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Environmental Impacts Management of a Brazilian Gas Station: A Case Study

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Abstract- The relative questions to the impacts of human activities in the environment are becoming increasingly present inworld population's life, by receiving great attention from various segments of society in recent years. All industrialsectors are pressured to achieveits activities in harmony with the environment. The gasstations, exercising potentially polluting activities, because ofstored and sold products, as well as effluents, emissions and generated residues, must conduct its activities according to standards and laws to ensure the minimization of risks to the environment, safety and health of employees and neighboring community. In this sense, the focus of this paper is to present, based on a case study, what the environmental management measures adopted at a gas station located in the São Paulo State, Brazilto control environmental impacts generated by its activities, as well as adapt to environmental regulations. It was chosen only a single case study because of the possibility of obtaining more detailed information of the subject and studied organization.

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Environmental Impacts Management of a Brazilian Gas Station: A Case Study

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Abstract- The relative questions to the impacts of human activities in the environment are becoming increasingly present inworld population's life, by receiving great attention from various segments of society in recent years. All industrialsectors are pressured to achieveits activities in harmony with the environment. The gasstations, exercising potentially polluting activities, because ofstored and sold products, as well as effluents, emissions and generated residues, must conduct its activities according to standards and laws to ensure the minimization of risks to the environment, safety and health of employees and neighboring community. In this sense, the focus of this paper is to present, based on a case study, what the environmental management measures adopted at a gas station located in the São Paulo State, Brazilto control environmental impacts generated by its activities, as well as adapt to environmental regulations. It was chosen only a single case study because of the possibility of obtaining more detailed information of the subject and studied organization. As result of the case study, was possible to check that with the fulfillment of the technique requirements requested bycurrent environmental legislation and environmental agency, it is possible toachieve an effective management of environmental impacts generated in developed activities.

Keywords: environmental impacts, environmental management, gas station, environmental legislation, case study.

I. Introduction

The concern with environmental conservation and sustainable development of human activities is a topic of great relevance. In recent times, it is possible to feel with great intensity the negative effects of human activities developed over the centuries without worrying about the quality of the environment.

In view of the various environmental disasters occurring today, it is great desire of society for sustainability, which requires of organizations (especially those that pollute or that have the potential to pollute the environment) a more harmonious coexistence and balanced environmental development of its activities. According to Cavalcanti (2010) the efforts carried out to promote the improvement of pollution levels, both associated with air, water, soil and other environmental compartments are essential, especially due to growing concern of combining economic development and sustainability.

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The gas stations represent a business activity branch which basically sell alcohol and fossil fuels. These fuels, although high in energy density, are known to cause high levels of air pollution and are blamed for contributing to climate change and global warming (SHUKLA, PEKNY and VENKATASUBRAMANIAN, 2011).These fuels also are important sources of contamination of the soil and the water, and have been the subject of numerous studies due to the complexity of the phenomena of interaction of these pollutants with the soil and the large number of contaminated areas (FREIRE, TRANNIN and SIMÕES, 2014). Additionally, the environment where gas stations are localized exposes gas station attendants to several risks and health hazards, which should be considered harmful to the health status of these workers (ROCHA et al., 2014). Among the risks are the contact with fuels and other chemical products, remaining close to fuel pumps, noise, etc. (ROCHA et al., 2014).

According to Freire, Trannin andSimões (2014) there are approximately 36 730 gas stations in Brazil.Gas stations in Brazil are commonly located in residential and commercial areas, which canlead to the degradation of health quality for people who live and work in the neighborhood (CORRÊA et al., 2012).Bearing in mind that all installation and oil and other fuels' storage systems are characterized as enterprises partially or potentially polluting and generators of environmental accidents, due to the large potential of pollution severe and environmental impacts that can generate, the environmental licensing of gas stations became mandatory in all Brazil after publication of CONAMA Resolution No. 273/2000. In the São Paulo State, became mandatory after the publication of SMA Resolution No. 05/2001.

Gas stations as emission sources of pollutants in the atmospheric air, contaminants in the soil and groundwater have been the subject of considerable study, a particular interest being those related to the design and evaluation of control systems in an attempt to diminish environmental impacts (TERRÉS et al., 2010). Based on statements highlighted, this paper has as purpose to present through a case study how the management of environmental impacts of a gas station localized in São Paulo Stateis carried out. For this the research seeked to answer the following questions:

1) What are the main environmental impacts generated by the gas station?

2) How does the compliance with current environmental legislation impact the effective management of environmental impacts generated by the gas station?

II. Methodological Procedures

According to its goals, this papercan be classified as an exploratory research. The exploratory research was chosen in order to provide greater familiarity with the problem, in order to make it more explicit or form hypotheses, and their schedule is quite flexible, so it allows the consideration of various aspects related to the fact studied (GIL, 2010).In most cases, these studies involve literature review, interviews with people who had practical experience with analyzed problem and researched examples that encourage understanding (GIL, 2010).

Regarding the technical procedures used to carry out this paper, it was designed by a case study and bibliographical researches. For Gil (2010), the case study is the detailed and exhaustive study of one or a few objects, in a way that allows its broad and thorough knowledge. Despite the limitations, the case study is the most appropriate method to know in depth the characteristics of a particular organizational phenomenon (YIN, 2010). Although Eisenhardt (1989) and Miguel (2007) recommend the use of multiple case studies for obtaining more concret results, Yin (2010) states to conduct single case studies it is justifiedif the case constitute a rare event or unique or serve as a revealing way. In this paper, a single case study was carried out because of the possibility of obtaining more detailed information on environmental impacts of a gas station.

For achieve this case study were done researches on the main aspects and environmental impacts of sector, prepared questionnaires that were sent to the person in charge and were made technical visits in the gas station. In the technical visits, it was possible to get a better structured description of facilities, environmental licenses and the development of the post activities. The gas station object of the case study, as a restriction for collaboration in the research, requested confidentiality regarding their identity, so in this paperwill be cited as Gas Station A.

The bibliographical researches on environmental impacts of gas stations were especially conducted on SCIELO, SCOPUS and Web of Science databases because of its broad access and impact in the international academic community, and papers published in journals indexed in them being considered as the research of the highest scientific level (CARNEVALLI and MIGUEL, 2008; NGAI et al., 2008). Some information from papers published in other databases and laws were obtained, because although they have less relevance for impact researches, certainly can have important issues (BORTOLLOSSI and SAMPAIO, 2012).

III. Literature Review

a) Environmental impacts caused by gas stations

Gas stations represent a business activity branch that works primarily with the retail sale of fossil fuels and bi-fuels (LORENZETT and ROSSATO, 2010).These endeavors store various types of fuel tanks that in most cases are underground, also possessing a set of lines and pumps that are part of the storage system and commercialization of products(CATUNDA et al., 2011).Because of the fuels that store and activities that develop these endeavors have great potential for degrading the environment where theyare localized.

The contamination of the soil and consequently of groundwater is one of the major environmental impacts caused by the activities of gas stations, since this is related to health problems, environmental damage and adverse social impacts. There are several sources of groundwater contamination. However, one of the most hazardous is contamination through leaks in underground storage tanks of fuel, the severity of which increases due to the characteristics of the fuels being rich in toxic substances of a mutagenic and carcinogenic character, and to the great likelihood of movement in the soil, and the fact that a leak is not always detected immediately (ROCHA, SOARES and MEDEIROS, 2011). Over time these tanks may leak due to corrosion, cracks, defective piping, and spills during refilling and maintenance activities. Petroleum and other fuels pollution from leaking underground storage tanks leaches into the surrounding soil and groundwater and can damage nearby water bodies and ecological systems (ZABEL and GUIGNET, 2012).

The increase in groundwater use has raised concerns related to the main sources of pollution, among which are included those caused by leaks in fuel storage tanks such as petrol, diesel and alcohol. Contamination of soil and groundwater by fuel storage facilities carry risks to human health directly and indirectly. In direct contact, it can highlight inhalation, ingestion, skin and eyes contact; in indirect contact, there is the ingestion of food and water contaminated with compounds present in fuels, which in most cases are carcinogenic(FREIRE, TRANNIN and SIMÕES, 2014).

Petroleum by-products are harmful to human health.By filling the tank, e.g., with petrol, there is an exchange of saturated vapor inside the tank of the vehicle by the corresponding liquid fuel coming from the underground tank. This underground tank also makes this exchange of saturated vapor by liquid fuel to be supplied by the tanker truck (CORRÊA et al., 2012). Vapors can travel upwards through the soil into nearby homes and buildings. These vapors, known as volatile

organic compounds (VOCs) poses acute health risks caused by inhalation such as headaches, asthma, fatigue, throat, eye irritation nausea, mucosal symptoms and even risks of explosion (EMARA et al., 2010; PEREZ-RIAL et al., 2009; TERRÉS et al., 2010). Exposure to petroleum by-products such as gasoline and diesel oil over long periods of time increases the riskof several chronic diseases, including cancer, and can affect the kidneys, liver, and nervous system (CORRÊA et al., 2012; YANG et al., 2014; ZABEL and GUIGNET, 2012).

Gasoline is a petroleum-derived liquid mixture consisting primarily of hydrocarbons and enhanced with additives to increase octane ratings, and improve performance in internal combustionengines (KINAWY, EZZAT and AL-SUWAIGH, 2014). According to Haest et al. (2010) it is a light non-aqueous phase liquid that typically comprise C6-C8 mono-aromatics (benzene, toluene, ethylbenzene and xylenes, broadly known as BTEX) and other additional constituents such as methyl tertiary butyl ether (MTBE). Gasoline spills are among the most frequent causes of groundwater pollution. If released into the subsurface, it migrates through the vadose zone until it reaches the water table (HAEST et al., 2010). Furthermore, gasoline vapour emissions constitute one of the main sources of air pollutants in gas stations. There is a wide range of volatile aromatic hydrocarbons (VAHs) present in the atmosphere of gas stations as a result of emissions of vapours during dispensing, loading, unloading and transportation of gasoline (EDOKPOLO, YU and CONNELL, 2014).

Diesel oil leakages from underground storage tanks, distribution facilities and various industrial operations represent an important source of soil and aquifer contamination (MARIANO et al., 2007). Diesel oil contains 2000 to 4000 hydrocarbons, a complex mixture of normal, branched and cyclic alkanes, and aromatic compounds obtained from the middle-distillate fraction during petroleum separation (MARIANO et al., 2008).Some of the polycyclic aromatic hydrocarbons (PAHs) - compounds of diesel oil are among the least affected by weathering, and these semi-volatile compounds with a low solubility and recalcitrant characteristic may persist for a long time in the environment (MARIANO et al., 2008), being listed as priority pollutants by international environmental protection agencies due to their carcinogenic, mutagenic, and toxic effects (GARCIA et al., 2010).

Another fuel broadly stored and sold in gas stations currently is the ethanol. In Brazil, ethanol produced by sugar cane juice fermentation is the most used (TANO and BUZATO, 2003). Ethanol is expected to degrade rapidly and without any acclimation period under most redox conditions unless present at very high concentrations, such as might occur adjacent to fresh spills (POWERS et al., 2001; MACKAY et al., 2006). Ethanol nonetheless is expected to impact in situ biodegradation of other fuel components due to its rapid preferential degradation causing depletion of ready available electron acceptors and/or alterations in the fraction of the native microbial community able to degrade the various contaminants (MACKAY et al., 2006; MACKAY et al., 2007; POWERS et al., 2001; RUIZ-AGUILAR et al., 2002; SILVA and ALVAREZ, 2002).In case of the BTEX compounds (benzene, toluene, ethylbenzene and xylene isomers), it has been shown that ethanol can slow or stop their biodegradation in situ and in microcosms (MACKAY et al., 2006; MACKAY et al., 2007; SILVA and ALVAREZ, 2002).

Another relevant environmental impacts caused by the activities of gas stations are the effects caused by fires, which, when they occur, are very harmful to employees, customers, owners, and the neighborhood and may cause fatalities; and the impacts caused by their respective wastes from auxiliary services provided (ROCHA, SOARES and MEDEIROS, 2011).

According to Lorenzett et al. (2011) environmental management at gas stations can be understood as the measures carried out by the establishment that contribute to the protection, preservation and environmental recovery, measures ranging from deploying more secure facilities to the maintenance of green areas of environmental preservation, taking into account that in the absence of environmental management measures entities may incur in environmental impacts, affecting not only the environment but also all forms of life, especially humans. The activity of gas stations is becoming increasingly complex, since the cost of environmental accidents is high, and therefore, these endeavors must carry out their activities in accordance with the standards and environmental laws in order to ensure the minimization of risks to the environment, safety, employees and surrounding community health (CATUNDA et al., 2011). Given these dangers and severe environmental impacts, some pre cautions must be taken in the handling of petroleum products in order to prevent fire, diseases and risks to people, soil, air and water. In view of this, it is important to know environmental legislation applied to this sector.

b) Environmental licensing of gas stations in São Paulo State, Brazil

According to CONAMA Resolution No. 01/1986 environmental impact is defined as any change in physical, chemical and biological environment, caused by any form of matter or energy resulting from human activities that directly or indirectly affect health, safety and welfare's population, social and economical activities, the biota, the aesthetic and sanitary conditions of the environment and the quality of environmental resources.

CONAMA Resolution No. 237/1997 defines environmental licensing as an administrative procedure

whereby the competent environmental agency licenses the location, installation, expansion and operation of projects and activities that are considered effectively or potentially pollutant and that use environmental resources, or those who, under any form, can cause environmental degradation, considering the laws and regulations and technical standards applicable to the case.

As a tool for pollution prevention, the licensing is essential to ensure the environmental quality of organizations, including public health, economic development and biodiversity conservation. Obtaining environmental licenses, coupled with the fulfillment of technical requirements, forms the basis for environmental compliance, adapting the organization to the competitive market. Environmental licensing is divided into three stages, the end of which are subsequently issued the preview, installation and operation licenses.

The environmental licensing of gas stations became mandatory in all Brazil after the publication of CONAMA Resolution No. 273/2000. According Lorenzett and Rossato (2010), this resolution aims to stabilize the enterprises that have fuel storage tanks and how management measures and environmental licensing of activities.

In the São Paulo State, the environmental licensing of gas stations fuel became mandatory after the publication of SMA Resolution No. 05/2001. According to this Resolution, the CETESB - Companhia de Tecnologia de SaneamentoAmbiental (now CompanhiaAmbiental do Estado de São Paulo) is responsible by the application of the provisions of CONAMA Resolution No. 273/2000, and the related monitoring and environmental licensing of pollution sources referred to.

According to CONAMA Resolution No. 273/2000, the competent environmental agency will demand the preview, installation and operation environmental licenses. The activities which are object of licensing understand fuels storage and supply, and other relatedprocesses such as car washing, oil change, vehicles lubrication and related administrative services. Should not be included in the licensing other activities usually associated with gas stations, such as convenience stores (unless they harbor activities related to the supply fuels), shops, restaurants, snack bars, parking, garage and other commercial activities (CETESB, n. d.).

IV. Case Study in the gas Station a

a) Gas station A's operational history

According to information obtained from the responsible person of the gas station' administration during the interviews, the endeavor began its activities in 1995, selling alcohol, gasoline and diesel oil, making the lubricating oils' change,and selling other products in an annex convenience store.

In 2001, the gas station Awas summoned by CETESB to obtain the necessary environmental licenses, in compliance with SMA Resolution No. 05/2001. It was summonedin the time by CETESB to license up adapting to the operation minimum conditions, because according to the classification of the environmental agency, it was classified into the category of enterprises subject to adjustment to the minimum operation conditions, because their tanks and underground pipes had less than 15 years.

In compliance with the necessary procedures for environmental licensing, it was conducted a technical assessment of environmental liabilities in the Gas Station A's area, to verify if it was contaminated by chemicals present in fuels derived from petroleum, which are parameters BTEX (benzene, toluene, styrene, ethylbenzene and xylenes); parameters PAH (polycyclic aromatic hydrocarbons), which include substances as anthracene, benzo (a) anthracene, benzo (k) fluoranthene, benzo (g, h, i) perylene, benzo (a) pyrene, chrysene, dibenzo (a, h) anthracene, phenanthrene, indeno (1,2,3-c, d) pyrene and naphthalene, and due to oil change's activities development, the parameters TPH (total petroleum hydrocarbons). The technical assessment report testified that the area was not contaminated by any of the compounds,because all parameters were below the limits set by the CETESB' Decision of the Board No. 014-2001-E, which in the time defined limits allowed for each compound in soil and groundwater. It was also carried out an inspection by the Fire Department in order to certify the conformity of the facilities on the risk of fires and explosions, being issued the AVCB (Auto de Vistoria do Corpo de Bombeirosor Fire Department's Inspection Certificate), which should be renewed every three years because its expiration date.

The gas station received the operation license in 2001, with an expiration date of 5 years because the value of it w (activity complexity factor) is equal to 1.5, according to the classification established by State Decree No. 8,468/1976. In compliance with the technical requirements and aiming to avoid the occurrence of environmental liabilities, the gas station made annually sealing of tanks, gas pumps and equipments, as well as its underground pipes. In 2006, the operation license' renewal was obtained.

In 2011, with the operation license validity end, and how it could not renew due to the fact that the tanks and pipes had completed 15 years, the gas station requested the environmental licensing in adaption to the category subject to complete renovation of their facilities, obtaining preview and installation licenses, and later, the operation license. To obtain these environmental licenses the following activitieswere carried out:

1) New technical assessment of environmental liabilities in the Gas Station A's area (to verify if all parameters were below the limits set by the CETESB Decision of the Board No. 195-2005-E), being analyzes of soil samples and groundwater conducted by laboratory duly accredited by INMETRO (InstitutoNacional de Metrologia, Qualidade e Tecnologia), in compliance with SMA Resolution No 37/2006.
2) Evaluation of environmental liabilities in the installation areas of old tanks, following the same technical evaluation requirements previously mentioned. The two technical assessments carried out confirmed that the gas station A's area was not contaminated.
3) Removal of old tanks, pumps and pipes, with its subsequent adequate disposal.
4) Acquisition of modernand reliable tanks, pipes, pumps and equipments, and that also meet the requirements of the CETESB and ABNT (AssociaçãoBrasileira de NormasTécnicas).
5) Sealing technical analysis of installed tanks, pumps and equipments.

b) Activities developed in gas station A currently

According to data from the questionnaires and the observations made during visits techniques, the following activities in the gas station A are developed:

1) Fuel storage: for the development of this activity the gas station has two underground tanks, located in their vicinity. These tanks have a capacity of 30 000 liters of fuel each, totaling 60000 liters of fuel stored. One of the tanks is two-compartmented and stores gasoline and ethanol, the another is tri-compartmented and store gasoline, ethanol and diesel oil.
2) Vehicles supply: this activity is carried out by attendants and occurs on the supply track through the use of five supply pumps.
3) Lubricating oil change: this activity is developed in a location away from the administration, which has a ramp built to provide greater security in the operation of the activity, and where the burned oil is stored in drums to be collected by a reprocessor company.
4) Convenience store: in this place are sold snacks, drinks and other food products.
5) Administration office: in this local are developed activities of administration and management of the activities of the gas station.

c) Main environmental impacts of the gas station A

The main environmental impacts generated by the development of the gas station A's activities can be viewed in Table 1.

Table 1 : Main environmental impacts of gas station A

Activities	Mainenvironmentalimpacts	Sourceofimpacts	Environmentimpacted
Fuelsreceipt	Emission of VOCs	Fuelsdischarge	Air
	Fuelsspill	Possible products spills in the discharge operation	Groundwater and surface water, soil and air
	Explosionsandfires	Ignitionsourceshandling	People, gas station facilities, residential and commercial establishments adjacent to the gas station
Fuelsstorage	Emission of VOCs	Underground tanks breather	Air
	Fuelsspill	Possible holes in tanks and pipes	Groundwater and surface water, soil and air
Vehiclessupply	Emission of VOCs	Fuelssupplyoperation	Air
	Fuelsspill	Possible products spills in vehicles supply operation, coming from the diesel oil filters, pumps and absorbent materials	Groundwater and surface water, soil and air
	Residues release	Improper disposal of absorbent materials	Groundwater and surface water, soil
	Explosionsandfires	Ignitionsourceshandling	People, gas station facilities, residential and commercial establishments adjacent to the gas station
Gas station equipment and facilities cleaning	Oilywaters	Inadequate operation and/or inefficient control of these impacts	Groundwater and surface water, soil
Lubricatingoilexchange	Productsspill	Possible products spills in oil change operation	Groundwater and surface water, soil and air
	Residues release	Improper disposal of product empty packages	Groundwater and surface water, soil
Conveniencestore	Residues release	Improper disposal of household garbage	Soil
Administration office	Residues release	Improper disposal of office garbage	Soil

d) Main measures to manage the environmental impacts of the gas station A

Through of the observations obtained duringvisits,from questionnaires answers, environmental licensesanalysis and technical analyzes results of environmental liabilities carried out, it was observed that the gas station A is managing adequately the main environmental impacts caused by the development of its activities. The total fulfillment of essential technical requirements defined by environmental agency to develop the fuel resale and other related activities strongly helps the gas station in successful reach of the environmental resources preservation. It was also observed that the impacts management began in the period of first operation license obtaining, increasing effectiveness in preview and installation licenses obtaining, in compliance with the technical requirements demanded for obtaining the operation license of the year 2011. The relation of the main actions taken to contain or mitigate the gas station A's environmental impacts today, can be seen in Table 2.

Table 2 : Actions taken to contain or mitigate the environmental impacts generated in gas station A

Activities	Mainenvironmentalimpacts	Actions to contain or mitigate the environmental impacts
Fuelsreceipt	Emission of VOCs	- Independent breather for each underground tank. The breather is positioned in such a way that it not causes discomfort and allow the vapors dispersion.
	Fuelsspill	- Installation of double-walled tanks, constructed according to NBR 13785 and equipped with interstitial monitoring linked to continuous monitoring system; - Installation of anti-overflow valves in the tanks discharge pipe; - Acquisition of flexible and non-metallic underground pipes, in compliance with NBR 14722; - Installation of discharge pipe with waterproof sidewalk chamber and sealed for spills containment; - Sealed discharge installation (adapter nozzle for sealed discharge); - Installation of watertight and waterproof access chambers to the tanks entrance; - Fuels discharge area constructed in reinforced concrete and provided with drainage directed to the effluent treatment system (oil and water separation box); - Performing of technical report about fuels storage and distribution systems watertight, issued by a company or a qualified professional, accompanied by appropriate ART (Technical Responsibility), carried out every operation license renewal.
	Explosionsandfires	- Compliance of establishment's operation and maintenance plan, which contains guidelines for verifying the integrity and maintenance of equipments and systems, operational procedures, response plan to the emergencies considering the occurrence reporting to the Fire Department and CETESB, personnel training program covering operational practices, maintenance program of equipment and systems and response to incidents and accidents.
Fuelsstorage	Emission of VOCs	Independent breather for each underground tank. The breather is positioned in such a way that it not causes discomfort and allow the vapors dispersion.
	Fuelsspill	- Installation of double-walled tanks, constructed according to NBR 13785 and equipped with interstitial monitoring linked to continuous monitoring system; - Installation of anti-overflow valves in the tanks discharge pipe; - Acquisition of flexible and non-metallic underground pipes, in compliance with NBR 14722.
Vehiclessupply	Emission of VOCs	-
	Fuelsspill	- Check valve installation in the diesel oil filtration system; - Check valves installation in the supply pumps; - Watertight and waterproof containment chamber installation in supply pumps, which contains liquids detection sensor connected to the monitoring system.
	Residues release	- Residues dispatch to landfills, correctly licensed.
	Explosionsandfires	- Compliance of establishment's operation and maintenance plan, which contains guidelines for verifying the integrity and maintenance of equipments and systems, operational procedures, response plan to the emergencies considering the occurrence reporting to the Fire Department and CETESB, personnel training program covering operational practices, maintenance program of equipment and systems and response to incidents and accidents.
Gas station equipment and facilities cleaning	Oilywaters	- Waters drainage system construction, internally positioned to 55 centimeters from the covering projection of the supply track; - Drainage system installation and sewage treatment system constituted of the sandbox and water-oil separator with coalescing plates, for effluents generated in the supply track; - Sending of sandbox toxic mud and water-oil separator for a treatment company correctly licensed.

Lubricatingoilexchange	Productsspill	- Installation of effluent treatment system constituted of the sandbox and water-oil separator with coalescing plates for the effluents produced in the oil exchange and area cleaning operations; - Oil change area built in waterproof floor; - Used oil storage in drums located in area with containment basin and cover; - Used oil dispatch for refinery company correctly licensed.
	Residues release	- Packages dispatch to specializing companies in contaminated packages cleaning, with its subsequent proper disposal.
Conveniencestore	Residues release	- Final disposal in municipal landfill.
Administration office	Residues release	- Final disposal in municipal landfill.

V. Conclusions

Nowadays, due to the intense problems related to environmental degradation, the world lives a period where the environmental issue is gaining momentum, environmental agencies are increasingly active and environmental legislation increasingly rigorous. Due to intense environmental impacts that the development of its activities can generate, the environmental legislation applied to gas stations are increasingly severe, requiring effective preventive and corrective actions with respect to the generation of environmental accidents.

Environmental licensing shows up as an important instrument for the environment preservation by the gas stations, because the fulfillment of their demands provides an efficient control of various environmental impacts generated by the activities developed by the sector.

The fuels resale activities are becoming increasingly complex, given that the environmental accidents and incidents costs, as well as costs for its remediation are high, requiring thatgas stations to carry out their activities in accordance with the existing environmental laws and regulations as well as compliance with good work practices, in order to ensure the minimization of risks to the environment, safety and health of employees and neighboring community.

This study aimed to analyze through a case study, what the environmental management measures adopted in a Brazilian gas station, which aim to meet the principles of sustainable development, and at the same time, the guidelines of environmental legislation applied to the sector.

During this study it was observed that the activities developed by the gas station A are fuel storage, vehicles supply, lube oil change, convenience store and administration office. Such activities maintain direct and intense relationships with the environment, through of contact with soil, groundwater and air, which can cause direct and indirect impacts on them, on the facilities of the station, adjacent facilities and human health.

During the study achievement, analyzing the environmental licenses of gas station it was possible to observe that the legislation has a focus on possible accidents involving fires and leaks into the soil and groundwater, but it is necessary to give more attentionto emissions into the atmosphere, which was also stated by Corrêa et al. (2012).

This paper presented how the environmental management in a gas station which is not contaminated for fuels derived from oil is carried out. Future papers must be conducted in gas stations contaminated to check the main measures adopted for decontaminate the soil and/or groundwater and to prevent health human of gas station workers and neighborhood.

With the development of the paper it could be concluded that compliance with the technical requirements required by environmental legislation and the environmental agency as requisite for carried out the fuels resale and other related activities, allows to the gas station A an effective management of environmental impacts of their activities, avoiding the generation of environmental liabilities, which, besides requiring high costs for remediation, can bring severe negative effects to the environment.

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