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## **International POPs Elimination Project**

*Fostering Active and Efficient Civil Society Participation in  
Preparation for Implementation of the Stockholm Convention*

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# **Lebanon Hotspot Report: the Garbage Mountain**

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## About the International POPs Elimination Project

On May 1, 2004, the International POPs Elimination Network (IPEN <http://www.ipen.org>) began a global NGO project called the International POPs Elimination Project (IPEP) in partnership with the United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Program (UNEP). The Global Environment Facility (GEF) provided core funding for the project.

IPEP has three principal objectives:

- Encourage and enable NGOs in 40 developing and transitional countries to engage in activities that provide concrete and immediate contributions to country efforts in preparing for the implementation of the Stockholm Convention;
- Enhance the skills and knowledge of NGOs to help build their capacity as effective stakeholders in the Convention implementation process;
- Help establish regional and national NGO coordination and capacity in all regions of the world in support of longer term efforts to achieve chemical safety.

IPEP will support preparation of reports on country situation, hotspots, policy briefs, and regional activities. Three principal types of activities will be supported by IPEP: participation in the National Implementation Plan, training and awareness workshops, and public information and awareness campaigns.

For more information, please see <http://www.ipen.org>

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# Lebanon Hotspot Report: the Garbage Mountain

## I. Physical description of the site

Saida is located along the southern coast of Lebanon and is geographically and administratively limited by the Awali River on the North and by the Siniq River on the South.

The coast of the city can be divided into three zones, which can be distinguished clearly:

1. The sandy beach zone extends from the Awali River towards the North of the ancient sea castle. This area is composed of a set of sewage pipes that drains the untreated water directly to the sea.
2. The port area extends from the sea castle to the ancient Phoenician port and is known as Alexander Sea.
3. The reclaimed area which suffers from the current uncontrolled landfill site. This area is also highly polluted by the industrial city located at the east of the coastal zone where several dying factories are located in addition to the sewage treatment plant -which is supposed to start operating by the end of 2006- and the new under construction solid waste treatment plant -which is expected to start working in 2008.

### a. Ecological relation between the city and the surrounding area

The city has a direct relation with its shore. Along the coastline of the city, we can identify a no-construction zone of several meters wide. However, more attention should be given to the coastal zone: it should be more carefully protected from future urban expansion.

The eastward expansion of the city (hence, towards the hinterland) resulted from the increasing need in land for urbanization. During the last decades, the urban expansion cut through the green belt zone, which was composed mainly of citrus trees. Nowadays, the thin green belt –which is put in danger by the future urbanization expansion of the city-, is well connected to the different urbanized zones by a set of roads.

The city is composed of about 350 000 inhabitants. The majority reside within the municipal boundaries of the city and the zone overlooking the city (new expansions).

The city has a number of light-industrial activities, mostly dedicated to food factories and furniture. The city has two industrial zones located at the southern part of the city. It is in these two zones that the majority of the mechanical and light-industrial factories are located.

The city is well known for its citrus plantations and hence for its local citrus production. In fact, most of the citrus production that is sold on the Lebanese markets comes from the green belt zone, which, as stated above, is currently put under pressure by new urban expansions.

### **b. The uncontrolled landfill**

The city and its surroundings suffer from several problems that directly or indirectly affect the population of the entire region. The most important problem with a high potential negative environmental and health impact is the presence of the solid waste landfill site, located along the sea shore (hence, within the municipal boundary of the city). This site is known as the “Garbage Mountain”.

The total volume of the site is around 1 Million cubic meters that forms a hill of around 45 meters high and 150 meters length -with direct contact with the sea. This area is generating a set of dangerous problems such as odours and continuous uncontrolled burnings in the site.

The accumulated waste in this landfill is a mixture of municipal solid waste, industrial waste, hospital waste, slaughter waste and others. Soil represents around 75% of the total volume of the site. Knowing that the site has a direct contact with the sea, parts of the accumulated waste regularly fall into the sea. For instance, the last time this happened was in September 2005.

Small "pockets" of gas methane are formed in the internal and inferior part of the landfill. When the hill grows and the total pressure increases (due to waste accumulation), this gas gets out of the landfill. Consequently, when it gets in contact with the air, this gas creates fires and continuous uncontrolled burning.

## **II. History of the site**

Like most of the cities in Lebanon, Saida suffered from the recent natural and socio-political disasters/events. In fact, the 1956 earthquake destroyed a big part of the old city and the 1982 Israeli invasion caused the total destruction of the western part of the city (facing the port) and caused the removal of many ancient zones and souks. The restoration of these areas and the cleaning-up efforts wiped parts of the ancient city - mainly the old souks (markets)- while their debris were removed and dumped in the south of the city. These actions, in fact, contributed to the creation/development of the current uncontrolled landfill site.

These destructions had a negative impact on the city itself and the local residents and thus created additional local problems, even though they were remarkable efforts to enable the city to re-emerge again.

This site was created in the early 1980s. It has always been used for waste disposal generated by the city of Saida and the neighboring areas. It receives mainly five kinds of waste, defined as following:

1. Municipal solid waste (most important)
2. Debris, construction leftovers
3. Agricultural waste, including pesticides
4. Industrial waste, including chemical waste
5. Hospital waste, including infectious waste

### III. Chemical characteristics

In this landfill, waste disposal is totally uncontrolled. All kinds of waste are accumulated in this site (agricultural, chemical, industrial, hospital waste, etc). Hence, knowing that there is a wide mixture of toxic waste in this landfill, we can not exclude the presence of POPs (especially pesticides, and PCBs) and other hazardous chemicals (e.g. tannery waste and paints).

The "Dioxins National Inventory" (done in Lebanon) states that the most important source of dioxin/furans releases come from uncontrolled burning processes. However, the majority of the uncontrolled burning in Lebanon takes place in uncontrolled landfills. Knowing that such burning (fires) happen very often in the landfill of Saida, we can state that this landfill is a dangerous source of dioxin/ furans emissions.

Unfortunately, we can also state that no analyses and/or other kinds of monitoring activities have been conducted on this site. Till now, there is no accurate data concerning the composition of the existing waste. Consequently, there is an essential need in research projects/studies and analysis of the site. These studies have to address (identify and define in details) the negative environmental and health impact of this landfill.

### IV. Environmental, Socio-Economic and Health Consequences

The landfill under study has a number of negative impacts which can be defined as following:

#### **a. Socio-economic impact**

Knowing that the landfill is located near the city and hence next to several residential areas, we can state that its presence decreases tremendously the land value of the entire surrounding area.

Furthermore, this landfill is also located next to archeological sites. Hence, its location decreases the chances of this area to develop into a national or regional touristic zone.

### **b. Health**

This landfill is an important source of pollution. As stated previously, periodic burnings/fires are caused by the continuous emission of methane. Consequently, black smoke composed of combustion gases (including toxic gases) regularly covers the city. In other terms, the landfill represents a dangerous source of pollution which has a negative impact on public health, especially on sensitive people, elders and children.

### **c. Environment**

This site has two main negative impacts on the environment, and more particularly on the sea. The first one is defined by the continuous leakage of liquids rich in heavy metals and toxic chemicals towards the sea. The second environmental risk related to the sea, is the fact that very often parts of the accumulated waste fall directly into the sea (as stated previously).

The current situation of the landfill site in terms of location, management and control, represents a very important environmental problem. Knowing that landfills should be the appropriate environmental solution for solid waste problems, this landfill is in fact a problem in itself due to its inappropriate location, mismanagement and lack of control.

## **V. Responsible Parties**

The different governmental institutions responsible for the management and control of this site are: the Municipality of Saida, the Ministry of Environment, the Ministry of Public Work and the Council for Development and Reconstruction (CDR).

## **VI. Plans for Cleanup**

Different projects with different visions for cleaning up and rehabilitating the landfill have been drafted during the last years and many discussions (meetings, workshops) have been organized concerning this issue. However, it is only recently that the different responsible parties (Municipality of Saida and Ministries named above) and NGOs agreed on a particular rehabilitation plan. Hence, at the end of 2005, a detailed plan for the rehabilitation of the site was approved by the Municipality. An environmental impact assessment study (EIA) was prepared and submitted for approval to the Ministry of Environment on the 10th of March, 2006. Currently, the concerning governmental authorities are delivering the required permits and legal authorizations.

This "rehabilitation plan" is composed of different operational phases, defined as following: excavation, segregation, composting, recycling and land-filling. In parallel to this rehabilitation plan, a "mitigation program" will be implemented in order to control and mitigate the negative impacts that these operations can generate. Furthermore, a "monitoring plan" detecting pollution and negative externalities will be implemented during the rehabilitation period.

## VII. Recommendations

All the concerned stakeholders -Municipality, Ministries and NGOs- should be involved during the implementation of all the operational phases of the "rehabilitation plan" (as defined above). The good implementation of the rehabilitation plan depends essentially on the good coordination and cooperation between the different stakeholders. NGOs should play an essential role in the organization of awareness activities (e.g. awareness campaigns, lectures, seminars, workshops, distribute brochures/ booklets, etc). Furthermore, NGOs should be involved in the environmental and health impact assessment activities which will take place during the rehabilitation process.

## References

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Picture of the site

