

**Organisation of awareness-raising events  
concerning the implementation of Directive  
1999/31 EC on the landfill of waste**

REFERENCE: ENV.G.4/SER/2006/0049

**MINUTES CYPRUS**

30 May 2007

**BIPRO**

Beratungsgesellschaft für integrierte Problemlösungen

# 1 Description and results of specific events

## 1.1 Cyprus: Minutes and outcome

Date	Cyprus
25.-26.04.2007	<p><b>Venue:</b> Nicosia / Cyprus International Conference Centre (with support of Ministry of Agriculture, Natural Resources and Environment)</p> <p><b>Participants:</b> 36 (14 from authorities, 11 from associations/NGOs, 10 from enterprises)</p> <p><b>Agenda:</b> 9 presentations (including EC and BiPRO)</p> <p><b>Excursion:</b> Paphos landfill for non-hazardous waste and Ayia Marinouda landfill (closed landfill)</p>

The information exchange and awareness raising event in Nicosia has been organised with support of the Ministry of Agriculture, Natural Resources and Environment (Environment Service) and the Ministry of Interior. The 37 **participants** comprised especially representatives from the both Ministries, the Ministry of Health as well as from environmental NGOs and municipalities and community associations. The interest of enterprises working in the field of waste management and landfills was also high (participation list see chapter 1.2).

The workshop in Nicosia was planned as a two days event. In total, 12 **presentations** were held (including BiPRO and EC). An excursion to the Paphos landfill and the closed landfill of Ayia Marinouda was realized the second day.

Presentations held, addressed legal provisions and requirements both on European and national level as well as the current situation of waste management in Cyprus. Presentations stressed the strategic plan for waste separation management, landfilling and specific waste streams. A study about risk assessment of uncontrolled landfills, examples for the planning of a closure and recultivation of landfills and geotechnical criteria for the selection of a landfill site were also highlighted within the presentation.

The excursion to the landfill in the municipality of Paphos and Ayia Marinouda provided valuable insight into the technical standards of a newly built landfill and of a landfill which is closed but not recultivated yet (agenda see chapter 1.3).

As a result of discussions and presentations the following topics could be identified as priority issues and conclusions concerning the landfilling of waste in Cyprus:

### **Legal framework in Cyprus**

The European legal requirements of Directive 2006/12/EC and 1999/31/EC have been well transposed into national legislation, especially within the *Solid and Hazardous Waste Law*. For the transposing of Decision 2003/33/EC into national legislation no information had been given. Furthermore the requirements on the Law on Packaging and Packaging Waste, End-of-Life Vehicles, IPPC, Asbestos, Municipal Waste Incineration and Shipment of Waste are adopted to national law. Already in place are regulations covering used oils, the use of

sludge, batteries and accumulators, PCB's/PCT's and landfill sites. There exist a *Ministerial Order on a waste list*, requirements of waste registration, identification of dangerous waste and on application for waste management licenses.

The competences for permitting and controlling of landfills are divided between the *Ministry of Agriculture, Natural Resources and Environment* (Environment Service), which is responsible for specific waste streams and hazardous waste and the *Ministry of Interior*, which is in charge for the organisation of the municipal waste.

The municipal waste management is organised under the *Municipal Law*. The *Strategic Plan for the Management of Solid and Hazardous Waste* has been approved by the Council Ministers. It provides all the tools for an integrated management of all waste streams. The plan considers amongst others:

- Classification of solid waste according to the European waste list;
- Definition of targets;
- Comprehensive evaluation of the existing situation;
- Technologies, methods and procedures to be applied;
- Sources of waste and description of special waste;
- Analysis of targets concerning reuse, recycling and recovery.

The concept of landfills is translated into Cyprus legislation into *sanitary landfills*. A sanitary landfill comprises of a sorting line and treatment plants for specific waste streams, e.g. composting facilities. Considering the concept of sanitary landfills, only waste which cannot be further recycled or treated, should be landfilled at the end counting for 20 to 30% of the total waste amount.

4 Districts have been divided by the *Strategic Plan for the Management of Solid and Hazardous Waste*, being the Paphos District, the Larnaca/Ammohostos District, the Lefosia District and the Limassol District.<sup>1</sup>

### **Facts and figures of Cyprus**

The Cyprus citizen show a very high consumption pattern and production of waste is around 700 kg/year per capita. The Recycling rate still is very low and lies at about 20%. Especially the recycling of waste package has been started since 2006.<sup>2</sup>

In Cyprus, municipal solid waste is currently collected by either the local authorities or individual companies. Until 2005, officially there were in operation 7 disposal sites. However, only one of the 7 sites are fulfilled the requirements of the Directive 99/31/EC on the landfill

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<sup>1</sup> Presentation of Dr Costas Papastavros (Ministry of Agriculture, Natural Resources and Environment (Environment Service))

<sup>2</sup> Presentation of Dr Costas Papastavros (Ministry of Agriculture, Natural Resources and Environment (Environment Service))

of waste. Particularly 2 out of the 7 official disposal sites were operated under controlled disposal procedures (Kotsiatis site at Nicosia Region and Vati at Lemesos Region), while the remaining 4 sites were operated under semi-controlled disposal procedures. Beyond these 7 official disposal sites, there were identified and recorded 113 unofficial and uncontrolled disposal areas in operation during the elaboration of the current study (see Figure 1-1).



Figure 1-1: *Distribution of uncontrolled landfills in Cyprus (2007)*

A very detailed study was undertaken to evaluate the number, location and size of those existing uncontrolled landfills, to evaluate the environmental risk and to prioritise the closure and recultivation measures for the identified landfills. Once the sites have been identified, a GIS (Geographic Information System) database was developed with complete information for each site. Risk assessment of the sites was carried out using a method of multiple criteria decision analysis. The method was based on the highest scores achieved for each criterion. The 10 sites that have the highest scores are the ones prior to immediate restoration.

As measures for recultivation especially the isolation of the landfill body due to covering with foils and semi-permeable systems are suggested. Landfill gas treatment and leachate treatment systems are not foreseen to be included. The financial burden to carry out the recultivation measures will sum up in the next years, e.g. being estimated to 2.5 million € for

one landfill only. For smaller sites the waste shall be excavated and disposed of in properly designed landfills.<sup>3</sup>

In 2006, 626 kt/y of C&D waste were produced. It is still a used practice to disposed of C&D waste in an uncontrolled manner. The MoE and Ministry of Interior started recently a cleaning up program, cleaning especially very small dumping sites (e.g. along roads) accompanied by the installation of civic amenity sites, where C&D waste will be collected.<sup>4</sup>

### **Future planning in Cyprus**

The *Strategic Plan for the Management of Solid and Hazardous Waste* foresees 4 Regional Centres for the organisation Municipal Solid Waste Management. A priority is to reduce the waste produced and the separate collection. In each Regional Centre, the following actions will be accordingly made:

- Installation of a landfill site with biogas collection and energy recovery;
- Disposal sites for specific waste streams, e.g. C&D waste;
- Installation of a sorting plant and a plant for biodegradable waste treatment.

In one region only a landfill complying with the Landfill Directive exists. The other three landfills are only planned to start operation in 2010. A further priority will be the closure down and restoration of more than 100 uncontrolled landfills (see Table 1-1).

<b>Paphos District</b>	<b>Larnaca/Ammohostos District</b>	<b>Lefkosia District</b>	<b>Limassol District</b>
1. The organisation of the Regional Centre for Waste Management is under way. 2. The landfill is already in operation. 3. A transfer station is under construction. 4. Tender procedures are in progress for a sorting plant and treatment of the biodegradable fraction, expected to operate by 2010.	1. The construction of the landfill, two transfer stations, a sorting plant, and treatment of the biodegradable fraction (composting) is expected to start this summer 2007 and operate by 2009.	1. Upgrade of the major existing landfill of Kotsiatis serving almost 275,000 inhabitants 2. Main target is to have a state of the art organised Regional Centre, comprising of a landfill, a sorting plan, and treatment of the biodegradable fraction. The project is expected to operate by 2010	1. Upgrade of the major existing landfill of Vati serving almost 250,000 inhabitants. 2. Main target is to have a state of the art organised Regional Centre, comprising of a landfill, a sorting plan, and treatment of the biodegradable fraction. The works are expected to operate by 2010

Table 1-1: Status quo and ongoing measure for 4 Regional Waste Districts in Cyprus

Waste will be collected basically in civic amenity sites (*Green Points*). The community themselves decide on the places, where this sites will be installed. An area of 800 to 1,200

<sup>3</sup> Presentation of Alexios Panagouloupoulos (ENVIROPLAN S.A.) and Abstract: Lolos T. et al "Risk assessment and evaluation of uncontrolled landfill sites in Cyprus".

<sup>4</sup> Presentation of Georgios Koullapis, Ministry of Interior

m<sup>2</sup> are needed for each site. The decision is time-consuming, as spare places are rare and expensive. Planned are a number of 280 to 300 Green Points thorough the country. Citizen can bring up to 50 kg of C&D waste, glass, plastic, cooking oils, toxic waste, drugs and chemical etc.. The process of tendering for companies has been started recently and the first Green Points will be installed 2007. The *Green Dot Society Cyprus* has plans for install separate collection systems at household level.

Concerning the hazardous waste treatment, a treatment unit is proposed, covering the needs for storage, sorting, classification, neutralisation, controlled disposal of sludge and exporting. The designed study for that purpose is under execution and a decision for a specific site has been taken. Another threatening waste stream is asbestos waste and ways for proper disposal are still under investigation.

On the side of administrative capacities, the establishment of an *Environment Agency* and *Environment Inspectorate* as well as an *Research Institute* dealing with environmental technologies are expected to be founded in the future.<sup>5</sup>

### **Description of landfill visited in Cyprus**

The landfill for non-hazardous waste in the municipality of Paphos has started operation in 2005. The total capacity of the landfill is 1,363,000 m<sup>3</sup> with a yearly capacity of 60,000 t and an envisaged lifetime of 20 years. The landfill body consists of 4 cells, of which one cell is currently in operation.

A bottom liner and a leachate collection system is introduced. The leachate is treated within a waste water treatment plant using diverse osmosis together with other waste waters, e.g. from oil tank cleaning. The facility has a treatment capacity of 30-40 m<sup>3</sup>/day. The treated water is reused for irrigation. A collection system for landfill gas is introduced and a biogas plant with a capacity of 2,000 kW/d is planned.

The Acceptance Criteria Decision is implemented and the steps of basic characterisation, on-site verification and visual inspections seems to be implemented. Visual checks are weekly carried out by emptying a lorry load.

The technical standard of the site seemed to correspond to EU requirements. The following possible deficits of the landfill could be identified:

- No measures are taken to treat the mixed MSW prior to landfilling. The waste is solely compacted at the site. A MBA is planned and construction will start in 2008.
- Waste tyres are stored in as whole or shredded on the premises of the landfill.
- No control activities are carried out on behalf of the competent authorities as administrative capacities are low and administrative structures for conducting controls are missing (no existence of Environmental Inspectorate).

The old landfill mainly used for mixed MSW in Ayia Marinouda has been closed but not

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<sup>5</sup> Presentation of Dr Costas Papastavros (Ministry of Agriculture, Natural Resources and Environment (Environment Service)) and Georgios Koullapis, Ministry of Interior

recultivated. Measures are proposed including a top covering with an artificial liner to stop the infiltration of precipitation water. It is proposed to collect and treat the surface water, to introduce a monitoring programme and to collect the landfill body gas for further treatment. Furthermore a park and environmental centre are foreseen to be constructed on top of the landfill. The necessary financial volume is estimated at 2,5 million €.<sup>6</sup>

***Major problems and deficits identified by the workshop participants in the Cyprus***

- (1) Waste Management in general is given a low political priority in Cyprus. The human resources at the competent governmental level is very limited and local administration is low.
- (2) Only one landfill opened in 2006 is complying with the technical standards of the Landfill Directive. The opening of other landfills considering such requirements is only planned for 2010.
- (3) The institutional conditions for enforcement and control are not set into place. An Environmental Agency and Environmental Inspectorates do not exist yet
- (4) There exists 130 landfills uncontrolled or only poorly managed in Cyprus.
- (5) Prices of land are very high and finding space for either collection yards or landfills is difficult and longsome, especially because municipalities have to agree on the site chosen for those purposes.
- (6) Separated collection systems either on household or on community level are not in place. The Strategic Plan foresees for mid 2007 the installation of the first civic amenity sites (Green Points). The Strategy Plan does not foreseen measures for the separate collection of waste at household level.
- (7) The separate collection site for biowaste is only planned to operate in 2 to 3 years, until then separate collection will only be conducted within the civic amenity sites. Sufficient capacity for composting and bio-waste production is not in place.
- (8) For some recyclables economic ways for recycling has to be found as the amounts are comparable low and at the moment export is more sufficient than treating the waste within Cyprus.
- (9) Announcement of the installation of separate collection system, as the Green Dot Association Cyprus, using day media and press are insufficient. Citizens are not informed and aware that such systems are starting operation.
- (10) Due to the low amounts of specific waste streams collected amongst the citizen of the Island, waste recycling can often not carried out in a economical feasible way. Paper e.g. can only be recycled for the costs of 90 to 100 €/t. Techniques are not sufficient adapted. Even export is expensive as well; it seems to be the more economic option.

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<sup>6</sup> Guided tour at Paphos landfill and presentation of Nikos Gargoulas and Andreas Mentziz, EPEM SA

- (11) The selection of sites and the awarding of license and contracts are not always done by transparent criteria and corruption and bribing is seldom, but still a used practice.
- (12) The public resistance against new collection and landfill sites is high and the public is very aware of the issue. Especially the distance of landfills from residential areas seems to be a matter of concern.

***Examples of good practice identified as potential tools to improve the implementation and enforcement in Cyprus***

- (1) A very detailed survey for uncontrolled landfills was conducted using a GIS database and questionnaires. The study as well includes a risk assessment for the existing landfills resulting in a list of priority landfills for closure and recultivation measures.
- (2) The cleaning up of very small fly tipping sites (e.g. single refrigerators, old cars etc.) started in April this year following a plan by the Ministry of Interior.
- (3) Combined permits for landfills addressing together the IPPC and the Landfill Directive are issued to reduce administrative burdens.

***Priority activities for implementation of Landfill Directive requirements in Cyprus***

- (1) The level of planning is encouraging, anyhow the level of implementation, especially the installation of recycling and treatment facilities and the closure and recultivation process has to speed up to meet the given deadlines.
- (2) Environmental issues in general and waste management in particular has to be given a higher priority at the political agenda.
- (3) Enforcement structure, as Environment Inspectorates or an Environmental Agency have to be set into place.
- (4) The process of implementation of the “polluter pays principle”, the separate collection and the avoidance of waste have to be speed up. Furthermore the treatment capacity for separated waste streams has to be increased.
- (5) An active information policy and education projects have to be carried out to support the avoidance of waste and the separate collection amongst the society.

To increase the rate of separated waste streams, the separate collection systems have to include the household level collecting the major waste streams (e.g. biowaste and paper) directly at source.

**1.2 Participation List Cyprus / Nicosia // 25.-26.04.2007**

	<b>Name</b>	<b>Institution</b>	<b>Address</b>	<b>Phone</b>	<b>E-Mail</b>
<b>European Commission</b>					
1	Helmut Maruer	EU Commission, DG Environment	European Commission - Avenue de Beaulieu 5, 1049 Brüssel	+32 2 296 4599	helmut.maurer@ec.europa.eu
<b>Key Authorities</b>					
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11	Antonis Kourouzides	Ministry of the Interior	Dimostheni Severi, 1453, Nicosia Cyprus		akourouzides@moi.gov.cy
12	Solomos Solomou	Ministry of Health, Public Health Services	Kinyras 6, 1450 Nicosia, CYPRUS	+357 22 303182	akaris@mphs.moh.gov.cy
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14	Areti Pantelidou	Pharmaceutical Services, Pharmaceutical Inspection	Pharmaceutical Services 1475 Lefkosia	+ 357 22 40 71 27	apantelidou@phs.moh.gov.cy
15	Georghia Solomonidou-Christofidou	Planning Bureau	29 Vyronos St., 1409, Nicosia, Cyprus.	+357 22 602 841	gchristofidou@planning.gov.cy
<b>Association / NGOs</b>					
16	Costas Skoufaris	Refuse Collection Association	Sina Oros, Solea, Nicosia, Cyprus	+357 9965 7707	

17	Lena Machlovzarides	Union of Cyprus Municipalities	78 Rigainas Str, 1010, Nicosia, Cyprus	+357 224 45240	machlovzarides@ucm.org.cy
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19	Athos Agapitos	Cyprus Green Party	169, Athalassas Ave., 2024 Srovolos	+357 22 51 87 87	chrisemily@gmail.com
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21	Maria Monou	University of Cyprus			Monou@ucy.ac.cy
22	Laxis Demetriades	Cyprus Environmental Movement			eka.agroton@cynet.com.cy
23	Minas Mina	Cyprus Recyclers Association and Cooperators			recycl@cytanet.com.cy
24	Athanasiov Thanos	Minas Recycling Group			Dir@cytanet.com.cy
25	Pierantonios Papazoglov	Unit of Environmental Shedies			papazoglou.p@intercollege.ac.cy
26	Vassilis Vassiliades	Cyprus Chamber of Commerce			vasukus@ccci.org.cy
<b>Enterprises</b>					
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**1.3 Agenda Cyprus / Nicosia // 25.-26.04.2007***Wednesday, 25<sup>th</sup> April 2007*

9:30	Registration, Come together, including Coffee
Chairpersons: Demetris Demetriou (Ministry of Agriculture, Natural Resources and Environment); Nicole Seyring (BiPRO GmbH)	
10:00	Dr Lazaros S. Savides (Permanent Secretary, Ministry of the Interior) <i>Opening of the Workshop</i>
10:10	Elisabeth Müller / Nicole Seyring (BiPRO GmbH, Munich) <i>Welcoming of Participants and Introduction of the EU Project</i>
I. RELEVANT legislation AND STATUS QUO	
10:20	Nicole Seyring (BiPRO GmbH) <i>Overview on Relevant European Legislation – The Landfill Directive</i>
10:50	Helmut Maurer (EU Commission, DG Environment) <i>Status and Problems with the Implementation of European Legislation for Landfills – A European Perspective</i>
11:20	Dr Costas Papastavros (Chief Inspector, Environment Service Cyprus) <i>Waste Management Strategic Plan of Cyprus</i>
12:00	Dr Georghios Koullapis, (Chief Inspector, Ministry of the Interior) <i>Domestic, Construction &amp; Demolition Solid Waste Management in Cyprus</i>
12:30	Questions and Discussions
13:00	LUNCH BREAK
II. SPECIFIC ASPECTS OF IMPLEMENTATION	
14:00	Alexios Panagoulopoulos (ENVIROPLAN S.A.) <i>Risk Assessment and Evaluation of Uncontrolled Landfill Sites in Cyprus</i>
14:40	Dr Georghios Koullapis, (Chief Inspector, Ministry of the Interior) <i>Strategic Plan for the Green Points Collection in Cyprus</i>
15:10	Theofanis Lolos (ENVIROPLAN S.A.) <i>Integrated Waste Management Facilities, Treatment and Disposal at Larnaka and Ammochostos Regions – Case Studies for the Application of the EU Landfill Directive</i>
16:00	COFFEE BREAK
15:30	Nikos Gargoulas (EPEM S.A.) <i>IPPC and Waste Management: The Case Study of the Pafos Sanitary Landfill</i>
16:15	Polys Michaelides (Ministry of Agriculture, Natural Resources and Environment, Geological Survey) <i>Geological-Geotechnical Criteria for the Selection of Waste Disposal Sites</i>
17:00	Question and Discussions, Final Conclusion
17:30	END OF THE FIRST WORKSHOP DAY

*Thursday, 26<sup>th</sup> April 2007*

Chairpersons: Demetris Demetriou (Ministry of Agriculture, Natural Resources and Environment); Nicole Seyring (BiPRO GmbH)	
III. EXCURSION	
10:00	<i>Visit to Paphos Landfill for non-hazardous waste</i>
12:00	<i>Visit to Ayia Marinouda Landfill (closed landfill)</i>
13:00	END OF THE WORKSHOP