GREENPEACE MEDITERRANEAN - BACKGROUND INFORMATION

INDUSTRIAL POLLUTION IN LEBANON

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1. THE WASTE CRISIS:

Lebanon's household waste is currently dumped in landfills along the coast, including the huge Borj-Hammud landfill near Beirut Port, and in hundreds of small dumps all over the country. In these small dumps, fire is often used to "solve" the waste problem. Industrial hazardous sludge is pumped via pipes or the normal sewage system into the Mediterranean Sea. Solid hazardous waste is dumped in household landfills and in the nature.

The toxic ash of the Amrusieh incinerator in southern Beirut (destroyed in June 1997) and the one of Karantinanear beirut Port had been dumped in the capital's Borj-Hammud landfill (closed in July 1997). In this landfill, some 2,000 barrels of toxic waste have been dumped in 1987/88. They were part of 15,800 barrels and 20 containers of toxic waste imported illegally from Italy in 1987.

The people in the Greater Beirut area generate about 1,700 tons of waste every day, according to the Environment Ministry and the private waste management company "Sukkar Group". They are collected by "Sukhleen", which is part of the "Sukkar Group". The group's company "Sukom" operates the Karantina incinerator.

Reliable data on waste amounts and quality, based on a full-scale scientific research, are not available. Former Environment Minister Samir Moqbel claimed in his 1995 "White Book for the Environment" that the Greater Beirut area generates between 800 and 900 tons of waste, or about 1,400 m3, including normal household waste and "batteries, used medication, normal hospital waste and some industrial waste, etc."

A 1992 United Nations Environment Program (UNEP) report said that some 4.7 Mio. people live in Lebanon, including foreigners. They produce some 0.7 to 0.9 kg/resident/day, meaning a total of about 3,800 tons per day of solid wastes for the whole country. It said that the waste composition is comparable to that of developing countries, that is with a large proportion of high-fermentation vegetable products (50 to 60 %).

On 15th January 1997, the government in Beirut passed an "emergency plan" to manage the waste generated every day in Beirut and some of its suburbs. Under pressure to close down the huge coastal landfill in Borj-Hammud in Beirut, the authorities decided to collect and then separate the 1,700 tons of waste in new plants in Amrusieh and Karantina in Beirut. Ten per cent are now being separated for recycling, 50 per cent composted and 40 per cent dumped in a “sanitary landfill” in Naameh valley, south of Beirut.

The plan is a first step in the right direction because it would end the current state of total chaos and start separating some of the recyclable materials and organic waste to be composted for the agriculture sector. However, the omitted to address a national waste management strategy based on reducing, reusing and then recycling waste. It considers landfilling household waste mixed with hazardous waste. The "emergency plan" was formulated by the Environment Ministry and the CDR.

Greenpeace urged the CDR and the Environment Ministry to tackle the problem of hazardous hospital and industrial toxic waste mixed with the estimated 4,000 tons of household waste generated every day in Lebanon. The official "emergency plan" does not even mention the existence of hazardous hospital and toxic industrial waste.

2. INDUSTRIAL POLLUTION:

The United Nations Development Programme (UNDP) estimates total solid waste arising from industry to be around 326,000t/year, (UNDP report P. 99) with most of it generated in Mount Lebanon and Great Beirut Area (These areas are classified here as "Junieh Bay" and "South Beirut").

The following report focuses more on liquid waste, as it is easier to identify on site, whereas solid waste is probably transported to dumping sites such the one in Borj-Hammud in order to get burnt or buried

"There is virtually no treatment of liquid effluent from industry, which is mostly discharged to surface and coastal water." (UNDP report P. 100). This is easily verified during on site visits, as in most cases, streams and sewage systems are clearly apparent., hence allowing sample taking.

Regarding industrial pollution, the United Nations Environment Program (UNEP) wrote a report in 1992 on "Environment and Development in Lebanon". It said: "Most industrial firms on the coast discharge their waste waters into the sea without any treatment. Most inland industries discharge their waste waters generally into the nearest stream without treatment. Some industries let their waste waters into deep bore-holes thus risking contamination of underground waters and springs that issue somewhere else... Industrial solid wastes, and some are toxic, are generally mixed with municipal refuse without any particular measures taken."

An official 1994 Census identified 23,517 industrial units (including some services) in Lebanon. Economists believe that industrial growth will outstrip overall economic growth, as the various constraints are removed, and future growth could lie between 8 - 10% per year Clearly future growth has significant implications for the environment. There has never been a coherent development policy for industry, although there have been a number of ad hoc policy measures designed to encourage the start up of industrial activities, including tax exemptions on new investments, customs protection for locally manufactured products, subsides for energy costs and investment protection.

The relatively small Lebanese industry has sectors that produce toxics like the chemicals, paints, detergents, varnishes, lacquers, plastics and rubber industries. They are largely focused on the domestic market, importing raw materials and reformulating and packaging them for domestic use.

The cement, asbestos and chemical industries in Chekka and Selaata in northern Lebanon are a major source of marine, soil and air pollution, Greenpeace sample test results proved in May 1996. Sample tests carried out by the Earth Research Center at Exeter University in England showed that ground water in Chekka is polluted by a wide range of toxic chemicals, while emissions from cement and asbestos factories pollute the air and the Mediterranean Sea. Greenpeace had sampled groundwater, petro-coke used as cheap fuel in the cement plants, wastewater from industrial discharge pipes and nearby sediments, waste from cement factory filters, surface sediment from the Asfur River in Chekka and dust from the factories.

A 1995 report by the Mediterranean Environmental Technical Assistance Program (METAP), "Lebanon: Assessment of the State of the Environment", estimated total solid waste arising from Lebanese industry to be about 326,000 tons per year. Given the concentration of industry in the Mount Lebanon, it follows that most industrial waste is generated in these areas. Assuming that industrial output will grow at 8% per year, the METAP report projected that by the year 2010 industrial waste arising could be over 1 Mio. tons per year.

The METAP report said: "Given the mix of industries in the Lebanon, it is reasonable to assume that most of the waste can be regarded as non-hazardous, and could be properly treated and disposed of with municipal wastes. A survey of current disposal practice suggests that some industrial waste is disposed of through the municipalities, but other disposal routes include informal on-site incineration, disposal to wells, and informal dumping. The concentration of formal and informal waste disposal is obviously on the western slopes and foothills of Mount Lebanon, giving rise to a risk of contamination of ground and surface water."

3. IMPACT OF INDUSTRIAL POLLUTION:

Due to the fact that there is virtually no treatment of liquid effluent from industry, pollutant loads impose serious environmental stress on surface water. Industry is imposing serious pollution not only to the coastal areas but also to a number of rivers:

* the Berdawni river where discharges from food processing, wineries, paper and tanneries are discharging from Zahle/Chtura, and then into the Litani river;
* further downstream in the Litani river where discharges from the sugar beet plant at Anjar add to the load in the river; and
* at Mashghara, effluent from tanneries and glue factories are discharging to a tributary of the Litani.
* the coastal zone and off shore waters north of Beirut and the Nahr al-Kalb and Nahr Ashqut rivers where numerous factories are discharging;
* the direct discharges to wadi and sea at Zouk Mosbeh and Zuk Mkayel, near Junieh;
* Ibrahim River, where an industrial area including a paper plant is discharging without treatment;
* the coastal zone and off shore waters around Saida, where tannery wastes are discharged onto the beach;
* the coastal waters at Selaata, where the fertiliser plant discharges phosphates and sulfates to sea;
* the coastal waters at Batrun and Chekka, where the cement plants are discharging cooling water to the sea; and
* the coastal waters and Ghadir wadi serving Chueifat, Ain Aanub and Bshamun.

About 80% of the Lebanese industry is located along the coastal region, concentrated in and around Beirut, Tripoli, and Saida.

A report financed and published by the German "Friedrich Ebert Foundation" in Beirut, "Action Plan for Lebanon 1994", said: "It is really sickening to observe the chaotic distribution of different industries among residential areas, including those that are deleterious to 'security of fresh air or neighbors' ease or public health or agriculture' that are defined by the code number 21/32. We also observe the prevalence of chaotic operations regarding several industries that 'damage the environment and pollute it with deleterious wastes and dangerous materials' as were defined by the code number 64/88."

Another report financed by the same foundation in 1992, "Identification of the Sources of Industrial Pollutants on the Lebanese Coast", pointed to the problem of agricultural toxic wastes. It said: "The absence of government control of the market of agricultural chemical has allowed for dangerous practices by companies and dealers. One example is the incorrect labeling of the chemicals, made to suit the dealers' profit. This could be very harmful in the case the expire dates are altered... Another example of illegal practices is the sale of nationally and/or internationally banned chemicals... The build-up of chemicals in crops and soils is leached to underground waters in the form of aquifers or underground streams which can eventually reach the sea."

On 2 November 1994, the Minister of Environment signed Decision No. 20/B which established environmental standards for protection of the environment from pollution. The standards govern air pollution and water pollution. The 1995 METAP report analysed the law and commented: "... the law has been implemented very quickly, and is not well drafted nor well thought through. It proposes both emission standards for liquid effluent and atmospheric emissions, and some environmental (ambient) quality standards. The standards appear to have been drawn from US EPA guidelines, but at present there is no institutional capacity for the effective implementation of the standards. The emissions standards are not related to current ambient water or air quality standards (as these are not monitored and there is insufficient data available on the current air and water quality in the Lebanon to assess the appropriateness of the standards). More importantly, there is virtually no capacity within industry for measurement and control for emissions, and the fact that the majority of enterprises are extremely small makes both implementation and enforcement extremely difficult."

In many municipalities hazardous wastes (including toxic and clinical waste) are often dumped alongside municipal and inert industrial wastes. The uncontrolled and mixed nature of current waste dumps all over the country - including river beds, abandoned quarries, the shoreline - means that it is highly possible that long-term soil contamination has occurred at these sites. The majority of Lebanon is dominated by calcareous rocks, much of which is heavily fissured allowing rapid percolation of

leachate into the groundwater. This process is accelerated in dump sites which are situated on porous sandy soils, for example, in Metn and Jezzine, and possibly slowed down in others, for example, the Kura clay plain in North Lebanon.

In addition to hazardous waste that have been dumped alongside municipal wastes, it is believed that about 10,000 barrels of toxic waste, imported illegally from Italy in 1987, were dumped around the country during the war years. Greenpeace has established the exact location of some dumping and burning sites, and authorities have collected about 77 tons of toxic waste and contaminated land. These 77 tons were secretly shipped to France for planned incineration in April 1996. Greenpeace and Lebanese officials sample test results showed that many spots, including the leachates from the Borj-Hammud dump, are contaminated by a variety of toxic heavy metals and chemicals substances.

One huge problem in Lebanon is also the impact of the estimated 7,000 tons per year of waste lubricating oil generated by the vehicle fleet, of which a significant proportion finds its way to the sewer systems and eventually to the Mediterranean Sea. Some of this oil is placed in containers, at petrol stations and by private individuals, and is then dumped on land or disposed of at solid waste dumps.

The power sector is also responsible for contamination of some oil contamination of land resources, as the electricity company is believed to generate some 227,000 litres of spent lubricating oil annually which is disposed of to drains. In addition, spent oil is also disposed by private users of generators who tend to dispose of spent oil at waste dumps, directly onto the land or into the sea. Contamination of land by waste oils is a long term problem.

The shoreline and coastal waters around Selaata (Chekka region), Saida, and the entire area from Damur in the south to Jounieh in the north of Beirut showed high levels of industrial contaminants. Some limited studies were conducted to evaluate the extent of marine pollution along the Lebanese coast. One study was carried out tested samples of fish and shrimp tissue for trace metals and pesticides, as well such chemicals as phosphates, nitrates, nitrites, ammonium, silicate. This research found concentrations of toxic substances like mercury, copper, cadmium and PCBs, all of which are likely to be associated with discharge of untreated industrial effluent.

The 1995 METAP said that the precise impact of industrial and household is not possible to estimate the precise impact without more detailed knowledge of the location, waste types and current management of the dumps. But it stated that: "...there are risks of contamination of ground and surface waters with various contaminants, notably ammonia. If toxic wastes have leached to ground water then there is a very serious threat to human health. This issue is acute and must be dealt with urgently... There is no direct evidence of leaching and water contamination from uncontrolled dumping of wastes, but it is almost certain that some contamination is occurring. Specifically, the secreting of drums of toxic wastes around the country and the dumping of industrial and domestic wastes without leachate containment are likely to lead to contamination of water and soil. The immediate impact on water resources from indiscriminate dumping of wastes is likely to be localised pollution of surface waters, although where leachate has contaminated the groundwater the fissured limestone bedrock allows plumes of pollutant to develop and move rapidly, contaminating a wider area."

The Tripoli-Mina study Environmental Audit Report pointed out that there is gross contamination of coastal water in the immediate vicinity of the Tripoli waste dump at the mouth of the Ibrahim River, and that there is considerable littering of plastic bags on the sea bed, which have caused complaints from both local fishermen and from Turkey and Cyprus, where plastic waste drifts on the currents.

4. WORLD BANK DATA ON INDUSTRIAL POLLUTION:

The World bank wrote in 1996 a report about the situation environmental situation in Lebanon. It said that two-thirds of the Lebanese population is concentrated in the cities along the narrow (1 to 8 kilometers wide) coastal plains and slopes. The Beirut metropolitan area has an estimated 1.2 million inhabitants. Its continuing growth is a result of the heavy rural to urban migration, particularly from the South where hostilities continue. Other principal coastal cities are Tripoli El-Mina with about 500,000 inhabitants, Sidon (about 300.000 inhabitants), and Tyre (about 150.000 inhabitants). In all these cities, rapid growth has been accompanied by inadequate housing , infrastructure, and urban services causing the following major problems:

- The coastal zone is subject to uncontrolled urban sprawl over most of its length, with notable encroachment over open spaces, agricultural and forest lands. Waves or rural-urban migration as well as the influx of foreign migrants in search of work have lead to the development of camps and squatter settlements, many of which have encroached on limited agricultural and forest lands and open spaces around cities. There is an inadequate supply of affordable and safe housing in urban areas , creating overcrowded conditions that pose severe health risks and lead to the occupation of fragile or hazard-prone areas. In Beirut City, for example , it is estimated that the average number of occupants per dwelling is about 6.5, up from 2.1 in 1970.

- Approximately 80 percent of Lebanese industry is located in the coastal zone , clustered in and around Beirut, Tripoli and Saida. The increase of industrial activity and lack of planning controls means that industry has located in inappropriate areas, such as in the middle of residential areas, close to schools, etc. Since these industries generate various types of wastes, they contribute to air, water and soil pollution.

Box 1. Potential Environmental Stresses on land ressources

Economic /Human Activity	Sources of Impact	Evidence of Stress
Industry	-Concentration of industrial activity in the coastal zone -Uncontrolled disposal of hazardous wastes -Sand, aggregate and clay quarrying Sand mining in mountainous zones Sand mining along the shoreline Clay mining in the Koura Plain	-Possible contamination of land -Contamination of land Aesthetics -Erosion and landslides -Many beaches have been left sandless, which has intensified coastal erosion -Loss of beach amenity -Destruction of olive groves
Energy	-Disposal of waste lubricating oils from electricity generators	-Contamination of soil -Aesthetics

- Another critical problem is the illegal disposal of industrial hazardous waste from highly polluting industries(tanneries, paint, metal finishing, etc.) and the disposal of thousands of barrels of hazardous waste imported during the war period.(It is believed that close to 16,000 barrels of toxic chemical wastes were dumped in various locations around the country during the war years.)The uncontrolled and mixed nature of waste dumps all over the country (including river beds, abandoned quarries and the shoreline)means that it is possible that long-term soil contamination has occurred at these cities. In addition , waste lubricating oil is disposed at waste dumps, or directly into the land or into the sea. Industrial activity may also contribute to potential contamination of land and water resources as a result of effluent discharge(including chemicals and soils), dumping of scrap metals and other solid wastes in an uncontrolled manner.

- Water quality is being impaired by excessive use of agro-chemicals and pesticides, uncontrolled discharges of industrial wastes, uncontrolled discharges of solid waste, sewage and waste oils, the absence of proper protection of natural sources, exposure of springs and streams to agricultural water, exposure of the water distribution systems to wastewater infiltration , and the absence of adequate water treatment. According to the national UNICEF/AUB water quality control survey(1990), about 70 percent of all natural water sources and piped water are exposed to bacteriological contamination; 66 percent of town water networks and 78 percent of village networks were microbially contaminated. There is virtually no treatment of liquid effluent from industry, which is generally discharged directly to rivers , streams and the sea. These discharges impose intense and highly localized stresses on surface and ground water , and on coastal waters , especially in the suburbs of Beirut , industrial sites along the coast (Chekka, Saida)and the Bekaa valley (especially the Litani river and lake Kerouan).

Research undertaken by the Marine Research Center identified the presence of DDT in fish tissue, and found lead and mercury concentrations in offshore waters; theses may come from the run off of pesticide residues used in agriculture in South Lebanon.

The National Central Laboratory water analysis data indicate that some 80 percent of the water from wells are bacteriologically polluted, possibly from inadequate sewage disposal (Khatib and Alami, 1994). There have been no surveys from chemical pollution , although it is almost certain that some contamination is occuring from the uncontrolled dumping of various toxic substances in the soil and water bodies.

The shoreline and coastal waters around Selaata, Saida, Tripoli and the entire area from Damur in the south to Jounieh in the north of Beirut are also affected by pollution. A 1993 survey by the Ministry of Environment at 38 sites along the northern coast showed that the presence of total coliform and E.coli in significant albeit variable qualities ranged between 35 and 11,000cfu/100 ml; as a result, some beaches are unsafe for bathing.

Air quality:

Industrial activity is concentrated around Beirut in Mount Lebanon , with 45 percent of the industrial units; these are mostly small enterprises, many of which are dispersed in residential areas . Given the nature of Lebanese industry , process emissions are likely to be low, with the exception of cement, fertilizers(Chekka, Selaata) and the sugar-beet factory at Anjar. Overall, industry is a relatively small contributor to air pollution in Lebanon of SO2.

Potential Air Quality Issues

Economic / Human Activity	Source of Impact	Evidence of Stress
Industry	Process emissions from industry	Concentrations of pollutants around industrial establishments
	Energy/combustion emissions from industry leading to high concentrations of SO2, Nox TSP	Concentrations of air pollutants around industrial establishments
		Acid deposition on soils
Energy	Emissions from power stations leading to high concentrations of SO2, Nox TSP	Concentrations of ground level SO2, Nox . Acid deposition around power stations TSP

Health Impacts:

Although most of the Lebanese population is exposed to pollution problems, conservatively we can assume that about 2.0 million people currently lack access to safe water and sanitation and another 1.5 million people live in urban centers with potential air pollution problems due mostly to transportation and energy use and industrial emissions. Limited tests of coastal waters (Bay of Jounieh and Kesrouan) suggest that as much as 3.0 percent of waters exceed the WHO bacteriological standard for acceptable bathing waters. Furthermore, the discharge of sewagee and industrial effluent in rivers and groundwater resources suggest very broadly that over 50 percent of Lebanon's drinking water sources are bacterially contaminated and fail WHO standards.

On the basis of previous Bank work , the loss of human life in Lebanon because of both premature mortality and disability could be as high as 1.0 million disability adjusted life years (DALYs). Environment-related causes may be responsible for about 15 percent of this total, with 87,000 DALYs lost each year due to poor water quality , lack of access to water , and sanitation and hygiene, and another 65,000 DALY's lost to air pollution and over-crowded housing. The social cost of these environmental problems could be substantial. The burden from lack of safe water sanitation /hygiene

and air pollution and over-crowded housing, when active life lost from premature mortality and morbidity(DALYs)is-rather arbitrarily-valued at current GDP per capita(US$1.510),is US$131 million and US$98 million , respectively, a total of about US$230 million . It should be noted that these are very rough estimates; they should be viewed as indicative. Other social costs of traffic include accidents and congestion , which are likely to be significant.

Summary of Social Costs of Environmental Issues

Social Costs	Sources of Impacts
Health	-contamination of potable water from sewage and industrial effluent , in surface and ground water and probably in water supply networks -toxic waste dumps scattered around the country -pesticides residues in soil, water and food -particulate emissions from industry(notably cement).
Loss of Natural and Cultural Resources Loss of Amenity	-discharge of high concentrations of industrial liquid effluent and sewage to rivers , damaging ecosystems
Economic Losses	-loss of coastal and mountain resources from over development and/or neglect, threatening tourism(and local leisure industries); -loss of soil productivity from erosion , pesticide residues and salination -loss of industrial competitiveness from non-complance with international standards, particularly regarding CFC's -costs of clean up/contaminated land -traffic congestion

Estimated Annual Cost of Environment and Natural Resource Degradation

Environmental Impact	Annual costs of environmental degradation(1992)
Human health -Lack of safe water/sanitation/ hygiene -Air pollution and over-crowding	 -US$ 130 million -US$ 100 million
Economic loss(other) -Loss of tourism revenues -Loss of fisheries	

A 1994 census identified over 23,000 industrial units with 84 percent employing fewer than 10 workers. The average employment of 5.9 workers/unit suggest the existance of a few large enterprises and a very large informal sector of small enterprises. Half of the largest enterprises are concentrated in food processing and beverages, clothing , and cement and building products. Furthermore , 57 percent of industrial units and 70 percent of the industrial workforce are concentrated in Mount Lebanon and Greater Beirut Area.

Another important feature is that many of the smaller industrial establishments have been set up in residential areas in and around Beirut, and represent a challenge for regulators and environmental policy makers.

5. THE SOLUTION IS CLEAN PRODUCTION:

Industrial production systems require resources: materials from which products are made, energy which is used to transport and process materials, as well as water and air. Present production systems are linear or cradle-to-grave, often using hazardous substances and finite resources in vast quantities and at fast rates.

The goal of Clean Production is to fulfill our need for products in a *sustainable way*, that is using renewable, non-hazardous materials and energy efficiently while conserving bio-diversity. It is based on four elements:

- **The Precautionary Approach:** It puts the burden of proof on the potential polluter to prove that a substance or activity will do no cause environmental harm, rather than on communities having to prove harm. This approach rejects the sole use of quantitative risk assessment in decision making because it recognizes its limitations.

- **The Preventative Approach:** It is cheaper and more effective to prevent environmental damage than to attempt to manage, try to "cure" it and deal with the "symptoms". Prevention requires process and product changes to avoid the generation of waste streams.

- **Democratic Control:** All those affected by industrial activities and exposures to hazardous materials must be involved, including workers, consumers and communities. Access to information and involvement in decision-making ensure democratic control. As a minimum, communities should have information on industrial emissions and access to pollution registers, such as the Pollutant Release and Transfer Register (PRTR), toxic use reduction plans, as well as data on product ingredients. The availability of information on toxic emissions should be enforced by law.

- **Integrated Approach:** Society must adopt an integrated approach to environmental resource use and consumption. Currently, environmental management is fragmented allowing pollutants to be emitted in the air, water and soil. Reductions in polluting emissions from production processes lead to the hazard being transferred to the product. These dangers can be minimized by addressing all material, water and energy flows, the whole life cycle of the product.

An integrated approach would be essential to ensure that all hazardous materials are phased-out, for example PVC. While in many European countries, notably in Germany and in Scandinavian countries, the environmental impact of PVC is recognized and various phase-out steps are being discussed or have been taken. In the Mediterranean countries, there is no limitation on the production or use of PVC, and no reduction plans exist.

The development of Clean Production:

Governments have traditionally approached environmental management by setting standards of permissible pollution loads to water, air and land. Industry has responded by installing end-of-pipe equipment, such as filters and water treatment plants. This approach only transfer the problem, since the contaminated filters are being dumped in landfills where they poison both soil and ground water.

The European Union has recognized the limitations of this approach and introduced *Integrated Pollution Control*. However, even this policy fails to recognize that most pollution cannot be controlled. The emphasis must be on prevention.

In the last five years, over 30 states in the US, have enacted pollution prevention statutes and introduced mandatory toxic use reduction planning. The state of Massachusetts set up a Toxics Use Reduction Institute (TURI) to help industry phase-out toxic materials in production processes. TURI also actively researches and disseminates information on safer processes and materials. However, the most successful strategy for eliminating toxic substances in production processes has been the introduction of national and regional bans and phase-outs. Examples include lead, PCBs, DDT and mercury.

Unfortunately the bans have not been global and pollution continues to circulate in the environment from both past emissions and ongoing production.

6. GREENPEACE DEMANDS:

In May 1997, Greenpeace presented to the CDR, and the Ministry of Environment a report on ways to solve the waste crisis in Lebanon, but they did not even discuss it with us. They said thank you and good by. Greenpeace Mediterranean proposes the following urgent actions, or short-term solution, to Lebanon's waste crisis:

* No dumping of toxic waste in any dump or “sanitary landfill”
* Separate and compost 60 per cent of Beirut's household waste as planned in new plants in Amrusieh and Karantina in line with the official "emergency plan"
* Separate industrial and hospital waste from the household waste streams
* Store hazardous hospital waste and toxic industrial waste above ground in safe hangars
* The remaining non-hazardous waste can be dumped in controlled landfills

Unfortunately, the authorities are planning to landfill the remaining 40 per cent without separating hazardous waste.

The long-term solution is to start now a nation-wide plan based on waste reduction, separation at source, reuse and then recycling. This should take place parallel to the separation and composting as well as recycling after collection. A similar waste management policy should be implemented in all Lebanon so that the waste dumps in Saida, Tripoli, Zahle, Tyre and elsewhere can be closed soon.

The industry must start implementing, also parallel to the "emergency plan", a plan to introduce clean production methods in all industrial processes. At the same time, the government must introduce strict regulations on imported consumer goods and ban all products that cannot be recycled in an environmental sound way like PVC plastics. Hospitals in Lebanon must be obliged by law to solve their waste problem at source by reducing their waste, reusing materials and replacing PVC products like tubes with non-hazardous products.

The Lebanese government has no choice but to start now with waste reduction, that is banning PVC plastic and other useless and harmful products. The CDR, the Ministry of Environment and Beirut's waste management company Sukleen must start organising waste separation in households and cooperate with the industry to promote an effective recycling infrastructure.

The future of Lebanon will depend on the way authorities deal with the growing mountains of waste in a small country aiming to regain its pre-war economic and tourist position. Focusing on “sanitary landfills” is a short-sighted policy that threatens the environment and the health of future generations, as well as the economic development. Lebanese authorities did not formulate a plan to reduce toxic waste streams. Greenpeace therefore fears that not only household garbage but also toxic industrial waste would continue to end up in dumps and “sanitary landfills”, like it is the case now, or through pipes or the sewage system into the Mediterranean. This would be a blow to the tourism sector.

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