Authority. It is up to this Secretary to previously define the areas for the deposit of ordinary and special garbage. (SOUSA, 1998)

The referred law also established that markets, supermarkets, slaughterhouses, butcher shops, and fishmongers had to keep the garbage produced for later collection. Bars, snack bars, bakeries, and other establishments that sell food should have garbage containers easily accessible and visible to the public (SOUSA, 1998).

Regarding the establishments that generate solid waste from health services, the Law determines in its article 7, the obligation to proceed with the incineration of contaminated waste, in compliance with existing sanitary and environmental standards (SOUSA, 1998).

Another important point established in the Law is the development by the government, through the Secretary of Urbanism and Environment, together with the organized community, of awareness programs, aiming to bring direct information to the entire population about the importance of adopting good habits to ensure urban cleanliness.

Moreover, in case of non-compliance, it will be considered an act of infraction and a fine can be applied according to the "Standard Value" of the municipality without prejudice to the penalties provided in other municipal laws, as stated in art. 12 (SOUSA, 1998).

In this perspective, there is a relevant legal instrument, more expressive in the municipality, bringing important determinations, such as, establishing the sector's competence to a certain Secretary, emphasizing the role of various sectors, such as commerce in general, in the packaging of waste, as well as, health services, in the responsibility for the incineration of materials, in order to inhibit impacts to the environment and public health, and preserve the urban cleaning.

It is worth pointing out that, although municipal laws governed the issue of urban cleaning and solid waste, the absence until then of a regulatory framework on the matter, which only came into existence with the enactment of Federal Law 12.305/2010, establishing the PNRS, brought changes to the management and proper management of solid waste in all spheres, especially with regard to the final disposal in landfills, and deactivation of open dumps, which for a long time caused serious environmental impacts and public health. In continuity, it highlights the edition of Law No. 2,409, of November 29, 2012, recognizing as municipal public utility the Association of Recyclable Material Collectors of Sousa - ASCAMARES, founded on October 30, 2006.(SOUSA, 2012)

Only in 2018, a law that dealt with the form of environmentally appropriate disposal of solid waste in the municipality appeared, with the edition of Ordinary Law No. 2.788, in order to authorize the Executive Power to grant public service concession to Legal Entity, through bidding in the public competition modality, for the purposes of implementation, administration, exploitation, treatment and final disposal of solid waste in the municipality of Sousa, with a view to expanding and improving the conditions of the environment. And finally, another law related to the theme that could be extracted from the municipal legislative collection, is Ordinary Law No. 2,801, of January 24, 2019, which authorizes the Executive Branch to open special credit of R\$ 1,800,000.00 (One million eight hundred thousand reais) intended for the maintenance of services in the landfill. From this legislative analysis, there are few laws related to urban cleaning and more specifically solid waste, although the relevance of institutionalization about the theme is latent and necessary, in order to structure this sector, and solve the problems still existing in the municipality.

National Policy on Solid Waste

It is important to highlight the National Solid Waste Policy in its own topic, due to its relevance in the general legislative acquis as to the theme, especially for being a landmark in relation to the management of solid waste in the country.

The law brings together a set of principles, objectives, instruments, guidelines, goals and actions adopted by the Federal Government, alone or in cooperation with States, Federal District, Municipalities

or individuals, with a view to the integrated management and environmentally sound management of solid waste. (BRASIL, 2010)

Brings clearly and precisely, as some of its objectives, the protection of public health and environmental quality; the non-generation, reduction, reuse, recycling and treatment of solid waste, as well as final disposal of environmentally appropriate waste; coordination between the different spheres of government, and these with the business sector, with a view to technical and financial cooperation for the integrated management of solid waste, the so-called shared responsibility, among others.

And also the end of open air dumps, with the determination of deadlines for the implementation of an environmentally adequate final disposal of waste, up to 4 years after its publication, that is, until 2014. However, long years passed without proper adherence and compliance with the deadlines of this law, and the permanence of dumps in the country continued to be a reality in many municipalities, from large to small, causing recurring impacts on public health and the environment.

It was in 2020, with the edition of the Federal Law 14.026, that the scenario begins to change, by establishing important changes to PNRS, regarding the deadlines for the implementation of the final disposal of environmentally appropriate waste, determining the municipalities according to the number of inhabitants until 2024 for the extinction of dumps and destination to safe and appropriate establishments.

Municipal plan for integrated management of solid urban waste of Sousa-PB

Regarding the Municipal Plan for Integrated Management of Solid Waste, according to the PNRS, its preparation is a condition for the transfer of resources from the Union (art. 18), having priority in access to these resources, the municipalities that opt for inter-municipal consortium solutions for solid waste management as well as those municipalities that implement the selective collection with the participation of cooperatives or other forms of association of collectors of reusable and recyclable materials formed by low-income individuals. (BRASIL, 2010)

This Plan should have a minimum content determined by PNRS, namely: diagnosis of the situation of solid waste generated, having detailed the origin, volume, characterization and forms of destination and final disposal adopted; identification of favorable areas for final disposal of environmentally appropriate waste; programs and actions for technical training aimed at its implementation and operation; programs and actions for the participation of interested groups, especially cooperatives or other forms of association of collectors of reusable and recyclable materials formed by low-income individuals, if any, among others. (BRAZIL, 2010). In addition, according to the Federal Law, the PMGIRS should come into force within two years after the publication of the PNRS, i.e., by 2012.

In the municipality of Sousa-PB, the Plan for Integrated Management of Urban Solid Waste was prepared in 2013 by the environmental engineering and consulting company A5 Ambiental, with undetermined validity.

The objectives, goals, programs, projects and actions presented in the Municipal Plan were defined for a time horizon of ten years, corresponding to three administrative managements, and the first review should occur in 2014, due to the need to make the Plan compatible with the municipal budget planning and every four years, in line with the preparation and approval of the Multi-Year Plan.

According to this Plan, the integrated management of solid waste in the municipality of Sousa has as its basic principles prevention, precaution, the polluter pays principle, sustainable development, solidarity responsibility and socio-environmental responsibility, and the implementation of selective collection. (SOUSA, 2013)

Also according to the Municipal Plan, the full operation of the Integrated Management of Solid Urban Waste depends on the actions not only of the government, but also of other sectors of civil society, such as the population, in the act of separation and conditioning of the recyclable materials in their residences, the large generators, responsible for their respective residues; the collectors, organized in cooperatives, proceeding with the collection of recyclables, and commercializing with the processing sources; as well as, the health service establishments, responsible for the collection and destination of their residues, in observance of the norms and resolutions relative to the management of Health Service Residues. And adds that the municipality, through its agents, institutions and companies hired through agreements, covenants and partnerships should play a leading role in the integrated management of the system. (SOUSA, 2013)

It is noted that the Municipal Plan also brings the diagnosis of the management of municipal solid waste, through the survey of data from the year of its preparation, such as: collection, generation, characterization of the gravimetric composition etc. We can cite the collection of the municipality in the year 2013, which was an average of 88 tons per day, and generation per capita estimated at 1.383 kg/hab/day. (SOUSA, 2013) About current data on the amount of solid waste generated, there is no updated information in the municipality.

Regarding the gravimetric characterization of the municipal waste, the study conducted by the company A5 Ambiental, revealed the need and feasibility of deployment and extension of selective collection throughout the city, given the diversity of urban waste generated and identified in the analysis, such as: organic matter, paper, plastic, cloths, rags, glass, electronic equipment and metals. (SOUSA, 2013)

Thus, it is glimpsed the existence of a PMGIRS in the municipality of Sousa, in a beginner and generic way, without presenting changes and updates over the new administrative managements, by conducting studies in order to delimit the current diagnosis of solid waste in the municipality, as well as planning actions and strategies for solving the problems identified.

Besides, it is a document of difficult access, since it is not possible to find it in the City Hall Portal or other electronic sites, and given this lack of publicity, it makes its applicability and update even more difficult.

Solid waste management in the municipality

As for the management of solid waste in the municipality, according to Municipal Law 169/2018, it is up to the Infrastructure Secretary of the Municipality of Sousa to perform public services of urban cleaning and waste management, except the services of final disposal of solid waste. It also adds that the infrastructure secretariat and the planning and development secretariat of the municipality are in charge of performing the necessary acts for the full compliance with the PNRS instruments.

In relation to hospital or health service waste in the municipality, which present risks to public health, it was verified the existence of two private companies responsible for the collection, conditioning and incineration process, an adequate final disposal system for these materials, Trash Coleta e Incineração de Lixo Hospitalar Ltda, and Waste Coleta de Resíduos Hospitalares Ltda.

METHODOLOGY

The research will use as a method of approach, the inductive method, which according to Marconi and Lakatos (2003), starting from particular data, sufficiently verified, a general or universal truth is inferred.

Regarding the research technique, it will make use of bibliographic and documentary research, through the main legislations and documents, in addition to bibliographic research in doctrines and scientific articles on the subject, and also, a field study is made in the sanitary landfill UTR SOUSA / PB, local destination of waste from the city in order to understand the operation in practice of this system.

The method of procedure will be comparative and historical, as it analyzes the management of urban solid waste in the local scenario and its legal framework, and then makes a brief comparative study in the national scenario.

General description of the study area

The municipality of Sousa, located in the interior of the State of Paraíba, occupies an area of 728.492 km² and is 438 km away from the capital João Pessoa, with a current population of 69,723 inhabitants, according to estimates by the Brazilian Institute of Geography and Statistics - IBGE, in 2020, considered the sixth most populous municipality in the state (IBGE, 2020).

This municipality is considered the headquarters, according to the criteria of population, aspects related to economic development and geographic location in the regional unit. (PARAIBA, 2013) Its Human Development Index (HDI) is 0.668, considered as average by the United Nations Development Program. (IBGE, 2010)

In the economic aspect, Sousa is very representative in Alto Sertão, especially in the service sector, responsible for most of the revenue of the municipality, also stands out in the industrial sector, for the operation of large industries of various types and segments, such as food, cleaning products, feed, among others, as well as a large agricultural producer, especially coconut, banana, cotton, among others. According to data from the Brazilian Institute of Geography and Statistics (2019), the number of companies operating in the municipality is 1,603.

Moreover, the municipality stands out for the existence of undergraduate and graduate courses offered by the Federal University of Campina Grande (UFCG), in full operation, developing important programs and extension projects of social and scientific nature, as well as legal services offered to the low-income community of the municipality.

Another relevant aspect of the municipality is the existence of one of the most important paleontological sites in Brazil, the Dinosaurs Valley, an important and magnificent conservation unit with dinosaur footprints fossilized millions of years ago, attracting tourists from all over the country.

In this context, the development of the economy, especially in the face of the diversity of sectors, and the growth of the urban population of the city over the years, resulted in a consequent increase in the generation of solid urban waste, and with this, numerous problems arising from poor management of this segment became evident.

In this sense, Gouveira (2012) explains that the growth in the disposal of solid waste progresses in accordance with the growing number of population and industries. This continuous growth is mainly associated with the evolution of customs, creation or changes in habits, improvement in the standard of living, industrial development and others, which have caused increasing expansion in purchasing power and the creation of new consumption options for the man, with direct consequence in the total amount of solid waste produced mainly in cities.

RESULTS AND DISCUSSIONS

Current situation of final disposal in the municipality of Sousa-PB

Until mid-2014, the final disposal of waste from the municipality was performed in the open-air dump belonging to the municipality, located on the banks of the BR 230, in Sítio Cadeado. There were long years of operation of the dump, where it was visible the degradation of the environment, frequent burning, presence of vectors and parasitic animals, as well as people of various ages in place, in order to extract recyclable materials for sale, or for their own use, as shown in Figure 01 below:

FIGURE 01: Image of the open air dump in the municipality of Sousa-PB.



SOURCE: Diário do Sertão (2014).

As of July 2014, the MSW collected in the municipality have as final destination the private landfill, the Unidade Sousa Tratamento de Resíduos LTDA - UTR Sousa, located on the road PB/384, S/Nº, KM 10 Sousa/ Lastro, in the rural area of the municipality, with a total area of 30 hectares, and the area intended for waste disposal is 10%, the other 20% is for legal reserve, green belt. (LIMA, 2019)

FIGURE 02: Map of the Sousa UTR landfill.



SOURCE: Google Maps (2022).

This company is responsible for the final disposal of the city, through a bidding process, in the form of Public Tender N°. 001/2019. In a search on the website of the State Court of Accounts (TCE-PB), the records of the bidding procedure in force were found, whose purpose was to hire a company specialized in receiving class A-2 waste, domestic, commercial, sweeping and pruning at a licensed landfill, whose number of inhabitants is approximately 75 (seventy-five thousand), to meet the needs of the Municipality of Sousa/PB through the Department of Water, Sewage and Environmental Sanitation of Sousa/PB - DAESA.

From this bidding, two (2) addenda were made to the contract, requiring the extension of the term for a period of twelve (12) months, starting on January 1st, 2021 and ending on December 31st of the current year. It is worth pointing out that this type of service is considered essential, of a continuous nature, therefore, the bidding is done in the "Pregão" mode for one year, and can be extended up to 60 (sixty) months, in accordance with article 57, clause II, of Law 8.666/1993 - Bidding Law.

FIGURE 03: Entrance to the Sousa UTR Landfill.



SOURCE: Own authors (2021).

On site visit, it is possible to identify at the entrance of the establishment, a control system of cars entering the site, in which they must be accredited, being released for initial screening, through a weighing scale of the buckets. However, it was not possible to identify this practice on the day of the visit. After this phase, they move to the upper part of the landfill. Upon arriving at one of the cells, as shown in the image below, a large amount of garbage has been accumulated for days, without any sorting, selectivity, being deposited in the same way it is collected in the urban environment. To the naked eye it is also not possible to identify a waterproofing layer to protect the groundwater and the soil from environmental impacts.

FIGURE 04: One of the cells at the Sousa UTR Landfill.



SOURCE: Own authors (2021).

The site also has the presence of many animals such as vultures, rodents, insects, which occupy the site independently and freely, which are attracted by the accumulation of organic matter present on site. Clarifying that these animals are agents that transmit diseases, being a risk to public health, especially the people who work in the landfill itself, as well as the riverside communities that live in the locality, besides representing a clear aesthetic degradation, it is still responsible for spreading strong and unpleasant odors, with the action of strong winds in the locality, which results in a big problem for residents who own land near the area.

According to Fernandes (2018) the main diseases caused by garbage are: cholera, dysentery, typhoid fever, filariasis, giardiasis, leishmaniasis, leptospirosis, bubonic plague, salmonellosis, toxoplasmosis, among others.

Another point to highlight, which was identified during the visit to the site, is the presence of many plastic bags spread by the action of the winds, polluting the entire extension of the site, including neighboring properties, causing an unprecedented degree of pollution. This is because these materials are composed of polyethylene, a substance originating from petroleum, which can take between 400 and 1,000 years to decompose (MEURESIDUO, 2020), which translates the latent need to reassess the modus operandi of the Unit, in order to try to solve this problem.

In the picture below, there is the recycling cooperative, conducted by an independent, private association, which separates the waste and, at the end, sends the waste to the cells for the next procedures. Although during the field visit it was not possible to identify the operation of this space, we at least know of its existence.

FIGURE 05: Landfill recycling cooperative.



SOURCE: Own authors (2021).

The procedures that follow are: compacting, and covering a layer of compacted soil to prevent leakage of liquid into the ground, however, on the day of the visit, it was only possible to glimpse the dumping of materials by buckets.

Another point worth mentioning is the slurry drainage system, in the study area there is a specific reservoir to capture the liquid, although it is not possible to identify any operation of the site, and more, there are no signs of a pipe network that conducts this liquid for further treatment. The image below shows the existence of the inoperative reservoir.

FIGURE 06: Slurry collection tank.



SOURCE: Own authors (2021).

According to Tera (2021), the slurry is a dark-colored substance, with a strong odor and that also has a high organic load in its composition. Thus, it highlights the damage caused by this toxic liquid, especially to groundwater, contaminating the region's waterways, resulting in damage to the environment as a whole, affecting the whole balance of life of the community's living beings.

Moreover, still in the landfill that disposes of waste from the municipality under study, with regard to the drainage systems of the gases released, especially methane, it is observed structures of pipes with stones along the cells, although not identified functioning. With this, polluting and harmful gases are released, resulting in atmospheric air contamination, greenhouse effect impacts, and respiratory diseases.

In light of this information, it is glimpsed a scenario of solid waste management of the municipality of Sousa, still incipient, and structurally inefficient, with regard to the implementation of PNRS, considering the deficiencies identified, that although it disposes of municipal solid waste to the landfill, its operation does not happen in the proper way, and in compliance with the legal dictates, which removes the effectiveness of the measure employed, since the garbage is dumped in an inappropriate and harmful to the environment.

CONCLUSIONS

The problem involving the inadequate disposal of solid waste generated in the country brings consequences year after year of environmental imbalances, especially when it comes to the life of living beings on earth. Garbage damages the quality of the atmospheric air, the soil, and the water courses, both surface and underground, anywhere in the world.

The continued incorrect disposal of waste conflicts with environmental standards, which, since the creation of the PNRS, has stipulated deadlines for adequacy throughout the Brazilian state, and the problem has been dragging on due to numerous factors, especially financial and lack of structuring of municipal entities.

What we see, however, is that the theme cannot be kept in the background, or only when there is money left over by the federated entities, in view of the fact that the problem of garbage is relevant, glaring, and that it requires, above all, cooperation from everyone involved, from the public authority to the citizen, from the public sector to the private sector, in other words, from the biggest to the smallest.

A public order problem that involves health, safety, and especially the education of the entire community, insofar as the integrated management of solid waste does not operate only in the landfill, there must be a change on the part of society, awareness of their role as social actors, responsible attitudes, and consistent with the preservation of the environment.

This is because the waste that comes out of public and private spaces, from homes to public offices, without respecting the standards of sorting, without proper separation, storage, worsens dramatically when combined with the lack of selective collection, recycling. All garbage is simply produced, dumped, collected by the municipal entity, and the transportation dumps it at the indicated place. They don't care or care to know the final destination of the materials, they just want to be free and away from discomfort.

Therefore, the incipiency and deficiency of the system is not only the responsibility of the municipality of Sousa-PB, but it lacks social participation, environmental awareness, committed actions towards a better quality of life, and with that, it is noteworthy, for the creation of public policies, social

focused on the theme, bringing the whole community in this journey, of changes and improvements, especially the stimulus to reuse and recycling of solid waste in order to generate jobs, income, and boost the local economy.

With this, the present work points out important legislative creations throughout the administration of the Municipality, however, the panorama that can be seen is the practice far from the theory, and the need to go even further with studies and analyses to the problems related to waste management, and its unfoldings.

Thus, although in the country devices and normative in general, is not the problem, it is important the maturation and renewal over time, of new documents, north for the Public Administration and civil society, and most importantly, seek inspections in agencies and services of this nature, in order to overcome the obstacles and shortcomings raised, and bring positive results.

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