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Environmental aspects and impacts of a waste incineration plant

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Abstract

The work was developed in real context, in the facility of hospital and others dangerous solid waste incineration. It's involved bibliographic research, analysis of the best available technologies, comparing them with those implemented, proposal for new measures to be implemented, a survey and evaluation of the environmental aspects and impacts associated, with proposal of mitigation measures of the identified impacts, as well as the presentation of a monitoring plan. The impacts from the installation are small and of limited magnitude, with the exception of the impacts associated with gaseous emissions and energy consumption.

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*Keywords:*Environmental Aspects; Environmental Impacts; Environmental Monitoring;Incineration;Solid Waste

1. Introduction

The existence of waste arising from the provision of health care to human beings, including medical activities of prevention, diagnosis treatment and investigation, constitutes a major public and environmental health problem and determines the increasing attention in safeguarding of the negative effects that may affect populations.

With the development of serious and transmissible diseases, such as the Acquired Immune Deficiency Syndrome, Hepatitis B and C, there was an increased awareness that certain hospital wastes (blood, secretions, ionized material, chemicals and human tissues) while contamination outbreaks constitute a danger to public health by Fadigas [1]. The constant increase in the use of pharmacological resources and medical material also increased the way of

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production of Hospital Waste with risk of environmental contamination and harmful to public health by Botelho and Pinto [2]. Thus, with the constant evolution of health services, it has become a priority of modern societies, triggering a greater use of chemical compounds, drugs, radiological residues of oncological treatments and of medical devices and derivatives by Bugalho and Miguel [3].

This situation has led to an increase in concerns, particularly with regard to have with hospital waste, because it is known that health institutions are a major producer of hospital waste, in that way it is increasingly necessary for them the rightly produced waste, minimizing the risks to public health. Thus, the development of different hospital waste management practices began, which allowed the reduction of the amount of waste to be treated and the introduction of alternative and less harmful treatment processes.

The incineration is a new activity in the company, which entails great efforts for its correct management taking into account the hazardousness of the waste to be treated, it is extremely important that the evaluation of its aspects and environmental impacts be structured judiciously. As a result of any product and / or services activity, there are environmental aspects that must be identified and controlled, especially those that may be the most significant for the environment.

Thus, the obtained data in each of the environmental descriptors subject to environmental impact by this plant were analysed, namely descriptors such as water, energy, waste, noise and pollutant emissions, and with this, mitigation / improvement measures were proposed to the management of the entire incineration process.

2. Methodology

The methodology adopted was intended to support the consistent determination of significant environmental aspects, namely those aspects that have or may have significant impacts on the environment and which should be considered as priorities. The environmental aspects of associated and identified activities are:

- Use of raw materials and natural resources;
- Atmospheric emissions;
- Discharges into the aquatic environment;
- Waste management;
- Use and contamination of soils;
- Local impact issues (noise, vibrations, odors, visual effect, etc.);
- Transportation issues;
- Risks of environmental accidents;
- Effects on biodiversity.

The aspects were identified considering four operating conditions:

- Normal;
- Abnormal;
- Emergency;
- Testing / Starting.

In addition to the aspects directly resulting from the activities, were also considered the indirect aspects on which influence could be exercised.

In terms of time, current activities with current impacts, those that have been developed in the past but which have relevant impacts on the present and those that are modified or future that are planned and that have expected impacts are considered.

Each environmental aspect is associated with the respective environmental impacts, actual or potential, considering both those aspects with adverse impacts and those that may have beneficial effects. The main negative impacts are:

- Pollution / contamination of water, soil or air;
- Depletion of natural resources;
- Increased environmental noise;
- Risk to public health or heritage;
- Negative effects on fauna and flora;
- Creation of waste, especially hazardous waste;