

THE WASTE MANAGEMENT PLAN AND ITS EFFICACY IN AN OFFSHORE COMPANY

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Abstract— *The study of this paper was carried out in a company that serves several platforms of Petrobrás, in Macaé-RJ, Rio de Janeiro State, Brazil, where it has maritime chamber services, including food, cleaning, cleaning and general cleaning of the areas under the responsibility of the contractor, provision of bed linings, bath, cutlery, crockery, kitchen utensils in general and leisure items. The way to evaluate the effectiveness of the company studied was to observe compliance with the Waste Management Plan. It was found that workers had no evidence of training the less the sufficient knowledge about how to segregate the waste, and were unaware of the waste management program.*

Keywords— *Garbage, waste management plan, solid waste*

I. INTRODUCTION

In the last decades, the environment has suffered the consequences of the increasing increase of an increasingly consumer population of superfluous, and can be pointed out as one of the current factors that contributes to the generation of waste (BELTRAME, 2012).

Demographic data show that in 2010 the Brazilian population was of approximately 191 million inhabitants with an urbanization percentage of 84.4% (IBGE, 2010). Also, according to the National Solid Waste Plan and the Brazilian Institute of Geography and Statistics (IBGE), in 2008 approximately 183.000 tons of waste were produced in the country (IBGE, 2010). However, in 2005, federal spending on sanitation as a proportion of total federal spending was less than 0.5% (OPAS, 2008), and it is worth noting that only in the last two decades have been effectively the projects related to recycling and selective

collections of waste produced in our country (SILVA, 2007).

The approval of Law No. 12.305 / 10, which establishes the National Solid Waste Policy (PNRS), after long years of discussions in the National Congress marked the beginning of a strong institutional articulation involving the three federated entities - Union, States and Municipalities, the productive sector and civil society in the search for solutions to the serious problems caused by waste, which has compromised the quality of life of Brazilians.

In order for the PNRS guidelines to be followed, and the goals of the National Plan for Solid Waste achieved, there is still a need for sensitization and mobilization tools and methodologies capable of influencing the various segments of society, including professionals in the area and the population as a whole .

The Waste Management Program (WMP) is closely related to the National Plans for Climate Change , Water Resources , Basic Sanitation and Sustainable Production and Consumption. It presents concepts and proposals that reflect the interface between several sectors of the economy, reconciling economic growth and environmental preservation with sustainable development (BRAZIL, 2012).

This study aims to analyze an offshore company that operates in the Campos-RJ basin regarding its waste management plan in force in the year 2017 and show how it is prepared.

II. METHODOLOGY

The study of this work was carried out in a company that provides services to several platforms of Petrobrás, in Macaé-RJ, where it has maritime chamber services, including food, cleaning, cleaning and general cleaning of areas under contractor responsibility, availability bed linens, bath, cutlery, crockery, general kitchen utensils and leisure items. It also provides laundry services, preventive and corrective maintenance of industrial kitchen equipment, leisure, lodging and pantry. And, mainly, administrative support services, collection, handling and segregation of waste from the contractor's areas of responsibility, leasing of equipment, as well as others.

The methodological procedures were the exploratory research and qualitative research, which are: a) semi-structured interviews ; b) observation ; c) field diary and d) documentary record as the main techniques available, the present study concentrates on numerous questions to the development of the solid waste management program.

In this work the way we approach the data was described by qualitative research, in the approach that there is an interrelationship between the real world and the subject, that is, an inseparable link between the objective world and the subjectivity of the subject that can not be translated into numbers, only the interpretation of phenomena and the attribution of meanings are considered in this process, the same does not require the use of statistical methods and techniques.

The natural environment is the direct source for data collection and the researcher is the key instrument. The process and its significance are the main focus in this type of approach.

For Oliveira (2002, p. 117):

Research using the qualitative approach has the ability to describe the complexity of a particular hypothesis or problem, analyze the interaction of certain variables, understand and classify dynamic processes experienced by social groups, present contributions in the process of change, creation or formation of opinions of a certain group and to allow, in a greater degree of depth, the interpretation of the particularities of the behaviors or attitudes of the individuals.

The methodological procedure used to collect and analyze the data was research-action type, this in turn can be defined as a small-scale intervention in the real world and a very close examination of the effects of this intervention (THIOLENT, 2004). We can also say that in our studies, action research is situational, because it is

concerned with the diagnosis of the problem in a specific context to try to solve it in that context.

III. RESULTS

The document included in the WMP of the company under study the management of waste, which includes measures of reduction, segregation, identification, packaging, final disposal, registration and control, in accordance with the current legislation as required in Article 138 of the Regulation of State Law No. 7.799, dated February 7, 2001, approved by State Decree No. 7.967, dated 06/05/2001.

It is the responsibility of the company in question to ensure that the Waste Management Plan (WMP) will be updated whenever there are operational changes that result in the occurrence of new waste or the elimination of new waste, and should have evaluation parameters aimed at its continuous improvement, trainings that can define indicators to measure their effectiveness and elaborate a plan of action to act and correct their nonconformity and with that to guarantee the effectiveness of the Plan of Management of Waste - WMP.

Minimization, Reuse and Recycling:

All processes are conducted in a way that minimizes waste generated, either through the substitution or rational use of inputs. Residues that can be reused or recycled are sent for these purposes, the rest are arranged as indicated in this procedure.

Segregation, Packaging and Identification of Waste:

Guidance on the type of container or identification for the packaging of waste in the company areas follows the following criterion: waste picker painted in characteristic colors and identification indicative of the type of waste.

Waste collectors are arranged in numbers and sizes to absorb the amount generated in each area, and are constructed of material suitable for the type of waste they are intended to collect.

According to the color codes recommended by CONAMA resolution 275 of 25/04/01 and adopted by the company and its facilities, the chart 1 below is as follows:

Blue	Paper / cardboard
Red	Plastic
Green	Glass
Yellow	Metal
Brown	Organic waste
Grey	General non-recyclable waste not subject to segregation

Chart 1: For waste identification
Source : CONAMA 275 de 25/04/01

It is known that the importance of WMP lies in the fact that segregation of infected and uninfected waste potentiates

the resolution of a portion of the problem of inadequate management by helping Environmental managers to make decisions and to keep their companies sustainable before society.

It was observed that workers had no evidence of training the less the sufficient knowledge about how to segregate the garbage, and they were unaware of the waste management program. Another fact that drew much attention was that the employees of the company at the time they were segregating garbage were not using the personal protective equipment needed for such activity. It was verified that the plastic is the residue of greater volume, as shown in figures 1.



Figure 1 - Waste collected on the platform (A) wastes not secreted (B) plastic.

Source: Company X

The main raw material for commercial plastics is Nafta, one of the fractions from the cracking of oil, which in turn is a non-renewable resource. Recycling or reuse of plastics should therefore be encouraged in order to delay the depletion of this source, as well as reduce the volume of waste, increase the life of landfills, and other important factors for the environmental management of waste.

Due to their low degradability, plastics remain in nature for long periods, causing visual and possibly chemical pollution of the environment. To reduce the impact of plastics on the environment, waste management becomes imperative and, in this way, the recycling strategy can be easily introduced. However, different allocation alternatives should be considered depending on the different properties of the plastic materials. Therefore, the products made with recycled plastic, for the most part, present questionable quality. Considering the low prices of virgin resin and the low acceptance of recycled material on the market, alternatives such as sorting post-consumer resins suitable for recycling and reducing processing costs (cleaning, transport, storage, etc.) could come to add value to the product and increase market acceptance.

The practice of competitive prices for recycled products still represents a major obstacle in this productive chain.

• Final Disposal of Waste

The waste generated in the base of the company is collected and transported by outsourced and legally qualified company, being followed until its final destination.

Through the manifests the entire process of garbage traceability is done.



Figure 2: Flow chart referring to the movement of waste generated in marine oil production units up to the final disposal.

Source : Petrobrás

• Waste Manifest System

The manifest system is an instrument of control that allows the State Environmental Institute (INEA) to know and monitor the destination given by the generator, transporter and receiver to the waste.

The legislation establishes that all waste, other than domestic, from the garage facilities must be removed by issuing a waste manifest, duly completed and signed.

Therefore, the waste control system that, through the use of its own form, called WASTE OF MANIFEST, allows to know and control the form of destination given by the generator, transporter and receiver of waste.

Waste of Manifest - Numbered form to be used for the activities linked to the Manifest System, composed of 4 (four) ways, of the DZ (Guideline of INEA) 1310-R.7 - Waste Manifest System.

IV. CONCLUSION

In view of the objective of analyzing the Waste Management Plan of an offshore company - WMP for the adequate handling of the residues coming from onboard services, this study identified in the literature that actions such as the elaboration of a Waste Management Plan are very important. Its importance rests on the fact that the segregation of infected and uninfected waste potentiates the resolution of a portion of the problem of inadequate management, helping Environmental managers to make decisions and to keep their companies sustainable in society. It was found that workers had no evidence of training the less the sufficient knowledge about how to segregate the waste, and were unaware of the waste management program.

The WMP demonstrated a deficiency in having only qualitative evaluations, lacking goals, quantitative assessments and indexes so that the program could be more efficient.

Note the size of the importance, for the society as a whole, of the WMP through Decree 9177, which was signed on October 23, 2017 and regulates art. 33 of Law No. 12.305, which establishes the National Policy on Solid Waste, and complements art. 16 and 17 of Decree No. 7.404, of December 23, 2010 and provides other measures, such as: By the measure, even those outside the sectoral agreements will have to collect and give appropriate destination to the products after their useful life.

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