

## **Burn, burn burn!- no sustainable waste management in Macedonia**

Macedonia is a country with no waste management. Literally, the entire waste generated ends up in landfills, both sanitary and illegal ones. There is only one sanitary landfill in the country- "Drisla" near the capital of Skopje that fully does not fulfill the criteria in order to be called "sanitary". The waste is dumped at many places without a plan, and proper covering of the waste landfilled rarely happens.

### **What happens with medical waste in Macedonia?**

Medical waste was treated in a more environmentally friendly way before the first medical waste incinerator was placed at the landfill of Drisla. The incinerator was a donation by the DIFID-UK under the recommendation of WHO during the Kosovo crisis (when Kosovo refugees entered Macedonia) in 2000.

This incinerator was intended to be used only for burning medical waste from Skopje's state hospitals and other health institutions. The incinerator does not contain a filter and it works as a stove (open and not protected). The table below contains specifications.

This incinerator is owned by the Ministry of Public Health. According to information provided by Drisla, there is a contract which defines that Drisla is in charge of collecting hospital waste and operation of the incinerator. For these services it receives a lump sum payment from the Ministry of Public Health.

<b>Item</b>	<b>Specification</b>
Capacity (hour)	200 kg/hour, approx 1 t/ shift
Actual operation time	1 shift per day, in total 7 hours/day, 5 days a week
Possible operation time	2 shifts per day and/or 7 days a week, more than doubled capacity. Furthermore the delivery of hospital waste is possible at any time due to a continuous operation of the landfill.
Actual waste input (year)	2001: 230 t, 2002: 240 t (estimation)
Type of Incinerator	Batch fired, two chamber incinerator
Manufacturer	INCINCO, GB
Investment Cost	No information: Donation of DIFID, UK
Filling	Manual loading
No. and Type of staff	5 workers, 1 driver (collection and transportation), 1 engineer, 1 administrator
Incineration temperature	Chamber 1: 800°C, Chamber 2: 1000 °C
Additional fuel	Oil burner with temperature control, 2 kW installed power, approx. 30 l oil/hour
Flue gas cleaning system	Non additional cleaning system beside secondary chamber
Emission Data	Regular inspection by main inspectorate of the Ministry of Environment
Ash disposal	Landfilling

### **New burning facility- the key player is GEF**

Due to the inappropriate operation of this incinerator, the UNDP (United Nations Development Programme) started developing a project for a new incinerator. The GEF (Global Environmental Facility) should pay for it. The value of the new incinerator is estimated at around EUR 1 million. The project is confidential and not subject to comments and opinions by citizens and civil society.

The whole idea behind this new project is much closed for public and NGOs. Also, what is more important, the Persistent Organic Pollutants (POPs) office within the Ministry of environment considers the Environmental Impact Assessment (EIA) procedure for this project an unnecessary expense and that surely it will not be done. According the new law on

environment very much close to the EU directives, the EIA procedure is essential for "installations for landfilling, burning and physical and chemical treatment of waste"<sup>1</sup>.

### **Incineration of waste- a source of toxics**

The World Health Organisation (WHO) considers medical waste incineration a significant source of highly toxic dioxin, a known carcinogen that has been linked to birth defects, immune system disorders and other harmful health effects.

In Europe, incineration is responsible for about 4 percent of mercury emissions to the environment from human activities. Mercury is a potent neurotoxin that can cause developmental defects and harm the brain, kidneys and lungs. Other pollutants from incineration include furans, acid gases, heavy metals and particulates.

In 2000, stricter emission limits for medical waste incinerators were introduced in the European Union. This resulted in the closure of many incinerators and an increase in the number of non-incineration facilities for treating infectious medical waste. However, incineration remains the prevailing method of treating medical waste in Europe.

### **Alternatives to incineration**

There are two possible ways a country can meet the statutory limits of EU in the future – it can either equip incineration plants with very expensive filters, or close them and set up the alternative - non-incineration - technologies. The latter are more environmentally friendly and usually cheaper than incinerators. Non-incineration technologies (unlike incinerators) do not produce toxic dioxins and their introduction is therefore in accordance with the Stockholm Convention on POPs (Persistent Organic Pollutants) that entered into force in May 2004. Also, because only small amount of the medical waste collected and incinerates is infectious, a different kind of treatment can be more effective and environmentally friendly.

The problem of pollution caused by the incineration of medical waste has been recognised by the World Health Organisation which states that a long-term goal shall be: "Effective, scaled up promotion of non-incineration technologies for the final disposal of health-care wastes to prevent the disease burden from (a) unsafe health-care waste management and (b) exposure to dioxins and furans."

Four basic processes are used in alternative medical waste treatment: thermal, chemical, irradiative and biological. Thermal processes rely on heat to destroy pathogens (disease-causing micro-organisms). The low-heat processes utilise moist heat (usually steam) or dry heat. Chemical processes employ disinfectants to destroy pathogens or chemicals to react with the waste. Irradiation involves ionising radiation to destroy micro-organisms while biological processes use enzymes to decompose organic matter.<sup>2</sup>

Mechanical processes, such as shredders, mixing arms, or compactors, are added as supplementary processes to render the waste unrecognisable, improve heat or mass transfer, or reduce the volume of treated waste.

### **Future for Macedonia's waste management**

It is clear that old, "dirty" technologies are starting to shift away from Western to Eastern countries where regulations are weaker. But, as Macedonia is synchronizing its legislation with the EU, and starts the process of association with EU, the laws and regulations will have to fully comply with the EU standards and directives. As the tendency of EU member states will become discarding this technology for destroying medical waste and waste in general, Macedonia does not need to repeat the wrong steps in waste management.

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<sup>1</sup> Regulation for determining the projects and criteria for applying EIA procedure, issued in Official journal of R. Macedonia No. 74, 2005.

<sup>2</sup> Information used from <http://www.noharm.org>

Instead, it can learn from the experiences and introduce sustainable technologies much faster and easier than the other countries.

Therefore, spending EUR 1 million on an incinerator that 5 to 10 years from now will inevitably be closed seems unsustainable and ridiculous. If allocated for medical waste management, this money should be focused on setting up a system for medical waste treatment and setting up an example for an environmentally friendly waste management.