

Working Document
Management of Obsolete
Pesticides
Georgia



Food and Agriculture
Organization of the
United Nations



Content		
Part I	The assessment of the legal framework on the pesticides waste management in the Republic of Uzbekistan	4
Section I	General background information (International Treaties participation)	4
Section II	Regulatory framework on waste management	5
Chapter I	Political & legal framework	5
Chapter II	Specific laws and regulations that govern waste management	5
Chapter III	Institution(s) involved in waste management (focus on pesticides)	6
Section III	Analysis of existing national waste management legislation	
Theme 1	Scope	7
Theme 2	Definitions	7
Theme 3	Administrative and institutional structure	7
Theme 4	Licensing	7
Theme 5	Trans-boundary movement, import/ export	7
Theme 6	Economic initiatives	8
Theme 7	Transport	8
Theme 8	Labelling requirements	8
Theme 9	Packaging and containers	8
Theme 10	Emergency procedures	9
Theme 11	Disposal obligations	9
Theme 12	Incineration	9
Theme 13	Recording, monitoring, and reporting	9
Theme 14	Offences and penalties	10
Theme 15	Official controls and inspection	11
Theme 16	Research and development	11
Section IV	Information supplementing legal analyses – from other Experts	12
Section V	Disposal, Storage, Recycling and Recovery Facilities – practical information from other Experts	13
Part II	Technical assessment of the management of obsolete pesticides and POPs waste and soil contamination in the Republic of Uzbekistan	14
Section I	Benchmarking of current POPs management against international best practice	14
1	Institutional arrangements	14
2	Inventory	16
3	Environmental Assessment	17
4	Inventory and Environmental Assessment Management	18
5	Safeguarding	19
6	Storage and transport	20
7	Disposal	21
8	Containers	22
Section II	General overview of POPs and other hazardous waste data	23
Section III	Existing and planned treatment options for POPs pesticides, obsolete pesticides and related hazardous wastes, contaminated land	29
Section IV	Transportation logistics	31
Summary sheets on findings		32
References		32
Annexes		33
Annex 1	Terms of Reference for IHPA for Coordination of a Disposal Study for Obsolete Pesticides in the Former Soviet Union (only in English)	33
Annex 2	Draft Report of Waste Inventory on the Territory of Georgia, 2007, Support to the Ministry of Environment Protection and Natural Resources in Improvement of Environmental Planning Framework	35

This publication has been produced with the assistance of the European Union. The contents of this publication are the sole responsibility of IHPA and can in no way be taken to reflect the views of the European Union.

All IHPA reports can be found in the library of IHPA at <http://www.iHPA.info/resources/library>



Part I: The assessment of the legal framework on the Pesticides Waste Management in Georgia

Section I - General background information (International Treaties participation)

The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (general information regarding statute of adaptation, signing and ratification, Focal Point Institute)

Convention was ratified. There is the decree of Ministry of Health and according to this chemicals from Third annex of Rotterdam convention are banned for use and storage.

The Stockholm Convention on Persistent Organic Pollutants (general information regarding statute of adaptation, signing and ratification, Focal Point Institute)

Stockholm Convention (SC) :Georgia is a part of the Stockholm Convention. Country signed SC in May 23, 2001 and ratified in October 4, 2006. The aim of the convention is to eliminate POPs waste in the country and to reduce the use of POPs. There is no legal instrument for regulation specifically POPs chemicals.

The Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Disposal (general information regarding statute of adaptation, signing and ratification, Focal Point Institute)

Law on the Transit and Import of Waste within the Territory of Georgia, based on the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.

International cooperation

Were there any Bilateral, Multilateral or Regional Agreements signed in the field of pesticides waste management?

No

Does your country cooperate with other states in monitoring the effects of the management of pesticides wastes on human health and the environment (legal or political documents)?

N/A

Were there any guidelines or codes of practice developed in cooperation with other countries?

N/A

Section II – Regulatory framework on waste management			
Chapter I Political and legal framework	<p>General overview National Laws and regulations that govern hazardous waste (especially OP) management N/A</p> <p><i>Were there any policies or strategies at the national level (federal level) aimed at the prevention of pesticides waste generation and minimization of risks associated with pesticides waste?</i> Integrated in law on harmful organisms and according that farmers should minimise the usage using IPM strategy</p> <p><i>Is there a Hazardous Waste Classification System in the country? Are the pesticides waste included in such classification?</i> According to the Basel Convention – there is OECD and EC classification, which includes pesticides too.</p> <p><i>Are there any other national legislation and regulatory measures adopted by Government in order to implement and enforce the provisions of the Basel Convention?</i> N/A</p>		
	Sector	EU legislation	Country legislation
Chapter II Specific Laws and Regulations that govern waste management	<i>General waste management</i>	Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance), <i>OJ L 312, 22.11.2008, p. 3–30</i>	
	<i>Import / Export</i>	Regulation (EC) No 689/2008 of the European Parliament and of the Council of 17 June 2008 concerning the export and import of dangerous chemicals, <i>OJ L 204, 31.7.2008, p. 1–35</i> Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals Text with EEA relevance, <i>OJ L 201, 27.7.2012, p. 60–106</i>	<ol style="list-style-type: none"> 1. The law on the Transit and Import of Waste within the Territory of Georgia, based on the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal 2. The order of MoA No. 2-211 on Approval pesticides and agrochemicals storage Transportation, realization and usage rules according to the Law on “Pesticides and Agrochemicals” 3. Most of the chemicals including in the Stockholm Convention on Persistent Organic Pollutants annexes are regulated by the sub Law of 2005 (Law on “Licensed and Permit.” The sub law defines the category of the chemicals, which are limited to the Market Access. Chemicals and Chemical substances included in that category are subjects permitting

			following areas: Production, Transportation, import, export, transit and re export. The responsible institutions issue the permits named: Technical and Construction Instruction
	<i>Landfill of waste</i>	Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste, OJ L 182, 16.7.1999, p. 1–19	N/A
	<i>Incineration</i>	Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the incineration of waste, OJ L 332, 28.12.2000, p. 91–111	N/A
	<i>Shipment of waste</i>	Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste, OJ L 190, 12.7.2006, p. 1–98	Law on the Transit and Import of Waste within the Territory of Georgia, based on the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
Chapter III Institution(s) involved in waste management (focus on pesticides)	<p><i>Name/s of the responsible institution/s in this respect? What normative act does provide this?</i> N/A</p> <p><i>When did it begin to work/function? Indicate the financial assistance in this respect (foreign or strictly national/internal)?</i> Burying OPs in sarcophagus in uncontrolled polygon of Iagluja</p> <p><i>Who is responsible for identifying whether a waste is hazardous or not?</i> N/A</p> <p>Pesticides waste management planning <i>Who is responsible for developing and implementing pesticides waste management plans?</i> MENR is responsible</p> <p><i>Are there certain programs or activities of involving the home-owners in the collection and transportation of pesticides wastes?</i> No</p>		

Section III – Analysis of existing national waste management legislation	
Theme 1 Scope	<p><i>What is covered by the national law in relation to waste management, regarding pesticides waste?</i> or <i>What is covered by the national law in relation to chemical management, regarding pesticides waste?</i></p> <p>Pesticide waste is considered as Toxic waste and it is managed according to the new Waste Management Code. Transit and import of toxic waste is regulated by a specific law and on “Transit and Import of Hazardous waste on the territory of Georgia”. Procedures regarding the export of toxic waste are according to Basel Convention</p>
Theme 2 Definitions	<p><i>Is there a definition of hazardous waste, especially of pesticides waste in the national legislation?</i> N/A</p> <p><i>Does the legislation provide any criteria / procedure when pesticides become waste pesticides?</i> No</p>
Theme 3 Administrative and institutional structure	<p><i>Is there an institutional infrastructure on the national level on pesticides wastes?</i> N/A</p> <p><i>Name the responsible institution/s in this respect?</i> N/A</p> <p><i>When did it begin to work/function? Indicate the financial assistance in this respect (foreign or strictly national/internal)?</i> It will start soon, after approving the Law on Waste Management</p>
Theme 4 Licensing	<p><i>Are there permits / licensing for waste (pesticides waste) management activities required?</i> According the law of licences and permits the activities related to hazardous waste should be permitted.</p> <p><i>Does the legislation provide explanations what is mean the pesticides activities?</i> N/A</p> <p><i>Do the permits / licensing include activities as using, stocking, disposal of pesticides?</i> N/A</p> <p><i>Which authority/authorities are responsible for issuing the license for the disposal of pesticides wastes?</i> MENR of Georgia issues permit for companies, which are responsible for disposal hazardous waste.</p> <p><i>Are there provisions for disposal facility licensing? Are there any specific requirements?</i> Requirements were not elaborated but if someone will decide to store the hazardous waste, then it is necessary to get a permit for such activity</p>
Theme 5 Trans-boundary movement, Import / Export	<p><i>What are the Transboundary Movement Reduction Measures taken at the national level so far?</i> Transit and import of hazardous wastes are banned</p> <p><i>What is the procedure of notification for the Transboundary Movement?</i> Export of waste is implemented according to the Basel Convention</p> <p><i>Name the international standards (ISO) adopted at national level.</i></p>

	<p>N/A</p> <p><i>Who is responsible for notifying the Transboundary shipment of hazardous (pesticides) waste destined for disposal?</i> MENR is responsible according to Basel convention</p> <p><i>Are there any restrictions on import, export and transit of hazardous (pesticides) wastes?</i> Import and transit of hazardous waste are banned according to the national law – The Law on Transit and Import of Hazardous Wastes on the Territory of Georgia (1997).</p> <p><i>In what cases is the authorization refused? How is this reflected in the national legislation?</i> No</p> <p><i>Any specific national legal provisions clearly prohibiting export of pesticides wastes?</i> No regulation about export – it is regulated according Basel Convention</p>
<p>Theme 6 Economic Initiatives</p>	<p><i>Does the legislation on waste management and chemicals provide the following principles: “polluter pay”, Waste Prevention Principle, Substitution Principle and Elimination of Toxic Substances, Principle of Internalizing Costs?</i> This principle is in the frames of the law on environmental protection which is one of the main ones in waste Management</p> <p><i>Does the legislation provide any economic facilities / requests for the minimization of hazardous waste, especially the pesticides waste?</i> N/A</p>
<p>Theme 7 Transport</p>	<p><i>Do there exist regulations regarding the transportation of hazardous (pesticides) wastes (transportation time, place, route, transported quantity, etc.)?</i> No</p> <p><i>Does the legislation provide the minimum guidelines regarding transportation of waste pesticides?</i></p> <p><i>Have there been approved any duties in respect of carriers?</i> No</p> <p><i>Are there special units that take care of the transportation of the hazardous (pesticides) wastes or this task is fulfilled by simple legal persons that collects the solid wastes in villages/towns and have concluded contracts with local authorities?</i> There is no specific regulation about transportation of hazardous pesticides but there is the regulation on transportation of dangerous goods in the country and if a company wants to transport hazardous waste then it should have a license for transportation of dangerous goods</p>
<p>Theme 8 Labelling requirements</p>	<p><i>Does the legislation provide requests for package and labelling of hazardous waste, including (pesticides waste)?</i> No</p> <p><i>If, yes does the requests for package and labelling of hazardous waste are according with the international and European standards in force?</i></p>
<p>Theme 9 Packaging and containers</p>	<p><i>Does legislation provide any requests regarding materials, which can be used for packaging or re-packaging of pesticides waste?</i> No</p>

	<p><i>Is the requirement of proper management of containers that contain pesticides waste in order to minimize the potential for release, and to ensure that the wastes are packaged in a manner consistent with the requirements for transportation stipulated in the legislation?</i></p> <p>No</p>
Theme 10 Emergency procedures	<p><i>Does legislation provide any requests regarding the spill response and emergency procedures?</i></p> <p>No</p>
Theme 11 Disposal obligations	<p><i>Does legislation provide any requests regarding specific obligations in relation to disposal?</i> There is no regulation on Disposal for toxic waste – but it is the case when MENR gives the instructions how to perform the disposal activities in case of emergencies.</p> <p><i>Does legislation provide any requests regarding the disposal procedure?</i> No</p> <p><i>How does the disposal of pesticides waste take place? Is it a uniform procedure or it depends on each case? What the legal act provides such request?</i> It depends on each case and on the project</p>
Theme 12 Incineration	<p><i>Is incineration allowed according to the national legislation? What are the categories of waste that can be incinerated?</i> There is no regulation on incineration, but there are facilities which are located on the landfill where medical wastes are burnt</p> <p><i>Who is responsible for issuing a permit for incineration? Based on what requirements?</i> In the framework of the law on Air the incineration process is partially regulated, as there is an emission. MENR is the responsible body to regulate that issue.</p> <p><i>Is there a detailed description of distribution and disposal of the waste, including waste composition that helps determine the percentage of waste suitable for incineration?</i> N/A</p>
Theme 13 Recording, monitoring, and reporting	<p>Recording <i>Are there requirements that on every site where tipping of pesticides waste takes place that waste is recorded and identified?</i> In the framework of the new Waste Management Code, the organisations will be obliged to declare the amount of the waste they are producing.</p> <p><i>Who has the responsibility of access to Material Safety Data Sheets (MSDS)?</i> National Food Agency (MoA) is responsible</p> <p>Monitoring <i>Provide general background of how does the monitoring take place for various hazardous wastes, according with national legislation.</i> No</p> <p><i>Who is responsible for Hazardous waste monitoring, including the pesticides waste?</i> Management, Monitoring and elaboration of the strategy for toxic waste including Obsolete Pesticides fall under responsibilities of Ministry of Environment of Georgia. But as there is no law on waste management all the activities are not yet in the process of implementation.</p>

	<p><i>Does the national legislation provide requests of the periodical reporting system on the national level regarding the hazardous wastes, including pesticides waste? What are the responsible institutions in this respect?</i> No</p> <p><i>Do the non-state actors have a free access to the information on pesticides wastes, which is stocked by the relevant public authorities?</i> No</p> <p><i>What is the situation with access to information to the general public in case if pesticides waste is managed by a private entity?</i> No</p> <p><i>Does the national legislation provide requests regarding monitoring of the construction and demolition of pesticides waste sites?</i> No</p> <p><i>What is the legal request regarding medical pesticides Waste monitoring?</i> No</p> <p>Reporting <i>What kind of legal persons (enterprises) must report to the relevant authorities on the hazardous wastes (including pesticides waste) registered during its activities?</i> The new regulation will be elaborated according to new Waste Management Code</p> <p><i>Is this kind of report compulsory?</i> Yes, it will be</p> <p><i>What are the consequences in case of non-reporting?</i> High penalties will be given</p>
<p>Theme 14 Offences and penalties</p>	<p><i>Is there being set up a certain legal frame regarding the liability (criminal/civil) of the carrier in case of the non-fulfilment of the already established duties?</i> No.</p> <p><i>Any legal (criminal, civil or administrative) measures to prevent and punish illegal import/export of pesticides wastes?</i> Import of toxic waste in Georgia prohibited by law.</p> <p><i>Are there national legal provisions regarding the illegal traffic of pesticides wastes?</i> If such case will appear the custom service will confiscate the hazardous materials, but thereafter will generate the problem that there is no facility where they can be stored (till present there have been no cases where the owner of the materials were obliged to pay for final disposal).</p> <p><i>Are there any specific articles in the national Criminal/Administrative Codes or Environment Protection Law regarding punishment of illegal traffic?</i> N/A</p>

Theme 15 Official controls and inspection	<p><i>Are there inspections made at accumulation areas to ensure that all spill contingency materials are maintained in working order, to ensure that containers are not deteriorating and maintain their integrity, and to identify spills or releases? If yes, what is their periodicity?</i></p> <p>No.</p> <p><i>Whether the inspections are documented on inspection logs and the logs are maintained as part of the facility operating record or not?</i></p> <p>No</p>
Theme 16 Research and development	<p><i>Whether Government, educational institutions and private industry cooperate to support a broad range of research, development, training, and educational activities designed to create and diffuse knowledge and professional expertise on pesticides waste minimization or not?</i></p> <p>No.</p> <p><i>Has your country developed pesticides waste prevention programmes? If any, please specify.</i></p> <p>No.</p> <p><i>Has there been noticed an improvement after their implementation/ results achieved?</i></p> <p>No.</p> <p><i>Any statistics/national reports proving the reduction of pesticides waste generation?</i></p> <p>No.</p> <p><i>Are there on the national level organized special trainings for persons involved in the management of pesticides wastes? In case of existence of such trainings what kind of method is mainly used – formal or on-the-job? What do the training courses cover in this domain in your country (Ex: topic, categories of involved persons, the used sources during the educational process, etc.)?</i></p> <p>No</p>

Section IV – Information supplementing legal analyses – from other experts

Topic 1 – Pesticides Manufacturing Industry

Are there pesticides manufacturers in the country?

No

What measures are taken by agrochemicals industries in accordance with the national legislation in regard to hazardous waste, including pesticides waste?

N/A

Does the legislation request measures to be-taken by industries/waste generators any measures in order to reduce or eliminate pesticides waste generation?

N/A

Topic 2 – Management of Obsolete Pesticides Stocks

Does the legislation provide request, conditions/methods for carried inventory/storage/disposal activities regarding obsolete stocks? Who carried them, and what are the results? Provide the list of activities in chronological order.

GEF/UNDP project – 2003-2005 – initial inventory – 49 sites were identified (was used UNDP form for Inventory). Project was implemented by MoE of Georgia.

MKI Project 2006-2008 – Eliminate acute risks from Obsolete Pesticides in Kakheti region- 26 sites were Inventoried; 6 priority sites were repacked and stored according to FAO standard. They were transported to Sarcophagus at Iagluja Polygon. Project was carried out by NGO MKI in collaboration with MoE Georgia.

State Project - 2008-2010 Repackaging of obsolete pesticides in Georgia –OP were repacked from 19 priority sites of deferent regions of Georgia and were buried at Iagluja Mountain in special sarcophagus. – project was implemented by MoE Georgia and LTD Qimiani and LTD Tbilisvisi selected through tender.

EECCA mini grant project – 2012 — 15 sites were inventoried according to FAO standard by LEPL food Agency – MoA. 5 tonnes of OP were repacked on Emergency site near to Kinder Garden (Village Mejevi).

GEF UNDP project -2011-2014 the assessment of Iagluja Polygon and 230t of OP were repacked and sent for destruction

Topic 3 – Methods used for treatment of pesticides wastes

What are the methods used for the treatment of pesticides wastes?

Transport to Europe for destruction

Section V – Disposal, Storage, Recycling and Recovery Facilities – practical information from other Experts

Topic 1 – Disposal facilities

Are there any disposal facilities in the country? What kind of legislation provides the activities of such facilities?

There is no final disposal facility in the country.

Are there permanent facilities created for the disposal of pesticides wastes or there are used ad-hoc methods and facilities in this respect?

No

Topic 2 – Storage facilities

Are there any storage facilities of pesticides waste facilities in the country?

Whether there are any pesticides waste final storage facilities constructed and operated in accordance with the environment standards?

No.

Does the legislation establish different rules for storage hazard waste? Please provide the differences.

Not yet, this will be elaborated

Topic 3 – Recycling facilities

Are there any recycling/re-use facilities in the country?

The national regulation provides regarding principles, conditions and methods of RRR waste

Topic 4 – Recovery facilities

Are there any disposal/destruction facilities for pesticides wastes or recovery facilities (especially for liquid and high concentration toxic)? Please offer examples?

No.

In case if the country does not have such facilities what are the methods or actions used by the national authorities to fulfil this task?

Is there any foreign financial assistance? Are there any mutual/bilateral agreements with international organizations or states that offered its assistance in this respect?

Government of Georgia will in such cases ask International donor organisations (like UNDP, FAO, UNEP) to provide support in the framework of ongoing projects

Part II. Technical assessment of the management of obsolete pesticides and POPs waste and soil contamination in Georgia

Section I: Benchmarking of current POPs management against international best practice

1. Institutional arrangements

Responsibilities in the country

Inter-ministerial Steering Committee for Obsolete Pesticides established?

Yes.

If yes, when is it established, and how many times does it meet per year?

In 2003, meets when it is needed

National Body Representation	Responsible Ministry	Contact person (name/contact details)	Activity and outcome	Reference Nr /Annex if needed
SAICM focal point	Ministry of Environmental Protection and Natural Resources of Georgia (MoE)	Department of International relation – Nino Tkhilava Phone: +995 32 72 50 email: nino.tkhilava@moe.gov.ge www.moe.gov.ge	National Chemicals Profile (2010)	
GEF Focal Point /Coordinating Unit	Ministry of Environmental Protection and Natural Resources of Georgia	Mr. Elgija Khokrishvili Khatuna Gogaladze, Minister of Environment +995 32 72 00 00 email: elgija.khokrishvili@moe.gov.ge www.moe.gov.ge	Coordination of all GEF projects	GEF country profile
Stockholm Focal Point /POP Centre	Ministry of Environmental Protection and Natural Resources of Georgia	Mr. Alverd Changseliani – Head of the Department of Waste and Chemical Management tel.: +9953-272-72-27 email: a.changseliani@moe.gov.ge	Convention Ratified (2006), NIP (2011)	Country profile for SC
Basel Focal Point	Ministry of Environmental Protection and Natural Resources of Georgia		Implementation of the provisions of the convention. Notificatiois for the shipment of POPs	BC country profile
Rotterdam Focal Point	Ministry of Environmental Protection and Natural Resources of Georgia		Implementation of the provisions of the convention Registration of new pesiciides and trade	Roterdam Convention Country Profile

FAO National Focal Point	Ministry of Agriculture	Mr. Mamuka Meskhi tel.: +995 577 40 30 22 email: meskhi@fao.org	FAO GE	FAO
EU/other project implementation units for hazardous waste	Delegation of the European Union to Georgia	Delegation of the European Union to Georgia. 38, Nino Chkheidze St., Tbilisi, 0102 Georgia. tel.: (995 32) 294 37 63/294 37 69 fax: (995 32) 294	EU funded projects	EU Delegation official documents
Inter-departmental committees	Ministry of Environmental Protection and Natural Resources of Georgia	SAICM Working Group- CENN Nino Shavgulidze Phone: +995 32) 275 19 03 Email: n.shavgulidze@cenn.org	Assessment of chemical management issues	Governmental Decision and Ministerial Order
GEF UNDP project on Polygon	Ministry of Environment	Mrs. Lali Tevzadze project PMU Phone: +995591 70 10 92 Email: lali.tevzadze@undp.org Tbilisi Faliashvili 15	Assessment of Iagluja Polygon 230 t OP repackaging and transportation	Governmental Decision and Ministerial Order
National waste focal point	Ministry of Environmental Protection and Natural Resources of Georgia	Waste management		
PRTR Protocol	Ministry of Environmental Protection and Natural Resources of Georgia	Nino Shavgulidze CENN Phone: +995 32) 275 19 03 n.Shavgulidze@cenn.org	PRTR protocol 2011	2011 – PRTR protocol
Other information:				

<p>2. Inventory If references needed please provide in the concerned Annex</p>
<p>2.1 National/regional inventory updated <i>(latest update and methodology, e.g. National guideline/NIP/World Bank/UNEP/FAO toolkit)</i> NIP/UNDP 2006, MKI 2006-2008 FAO National Inventory updated – 2014</p>
<p>2.2 Data sources and existing inventories (only Obsolete Pesticides) <i>(who, what, when, how, accuracy, validity?)</i> Reports available. National wide Inventory was carried out in Georgia. All data validated and available in PSMS (FAO)</p>
<p>2.3 First National Implementation Plan (NIP) <i>(e.g. responsible, year, no of sites, estimated tons, desk study/field surveys (% of total locations), POPs pesticides, PCB and Dioxins)</i> GEF UNDP project – 2006 – 49 sites, 3,000 tonnes of OP. Estimated PCBs – 400 tonnes according to the NIP 2011</p>
<p>2.4 NIP update (specifically on new POPs) <i>(e.g. responsible, year, no of sites, estimated tons, desk study/field surveys (% of total locations))</i> Was not updated</p>
<p>2.5 UNITAR Chemicals Profile <i>(e.g. responsible, data on organic hazardous waste available?)</i> National Chemical Profile, MoE, 2010 http://csrdg.ge/upload/editor/file/qim-profil/Georgia%20chemicals%20profile_eng-bolo.pdf</p>
<p>2.6 National Pesticides/POPs inventory <i>(e.g. responsible, other inventories independent from Convention frameworks)</i> MoE, MoA – FAO toolkit – PSMS</p>
<p>2.7 FAO PSMS inventory</p> <ul style="list-style-type: none"> - Inventory Implementation - Inventory training – 2006 Inventory first training in the frame MKI project; 2010 Inventory training was carried out in the frame GEF financed FAO EECCA project - Inventory work plan – Inventory plan was elaborated for inventory in Kakheti region and 2014 FAO Inventory - Inventory field visits and data collection – during the last 3 years was organised field visit in the frame of EECCA project and FAO EC-040 project - Inventory data entry into PSMS – inventory data was uploaded in the frame of FAO EC-040 project - Inventory data validation – stocks and contaminated sites - in the frame of FAO EC-040 project 2014 – 22 sites, 150 t of obsolete pesticides are on sites - Rapid environmental assessment (REA) data of contaminated soils - was implemented in the frame of FAO-040 Project by Black Smith Institute
<p>Other information: Other hazardous wastes than Obsolete pesticides: 2007 inventory mentioned that there are no changes and historical wastes still remain a problem. Taking into account the tendency of increasing the number of companies after 2007 an increase by 15% (approximately 2% per year) of the amount of waste generated can be estimated. If we take into account these conditions (total amount of hazardous</p>

waste 908,740 tons in 2007) the annually generated hazardous waste could be 18,175 t (estimation was made by Head of Department of Waste and Chemical Substances Management), which leads to total amount 1,017,789 t in 6 years. According to the inorganic waste generated by the mining companies these are deposited in mines without taking care of safety storage. According the inventory data on the territory of the former car-factory in Kutaisi 400,000 tons of sludge of different solvents and paintings are deposited. 44 m³ sludges are from petroleum stations and contain mostly contaminated materials with oil/petroleum. Additionally, according to the inventory information, 240 l per year of used oils are used for heating the green houses. Cyanide wastes (approx. 5 tons) are kept in non-corrosive metal cubes on the territory of car-factory of Kutaisi. Generated wastes like plastic bottles and others are disposed in landfills. There is a new tendency to collect plastic bottles, paper and glass. However, there is still no official information about processing companies

3. Environmental Assessment

If references needed please provide in the concerned Annex

3.1 National requirements

EIA= Environmental Impact Assessment etc.) + national experience

There is national law on EIA

3.2 International experience

non-FAO – WB, UNDP CESA etc

Environmental impact assessment was carried out for Iagluja Polygon in the framework of UNDP project

3.3 Capacity government and private to develop

Are there consultants or government trained people?

There is a list of the consultants and companies approved by the Ministry of Environmental Protection and Natural Resources of Georgia that are specialised on work with EIA documents

3.4 FAO stages in Environmental Assessment (EA) and Environmental Management Plans (EMP) experience from EMTK v 3

(Environmental Management Tool Kit for Obsolete Pesticides)

In the frame FAO/EC 040 project the people were trained to apply the process of EA and EMP in the frame of EMTK v3

Other information:

<p>4. Inventory and Environmental Assessment Management If references needed please provide in the concerned Annex</p>
<p>4.1 Responsible Organisation for Inventory and Assessment in place and operational Governmental organization – Waste management assessment and Inventory is the responsibility of Ministry of Environmental Protection and Natural Resources of Georgia</p>
<p>4.2 All managers/coordinators/Field people in place and operational There is lack of resources at the Ministry of Environmental Protection and Natural Resources of Georgia</p>
<p>4.3 All Field teams established and operational Field team from NGO “Ecolife”, who were trained within MKI International project are in place</p>
<p>4.4 All Inventory data management people in place and operational In the Ministry of Agriculture there are trained persons. But trained staff from Ministry of Environmental Protection and Natural Resources are not in place</p>
<p>4.5 National/Regional Inventory updated PSMS data are available for Georgia</p>
<p>4.6 National Pesticides/POPs Inventory Established Obsolete Pesticides Inventory was completed, but PCB and new POPs are not inventorized yet</p>
<p>4.7 Contaminated Sites Register No registration of contaminated sites is available for Georgia</p>
<p>Other information: Preliminary inventory revealed – 3,057 tons of obsolete pesticides in total out of which 357 tons in former warehouses of Soviet type kolkhoz and 2,700 tons in toxic waste polygon – Iagluja Mountain. According the lab analyses performed during 2003-2006 within UNDP project 60-65 % of the chemicals are POPs. Inventory was not carried out according the FAO field forms. There were forms elaborated by UNDP expert and were the places and approximately amounts identified. (Partially followed SBC standard.) In Georgia disposal of obsolete pesticides remained at the same level as in '70s. International BAT/BEP Practice is not well known. There are well known cement kilns (Heidelberg) but they are not interested to work with the hazardous waste, as they will need additional upgrading and specific licensing.</p> <p>Regarding disposal facilities there are experiences in Georgia for storing the hazardous waste. In 70th the so-called Iagluja Polygon considered as soviet type of final disposal area for hazardous waste, especially for banned pesticides, was established. After the collapse of Soviet era this area was abandoned and hazardous substances up to 3,000 t remained without any protection, no fencing no guards.</p> <p>Intermediate collection center for collected OPs was reconstructed in 2007 in the frame of Milieukontakt international project “Eliminate acute risk from Obsolete pesticides in Kakheti region”. 230 tons of Obsolete Pesticides with contaminated materials and soil were stored in a renovated and an upgraded warehouse till 2010. During the Milieukontakt project all project activities were organized according the FAO requirements. Inventory, repackaging and storage were carried out with instruction and involvement of TAUW Consultants and were in line with SBC guidelines.</p> <p>In 2010, 230 tons of repacked obsolete pesticides from the renovated store and 300 t of contaminated soil from old warehouses were transported to Iagluja Polygon – former toxic waste site. In '70s, 2,700 t of banned pesticides were buried in this polygon</p>

5. Safeguarding

If references needed please provide in the concerned Annex

5.1 National projects

2 state projects were implemented in 2007-2010 in Georgia –110 t of OP were repacked at 19 sites in different regions of the country

5.2 International projects

Safeguarding according to FAO standard was carried out in Kakheti region – 2006-2008 in the frame of MKI Project
UNDP project – Assessment of the situation in Iagluja Mountain and destruction of 230 t of OP buried on the Site in 2011-2014

5.3 FAO projects

FAO/EECCA project was implemented during 2009-2012.
FAO/EC- 040 project is an on going project 2011-2015

Other information

UNEP/WHO DDT project will repack 100t of Obsolete Pesticides (Mainly DDT) and demonstrate alternatives of DDT for vector born diseases. Current projects are UNEP/WHO DDT project and UNDP Iagluja Dumpsite project

<p>6. Storage and transport Packaging/Containerization/Storage/Transportation</p>
<p>6.1 Transport regulations <i>In-country transportation planning competences available?</i> <i>(e.g. ADR/IMDG/RID/DOT compliant, route planning, scheme, vehicle inspection scheme, certified local contractors)</i> Georgia is the member of ADR</p>
<p>6.2 Driver regulations <i>Driver registration</i> Licensing is in place</p>
<p>6.3 Storage regulations <i>(Seveso – off and on site emergency planning)</i> According to the new regulation for storage of toxic waste a license for such activities has to be obtained. No regulation yet functioning</p>
<p>6.4 Storage capacity Private or government, collection centers available, (e.g. responsible, no of suitable collection centers identified) No</p>
<p>6.5 Incident reporting and accidents No</p>
<p>Other information Hazardous waste transboundary movement is regulated by Georgian law on transit and import of waste. Experience of transportation of Hazardous waste during BP pipeline contract was made by the UK Company VEOLIA. Waste can be transported by road till the harbor and then be shipped via Black Sea to the EU with further access (by road, train or water) across the region to treatment facilities. The only treatment option in the region is the transport of waste for destruction to the EU. Transportation is possible by road and sea according the guidelines on transboundary movements of the Basel and the MARPOL convention. A future option could arise if the Azerbaijan government allows import of hazardous waste from Georgia and other neighbouring countries in the future, and if the present capacity: the Balakhany municipal wastes incinerator and the thermal desorption facility at the Serenja landfill of BP in the country can be used. If permission would be given a proper assessment if these installations could be made in order to assure that they fulfil international requirements ESM for treatment. Under the present circumstances, the capacity of the competent authorities to reveal problems related to chemical substances is very limited. Till present, they have revealed just several evident “hot spots”, which are industrial, agricultural and military wastes accumulated in the Former Soviet period. Namely:</p> <ul style="list-style-type: none"> - 4-9% arsenic containing waste amounting to 100 thousand tons in the Villages of Tsana and Uravi; - 3,000 tons of obsolete pesticide and agrochemicals wastes accumulated on hazardous waste polygon in Jagluja; - About 2,000 tons of different waste left behind on the territories of former soviet military bases

7. Disposal
<p>7.1 National experience – no experiences for final disposal.</p> <p>Technology selection</p> <p>Transboundary transport under Basel Convention BP pipeline project had obtained experiences for exporting of hazardous waste for destruction. Veolia was the international contractor.</p> <p>National transport</p> <p>Disposal capacities in Country <i>(e.g. type and no of disposal facilities,(landfill/destruction) permits, quality and standards applied (national/international), ownership (public/private), contact details)</i></p> <p>Project examples <i>(e.g. name of the project, tons, year, landfill or destruction facility, responsible authority (if possible, contact details))</i></p>
<p>7.2 International experience UNDP Project is currently going to send for 230t Obsolete Pesticides destruction to one of the treatment plants in the EU.</p> <p>Technology selection Combination Tredy/Polyeco company. Tredy has several hazardous waste incineration plants in France</p> <p>Transboundary transport under Basel Convention Yes</p> <p>National transport</p>
<p>7.3 Experience with FAO Not yet</p>
<p>Other information:</p>

8. Containers
8.1 National experience No experiences on container management
8.2 International experience There is a priority on contaminated land and container management (confirmed during the meetings with MoE and MoA). E.g. Priorities on containers in NIP Action Plan
8.3 FAO supported plan <ul style="list-style-type: none"> - National wide Inventory - Repackaging and disposal of 150t OP - Assessment of contaminated land - Elaboration of Container management strategy
8.4 Amount and type of empty containers/packaging materials? <i>(e.g. materials recycling in types, amounts)</i> No data are available
8.5 Collection Centres for empty containers? N/A <i>(e.g. number of centres, responsibility, compliant with FAO guidelines)</i> None
Other information Empty containers problem in Georgia is obvious and has high importance, as this area is not regulated. According the information from Ministry of Agriculture (MoA) there is the problem as it has been found that these containers are used for drinking water of other foodstuff. There is no information about amount of containers in the country. The only case that was reported by the MoA is the presence of 70 units of 200 l metal drums with "Dimilin" that were sent in 2011 for locust treatment. An inventory of these empty containers should be made and recommendation should be made to develop an official governmental regulation for management of empty containers

Section II: General overview of POPs and other hazardous waste data				
Info from Ministry of Commerce or Ministry of Industry or Ministry of Environment/Natural Resources and Ecology)				
Category	Explanation to figures	Annually produced waste	Legacy waste	References/ Annexes
		volume, tonnes/year	volume, tonnes	
I. Summary for all waste streams			N/A	
A. Agricultural chemical waste (see also parts already been filled in the benchmarking section)				
1. Obsolete pesticide waste			150	Inventory of OP in Georgia
2. POPs pesticide waste: <i>aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, hexachlorobenzene (HCB*), mirex, toxaphen, chlordane, alpha hexachlorocyclohexane (a-HCH)¹*, beta hexachlorocyclohexane (b-HCH)*, lindane, pentachlorobenzene*</i>	Mixed DDT in Kvareli site		100	Inventory of OP Georgia
3. New pesticides waste (incl. fake (counterfeit) pesticides)			No info	
4. Empty containers waste			No info	
5. Contaminated sites				
a. Burial sites (polygons)	<p>1 polygon 4 ha</p> <ul style="list-style-type: none"> Waste lagluja polygon: POPs pesticides and mixed with other chemicals For old Storages: 250 t. See under 1. OPs and 2. POPs pesticide waste: Total OPs-POPs waste: <p>Contaminated soils:</p> <p>Strongly contaminated topsoil: 4,800</p> <p>Strongly contaminated subsoil: 2,640</p> <p>Slightly contaminated soil: 20,080</p> <p>Total: 27,520</p> <p>These quantities are listed under B.2</p>		<p>6,320</p> <p>6,450</p> <p>4,800</p> <p>2,640</p> <p>20,080</p> <p>27,520</p>	New updates received from UNDP Project of Tauw Report. 28 October 2014
b. Storage sites	22 sites			
c. Usage sites (airfields, formulation plants etc.)			N/A	

¹ HCH is often used in Russian as HCCH

B. Industrial chemicals				
<p>1. POPs <i>a. PCBs, HCB*, hexabromobipheny (HBB), hexabromodiphenyl ether and heptabromodiphenyl ether, pentachlorobenzene*, perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride, tetrabromodiphenyl ether and pentabromodiphenyl ether (penta-BDE)</i></p> <p><i>b. brominated industrial chemicals</i></p> <p><i>c. Fluorinated industrial chemicals perfluorooctane sulfonyl fluoride (PFOS) and its salts and perfluorooctane sulfonyl fluoride (PFOSF)</i></p>	<p>The second priority was given to equipment and wastes containing polychlorinated biphenyls (PCBs). In the course of primary inventory, the relevant institutions were inspected; more than 5,000 capacitors and 15,000 transformers were discovered. An inspection of part of the capacitors and transformers showed content of PCB-contaminated oils. It should be mentioned that it will be necessary to carry out additional inventory of capacitors and transformers at a country-wide scale, in order to precisely identify the amount (volume) of PCB-contaminated oils. (According to the preliminary inventory of PCBs was identified):</p>		<p>Approx 500-600</p>	<p>NIP Georgia</p>
<p>2. Contaminated sites e.g. Contaminated containers, transformers and equipment</p>	<p>22 sites are contaminated with average 2 ha each. So a first total estimate of 44 ha contaminated land can be made.</p> <p>The Government of Georgia considered that 18,000 m³ land is contaminated in Iagluja polygon with POPs chemicals. There is no information about other possible contaminated lands and there is no strategy of treatment in whole territory of Georgia. See also under A 5.a</p> <p>For this part only the amount of contaminated soils at the Iagluja polygon has been included here:</p> <p>Highly contaminated topsoil Highly contaminated subsoil Slightly contaminated soil Total contaminated soil: Therefore it is impossible to give the total quantity of contaminated land/sites</p>	<p>4,800 2,640 20,080 27,520</p>	<p>No info</p>	
<p>3. Oily wastes e.g. non-POPs production waste, lagoons of sediments and sludges, solvents, waste lubricating oils</p>	<p>During the assessment of the inventory data, the following amount of wastes were found that in the category <i>Chemical industry and processing waste</i> that includes inorganic, organic and other type of waste. Please see the following type of wastes in the various regions:</p> <p>Adjara Region Batumi – LTD Oil Treatment factory – Oil Sludge – 9,500t; Acid Tar – 10,000 t. AdjaraAvto Trans. Company – used oil – 1.5 t. Company “Transformars and electrical equipments” – Obsolete chemicals – 2 t Batumi railway locomotive depot - used oil –</p>		<p>Some indications on regions but no country overview possible</p>	

	<p>3 t. LTD Ship construction company – Obsolete chemicals – 60t No.7 Road construction Unit – USD oil – 2 m³</p> <p>Guria and Samegrelo Foti – LTD Chanel Energy – Water contaminated with oil products – 150 t Kutaisi Car construction factory – waste of clinic process – 5 t (in 2 boxes). Kvemo kartli – 13, 034 t</p>			
<p>4. Inorganic wastes <i>Solid, liquid and sludge inorganic waste (often in many countries with mining activities and metal industries)</i></p>	<p>Tbilisi/ Rustavi Tbilisi Metro - Luminescence Lamps – 68,100 units Rustavi Company Energy Invest –waste – 2,776 t; Old inorganic waste – 100,000 t Imereti inorganic mining waste – 768,008 t In Annex 2, Table 2: under 7. Mining and mineral processing wastes –11,777,300 t. However, in this table none of this waste has been classified as hazardous waste</p>		Some indications on regions but no country overview possible	
C. By-products				
<p>1. Unintentional POPs <i>Dioxins: Polychlorinated dibenzo-p-dioxins (PCDD) and Polychlorinated dibenzofurans (PCDF) and PCBs. <u>Indicate sources like:</u></i></p> <ul style="list-style-type: none"> - Pulp and paper production, - Chlorinated inorganic chemicals, - Chlorinated aliphatic chemicals, - Chlorinated aromatic chemicals, - Other chlorinated and non-chlorinated chemicals, Petroleum industry, Textile production, Leather refining <p><i><u>Contaminated Sites and Hotspots:</u> e.g. Sites used for the production of chlorine, Production sites of chlorinated organics, Application sites of PCDD/PCDF containing pesticides and chemicals, Use of PCB, Use of chlorine for production of metals and inorganic chemicals, Waste incinerators, Metal industries, Fire accidents, Dredging of sediments and contaminated flood plains, Dumps of wastes/residues from source</i></p>				

<i>groups, Kaolin or ball clay sites</i>				
2. a-HCH*, b-HCH* (being generated from the Lindane production) and pentachlorobenzene*				
3. HCB* generated from PVC production and rubber tyres production				
D. Petroleum wastes Tarry and bituminous wastes, still bottom waste (from Distillation plants)	<p>2007 inventory mentioned that there are no changes and historical wastes still remain a problem. Taking into account the tendency of increasing the number of companies after 2007, an increase of 15% (approximately 2% per year) of the amount of waste generated has been estimated. Based on this assumption, and the total amount of hazardous waste 908,740 tons in 2007, the annually generated hazardous waste would be 18,175 t (this estimate was made by the Head of Department of Waste and Chemical Substances Management), the total amount of waste generated in 6 years would then be 1,017,789 t. According to the inorganic waste generated by the mining companies are deposited in mines without taking care of a safe storage method. According the inventory data due on the territory of the former car-factory in Kutaisi 400,000 tons of sludge of different solvents and paintings are deposited. 44 m³ sludges are from petrol stations and contain mostly contaminated materials with oil/petroleum. Additionally, according to the inventory information 240 l per year of used oils are used for heating the green houses. Cyanide wastes (approx. 5 tons) are kept in non-corrosive metal cubes on the territory of car factory of Kutaisi. Waste that is generated like plastic bottles and others are disposed in landfills. There is a new tendency to collect separately plastic bottles, paper and glass. However, there is still no official information about companies that are able to treat the selected materials</p>		1,017,789	
E. Inorganic wastes Liquid and sludge inorganic waste Solid inorganic waste				
F. Health Care Risk Waste	Analyses of the medical waste inventory materials submitted by the medical institutions of Georgia demonstrated that, as a whole, these			Annex 2

	<p>medical institutions (including those of Tbilisi) generate 2,433,390.5 kg of medical waste per annum, including: Category A – 1,516,044 kg; Category B – 818,089.4 kg; Category C – 4,526.6 kg; and Category D – 94,720.1 kg.</p>			
Summary volumes				
<p>Estimate of total hazardous waste market (watch need tonnes/year)</p>	<p>Inventory revealed the following types and volumes of the wastes at the territory of Georgia: (see Annex 2, Table 2)</p> <ol style="list-style-type: none"> 1. Oil refineries and oil product consumption wastes – 27,520 t. 2. Ferrous and non-ferrous metal scrap – 1,720 t. 3. Chemical industry and processing wastes – 781,120 t. Similar to the actualization of quantities as implemented for the total quantity of hazardous waste an increase of this amount with 15% as applied here: 898, 288 t 4. Polyethylene and plastic wastes – 12 t. 5. Glass slivers – 200 t. 6. Fluorescent lamps – 68,100 pieces. 7. Mining and mineral processing wastes –11,777,300 t. However, in this table none of this waste has been classified as hazardous waste 8. Construction materials production wastes – 35.70 t. 9. Timber processing wastes – 19,600 m³. 10. Alcohol beverages and soft drinks industry wastes – 45,000 t. 11. Other organic and inorganic wastes – 1,490 t. <p>According to the waste inventory data, the biggest share of the industrial waste falls on the mining. It is followed by chemical industry. Despite the fact that currently mining is not the leading industrial sector of the country the old mining wastes accumulated in the various regions of the country still represent the substantial pollution sources.</p> <p>Hazardous waste: 908,740 tons of the abovementioned volumes fall under hazardous wastes. From these hazardous wastes, the majority comes from the Chemical industry and processing water and is estimated 768,120 tons (100% of this waste) and from the Oil refineries and oil product consumption wastes 27,326 tons (99,3% of this waste).</p> <p>2007 inventory mentioned that there are no changes and historical wastes still remain a problem. Taking into account the tendency of increasing the number of companies after 2007, an increase of 15% (approximately 2% per year) of the amount of waste generated has been estimated. Based on this assumption, and the total amount of hazardous waste 908,740 tons in 2007, the annually generated hazardous waste would be 18,175 t (this estimate was made by the Head of Department of Waste and Chemical Substances Management), the total amount of waste generated in 6 years would then be 1,017,789 t. According to the inorganic waste generated by the mining companies are deposited in mines without taking care of a safe storage method. According the inventory data due on the territory of the former car-factory in Kutaisi 400,000 tons of sludge of different solvents and paintings are deposited. 44 m³ sludges are from petrol stations and contain mostly contaminated materials with oil/petroleum. Additionally, according to the inventory information 240 l per year of used oils are used for heating the green houses. Cyanide wastes (approx. 5 tons) are kept in non-corrosive metal cubes on the territory of car factory of Kutaisi. Waste that is generated like plastic bottles and others are disposed in landfills. There is a new tendency to collect separately plastic bottles, paper and glass. However, there is still no official information about companies that are able to treat the selected materials.</p>			

	Total: * 1,017,789 tonnes *Updated for 2014!			
POPs waste volume	Total Obsolete Pesticides: POPs pesticides (Iagluja polygon + storages) Highly contaminated topsoil – 4,800 t Highly contaminated subsoil – 2,640 t Slightly contaminated soil – 20,080 t Total contaminated soil: 27,520 t		6,470	New updates received from UNDP Project of Tauw Report. 28 October 2014
Other information added to this table:				
*HCB, a-HCH, b-HCH and pentachlorobenzene an occur as pesticide, by –product and industrial chemical Please note that nuclear/radioactive waste will not be considered for this overview!				

Section III: Existing and planned treatment options for POPs pesticides, obsolete pesticides and related hazardous wastes, contaminated land				
Type of plant or technology	Address/location	Contact person (name/contact details)	Brief summary of technical data (treatment capacity, permit for treatment of types hazardous waste, permit info, date permit)	Reference /Annex if needed
1. Existing plants e.g. existing and functioning hazardous waste landfills (polygons) or soil treatment plants				
1 Private owned				
2 Government owned				
2. Potential plants e.g. existing modern cement kilns and collect all data, photos, schemes, interest of companies to deal with OPs and POPs waste and contaminated soil destruction) Details include in Annexes				
1. Private owned	<p>HeidelbergCement Head office Lermontovi Str. 18 0114 Tbilisi, Georgia tel.: +995 32 2474747 fax: +995 32 2 470707 New plant in Tbilisi opened 2 June 2014</p> <p>HeidelbergCement Georgia Kaspi Plant 2, Parnavazi Str., 2600, Kaspi tel.: +995 32 332505 fax: +995 32 331666 info@heidelbergcement.ge</p> <p>HeidelbergCement Rustavi Plant 70, Mshenebelta Str., 3700, Rustavi tel.: +995 32 332505 fax: +995 32 331666 info@heidelbergcement.ge</p> <p>HeidelbergCement Kartuli Cementi Rustavi Plant 70, Mshenebelta Str. 3700, Rustavi tel.: +995 24 193171 fax: +995 24 193171 info@heidelbergcement.ge</p>	Michael Hampel - General Director of HeidelbergCement Georgia	<p>The Kaspi plant uses the wet process of production and manufactures the following types of cement: Portland cement M400, sulfate-resistant cement, CEMFIX.</p> <p>The Rustavi plant uses the wet process of production and manufactures the following types of cement: clinker, Portland cement M400, sulfate-resistant cement, CEMFIX.</p> <p>The Rustavi cement plant modernization - installation of latest generation Separators of the type QDK is an absolutely unique project in Georgia. It meets all modern standards of cement production. The project goal is to increase cement qualitative indicators and to diversify assortment. The modernization process of Rustavi plant took place from October 2013 until May 2014. The total investment amounted 4 million GEL (HeidelbergCement press release, 28.05.2014). Kartuli Cements owns the modern plant with European standards in Rustavi</p>	[5] [5] [6]
2. Government owned				

3. Planned facilities Government and or privately planned new hazardous waste facilities e.g. for treatment of oil waste in oil and gas industry				
1. Private owned				
2. Government owned				
4. Planned and/or implemented pilot plants e.g as part of research programmes in cooperation with donors/universities/research institutes pilot plants that are being tested for hazardous waste and soil				
1. Private owned				
2. Government owned				
5. Existing and/or planned empty container (plastic and or steel) recycling facilities/initiatives Steel recycling e.g at existing steel industry and plastic at existing plastic industry				
1. Private owned	There are some private companies which are doing recycling of paper, plastic and glass	There is no information about how they are collecting or processing.		
2. Government owned	No			
6. Any other information related to important market players in this field List names of the major market players with address and main address/location, Contact person (name/contact details) and indicate their main interest				
<p>Note on HeidelbergCement in Georgia Information about technology scheme of Heidelberg Cement factory was discussed with local expert. According to that discussion technology used in cement production can be considered as sufficient for using of waste destruction/management strategy with some upgrading the emission control.</p> <p>The Business group that is in charge to produce cement in Georgia decided not to be involved in the waste management strategy as they are not sure the local population is sufficient aware of the fact that during the waste treatment process in the cement kilns, the quality of the produced cement will stay the same and they do not want to create more problems in this matter. They stated that for them it is the most important for Heidelberg Cement that the product produced should be considered as high quality. They are afraid to loose costumers. In case of discussing this issue it is very important to work on the awareness strategy of the population in Georgia regarding the waste management issues. (See further details in Appendix 4) http://www.heidelbergcement.com/ge/en/country/plants_and_companies/index</p> <p>Press Release HeidelbergCement: 28.05.2014: Opening of the latest generation Separator in Rustavi Cement Plant http://www.heidelbergcement.com/ge/en/country/press_media/Press_Release/Opening+of+the+latest+generation+Separator+in+Rustavi+Cement+Plant.htm</p> <p>Heidelberg Cement opens new factory in Georgia Jun, 02 2014 Heidelberg Cement has opened a new factory in Tbilisi, Georgia. Latest generation separator began to work at the factory, which contributes to the rise of cement quality and assortment expansion. About \$10 million was spent on its installation. The company implemented investments in amount of 4 million lari. Construction began in 2013 and was completed during the year. See also http://www.aggreatresearch.com/articles/30065/Heidelberg-Cement-opens-new-factory-in-Georgia.aspx</p>				

Section IV: Transportation logistics

1. Assessment of various transport alternatives from main stockpile locations

(indicate large locations/or regions with more than 500 tonnes separately to the existing/planned treatment facilities including cost estimate)

Treatment facility in country and/or in foreign countries	Stockpile region/location	Transport method/alternatives - distances Rail-Road-waterway or combination of them Indicate main ports/railway stations etc. and supply maps where possible	Cost indications Problems to be expected	Reference /Annex if needed
1 In country 2 In foreign country	France and Belgium	Shipped from Port "Poti" – Black Sea		http://polyeco.gr/undp-polyeco-pops-pesticides-georgia/
1 In country 2 In foreign country				
1 In country 2 In foreign country				

2. Assessment of possible storage networks: waste transfer stations e.g. at main railway stations or at existing landfills (polygons) or Waste handling stations

List and describe existing stations with required details

3. Assessment of transport capacity

Private owned and government owned specialized and licensed transport companies for hazardous waste transport (e.g. ADR/IMDG/RID/DOT compliant, route planning, scheme, vehicle inspection scheme, certified local contractors) Describe here, if not already covered under 1. Benchmarking under 6. Storage and transport and 7. Disposal

4. Reference to the requirements of the Basel Convention (+ previous) experiences made with international export Implications of custom facilities

Describe Cases/ experiences that country have been made with international exports, not already covered under 1. Benchmarking under 7.2 International experience Indicate year and location (country) where transported from and where to and authorities involved and kind of waste. Briefly describe cases

Case 1

Case 2

Summary sheets on findings
<p>- Identification of the gaps in information Information about transportation and implemented projects</p>
<p>- Analysis of the technical and economic barriers for the development of national and regional waste management capacity Legislation, technological solutions and political interest</p>
<p>- Analysis of technical and economic opportunities for the development of national and regional waste management capacity Container management center should be established</p>
<p>- Other findings that need to be addressed The development of waste management center in country is recommended as unit at the MoE has not enough resources</p>
References
<p><i>(No detailed information is included in the main, but where available the various websites have been listed)</i></p>
<p>[1] NIP Georgia 2011, see: http://chm.pops.int/Implementation/NIPs/NIPSubmissions/tabid/253/ctl/Download/mid/3061/Default.aspx?id=67</p>
<p>[2] Draft Report of Waste Inventory on the Territory of Georgia, 2007, Support to the Ministry of Environment Protection and Natural Resources in Improvement of Environmental Planning Framework</p>
<p>[3] Obsolete Pesticide Inventory Report Georgia Info can be obtained at the MoE</p>
<p>[4] HeidelbergCement in Georgia and website http://www.heidelbergcement.com/ge/en/country/about_us/profile.htm</p>
<p>[5] Project “Strengthening Capacities for Designing a National Pollutant Release and Transfer Register and Supporting Strategic Approach to International Chemicals</p>
<p>[6] Management (SAICM) Implementation in Georgia” is implemented under the technical support of UN Institute for Training and Research (UNITAR) and financial assistance of SAICM Quick Start Program Trust Fund (QSP TF) see also http://www.cenn.org/wssl/programs/Georgia_Pilot_Project_Eng.pdf</p>

ANNEXES

Annex 1: Terms of Reference for IHPA for coordination of a Disposal Study for Obsolete Pesticides in the Former Soviet Union

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Terms of Reference for Consultant/PSA

Job Title	Coordination and implementation of a Disposal Study for Obsolete Pesticides in the Former Soviet Union		
Division/Department	AGPM		
Programme/Project Number	GCP/RER/040/EC		
Location	Regional		
Expected Start Date of Assignment	1 June 2012	Duration	1 year
Reports to	Kevin Helps	Title:	Coordinator, Senior Officer, Obsolete Pesticides

GENERAL DESCRIPTION OF TASK(S) AND OBJECTIVES TO BE ACHIEVED

The EC / FAO project GCP/RER/040/EC looks to develop capacity for management of hazardous wastes through the example of obsolete pesticides and POPs. There is an estimated 200,000 tonnes of these materials known to be affecting the Russian Federation, countries of the Eastern Neighbourhood (Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine) and the Central Asian Countries [CACs] (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan). Much of the previous work on disposal of waste from these countries has looked to export thousands of tonnes of pesticide stockpiles to high temperature incinerators operated commercially in EC member states. Whilst this strategy meets all international environmental compliance requirements it is prohibitively expensive. The vast distances involved for transport of waste from CACs to facilities in Europe makes the option of finding a local solution appealing based on risk management and cost considerations. Under the project a study of capacity to treat this material is to be commissioned. The Coordinator for the Disposal Study will for the 12 project countries:

- i. Review of existing policy framework for the management and elimination (including inventory, assessment, and transport) of POPs and obsolete pesticides in line with the requirements of the respective EU Directives/Stockholm Convention;
- ii. Conduct benchmarking of current POPs management (including (temporary) storage and destruction) against international best practice on BAT /BEP as set out by the Basel / Stockholm Convention working groups; highlight and describe best ongoing practices per country
- iii. Review of existing agricultural policy framework on the linkage to fulfillment of environmental obligations such as requirements for the management of contaminated empty containers/packaging
- iv. Review of existing and planned treatment options for POPs pesticides, obsolete pesticides and related hazardous wastes, contaminated empty containers and contaminated land;
- v. Assess potential treatment facilities such as existing modern cement kilns, as well as planned and/or implemented pilot plant investigations which can develop in the next years to important market players.
- vi. Assess the Russian-Belarus-Kazakhstan customs Union and its implications for hazardous waste in and through Russia, including an assessment of 1) experiences over the last years practical implementation and of 2) alternative transport routes from the republics avoiding Russian territory. To be completed with due reference to the requirements of the Basel Convention.

- vii. Assess access (by road, train or water) to treatment options and economics of transport of waste across the region to treatment facilities/alternative storage facilities;
 - viii. Review existing country POPs data (Obsolete Pesticides and PCBs) as far as available, and make efforts to collect, if possible, total hazardous waste stream data as set out in national profiles such as the UNITAR chemicals profile. This will be collated per country in order to assess the potential need for future investment per country/region. Provide estimates of the scale of investments (in terms of tonnes of POPs for disposal) and a rough estimation of their national distribution, tonnes of other obsolete pesticides, distribution and quantities of contaminated land and contaminated containers;
 - ix. Assess status of recycling options for empty containers or already planned or ongoing programs and initiatives;
 - x. Prepare country summary sheets on findings and identify the gaps in information;
 - xi. Compile report of study findings, including recommendations for filling the information gaps.
- The study will be undertaken in countries and through desk research as appropriate and will be implemented with the support of thematic international experts and national experts to be recruited as sub-contractors to the Coordinator of the Disposal Study. The coordinator will prepare draft terms of reference for all consultants within 2 months of the start of the study, which will be approved by the Regional Coordinator of project GCP/RER/040/EC at FAO before final recruitment is made. All information collected and assessments conducted will (if possible) be verified by competent national authorities in order to seek ownership and support for further project activities.
- The working language is English and some interpretation and document translation is foreseen.

KEY PERFORMANCE INDICATORS

Expected Outputs:

- i. Summary report of existing policy framework for the elimination and management of POPs and obsolete pesticides (12);
- ii. Analysis of barriers (technical, legal, economic) to the development of national and regional waste management capacity;
- iii. Report on Opportunities for introduction of new technologies (Thermal and non-thermal) e.g specific stockpiles (DDT and HCH waste)
- iv. Summary report of existing and potential Treatment Facilities, pilot plant facilities and empty container recycling facilities/initiatives (12 countries)-
- v. Report on POPs waste in relation to total hazardous waste market and approaches for Investment plan for POPs destruction for the region
- vi. Presentation of the draft report to the SC meeting in September 2013, finalization of the report incorporating eventual comments

Required Completion Date:

All by end of June 2013.

September 2013

REQUIRED COMPETENCIES

Academic Qualification

1. First degree in chemistry, engineering, environmental science or similar subject area related to chemicals management;
2. Higher degree (PhD) in a waste management related area, chemistry or engineering discipline linked to chemicals management;
3. Research or (university) lecturing experience related to waste and POPs management.

Technical Competencies and Experience Requirements

1. Minimum 20 years experience in the waste management and soil remediation industry / research sector;
2. Experience in development of risk-based strategies for POPs treatment using a combination of in-situ and ex-situ technologies;
3. Experience in development of POPs remediation plans in developing countries, experience in Asia region desirable;
4. Minimum 10 years experience in development of cost-based budgets for project implementation;
5. Excellent understanding of FAO guidelines and training systems for POPs / pesticide management and contaminated site assessment;
6. Excellent computer skills;
7. Excellent report and proposal writing skills;
8. Fluency in English.

Annex 2. Draft Report of Waste Inventory on the Territory of Georgia, 2007, Support to the Ministry of Environment Protection and Natural Resources in Improvement of Environmental Planning Framework



Draft

**REPORT OF WASTE INVENTORY ON
THE TERRITORY OF GEORGIA**

2007

Support to the Ministry of Environment Protection and Natural Resources in Improvement of Environmental Planning Framework



CONTENTS

Introduction.....	4
1. Legal Base and Managing Bodies for Waste Management	6
2. Results of Household Waste Inventory by Regions and the Entire Country	7
2.1 Achara Autonomous Republic	7
2.2 Guria Region	8
2.3 Samegrelo-Zemo Svaneti Region	8
2.4 Imereti Region	8
2.5 Racha-Lechkhumi and Kvemo Svaneti Region	9
2.6 Samtskhe-Javakheti Region	9
2.7 Shida Kartli Region	10
2.8 Kvemo Kartli Region	10
2.9 Mtskheta-Mtianeti Region	11
2.10 Kakheti Region	11
2.11 Tbilisi	11
Summary	12
3. Analyses of the Results of Household Waste Inventory	14
3.1 Volumes	14
3.2 Collection	14
3.3 Transportation	15
3.4 Disposal	15
3.5 Separation-Processing	16
3.6 Financing	16
3.7 Raising Public Awareness	17
Conclusions	17
4. 4. Results of Industrial Waste Inventory	17
4.1 Industrial Sector of the Country and a Focus of Inventory	17
4.2 Data Obtained through Industrial Waste Inventory	18
5. Analyses of the Results of Industrial Waste Inventory	20
Summary	20
6. Results of the Medical Waste Inventory	21
6.1 Goal of the Medical Waste Inventory	22
6.2 Methods Applied	22
6.3 Results of the Medical Waste Inventory in Medical Institutions of Tbilisi.....	24
6.4 Results of the Medical Waste Inventory in Medical Institutions of Georgia.....	25
6.5 Summarising and Assessing the Conditions Revealed through the Medical Waste Inventory.....	26
6.6 Recommendations	27
7. Results of Biological Waste Inventory	28
Tables	
Table 1: Results of the Household waste Inventory by the Regions	13
Table 2: Volumes of the Inventoried Industrial Waste by the Categories	19
Table 3: Medical Institutions, in which the Inventory has been Carried Out	23
Table 4: Volumes of Medical Waste in Georgia in Accordance with the Local Information	25
Table 5: Revised Version of Volumes of Waste Generated by Medical Institutions of Regions	26

Annexes

Annex 1:Data on Solid Household waste Inventory

Annex 2:Data on Inventory of Waste in Large Industrial Installations

Annex 3:Data on Inventory of Medical Waste

Introduction

Existing Conditions and Goal of the Inventory

The waste represents the serious environmental issue in Georgia. Up to now it is considered the source of environmental pollution and adverse impacts on the human health. There is no effective waste management scheme in place in the country. The wastes are not registered by the state, and therefore, no statistical waste data by the years is available. There are no sufficient data on volumes, types, and methods of processing, disposal and sterilisation of the waste accumulated on the territory of the country in the previous years (especially in the Soviet period) and at the current stage. Information available at the Ministry of Environment Protection and Natural Resources and submitted by its regional units does not respectively reflect the existing situation.

Full and detailed inventory of the waste was never conducted due to the lack of financing. Carrying out the inventory was possible only within the frameworks of separate programmes (for the purposes of such programmes). For instance, the inventory of POPs contaminated waste has been conducted on the territory of Georgia (except Apkhazeti and Samachablo) under the framework of Stockholm Convention, and the respective Report has been issued. This Report was submitted to the Ministry of Environmental Protection and was used as a basis for development of POPs National Action Plan.

Hence, the waste accumulated in Soviet and post Soviet periods (especially this relates to toxic substances) represent the huge problem. Besides, there is no information on the volumes of waste currently generated and accumulated in the country.

One of the priority directions for Georgia today is development and introduction of the effective waste management system. It is planned to develop a long-term (10-12 years) waste management strategy and action plan in the nearest future.

Exactly with this in mind, the waste inventory has been conducted in Georgia under UNDP support. The waste inventory aimed towards identification and assessment of volumes, composition and means of management, disposal and sterilisation of the waste.

Methodology

The methodology involved reviewing the existing documentation (legislation, various legal documents, researches, reports), as well as collecting information from persons directly responsible for the waste management issues through questioning them. For the purposes of inventory, the qualified experts (team leader and 6 experts) were selected by the open competition. The works were carried out in September-December 2006.

At the first stage, the waste categories subject to inventory and the information sources were identified. The respective questionnaires were developed based on UNEP questionnaires and sent to the private and public structures involved in the waste management.

The inventory was carried out for the following waste categories:

- household waste;
- industrial waste;
- medical waste;
- biological waste.

The summarised results of the inventory both by regions and for the entire country are incorporated into this report (Tables 1-5).

Detailed descriptions of the inventory data are also enclosed (Annexes 1, 2 and 3).

1. Legal Base and Managing Bodies for Waste Management



The main legal acts currently regulating the waste management issues are as follows:

Domestic Acts:

- ✓ Law of Georgia on Protection of Environment
- ✓ Law of Georgia on Licenses and Permits
- ✓ Law of Georgia on Healthcare
- ✓ Law of Georgia on Transit and Import of Waste at the Territory of Georgia
- ✓ Law of Georgia on Local Self-governance and Governance
- ✓ Law of Georgia on State Control in Environmental Protection
- ✓ Sanitary Code of Georgia
- ✓ Administrative Violations Code of Georgia
- ✓ Ordinance of Minister of Labour, Health and Social Security of Georgia on Sanitary Rules and Norms for Arranging and Operating Solid Domestic Landfills

International Instruments:

- ✓ Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal

Competences in Waste Management Sector

Currently, the state control of waste management is implemented by several authorities, within the limits of their competences. These are:

Ministry of Environment Protection and Natural Resources of Georgia

Functions include:

- Development and implementation of national policies;
- Control over transit and import of waste;
- Disposal of domestic and industrial waste, construction of landfills and incineration plants and licensing thereof;
- Disposal of toxic and radioactive waste, construction-operation of their burials and issuance of respective permits;
- Control over pollution by the waste.

Ministry of Labour, Health and Social Security

Functions include:

- Development and enforcement of sanitary-hygienic and sanitary-epidemiological norms and rules.

Customs Department

Functions include:

- Regulation of waste transits and imports.

Local Authorities

Functions include:

- Collection, transportation and disposal of solid domestic and non-hazardous waste.

As it can be observed from the above, waste management is regulated by the various acts. The special law on the waste does not exist. At this stage, the Ministry, with the assistance of the Government of Netherlands, has developed the Draft Law of Georgia on Waste. The Law is being discussed and it's submission to the government is planned for the nearest future.

2. Results of Household waste Inventory by Regions and the Entire Country

The total volumes of the waste registered on the territory of Georgia are included into the Table 1, and specific reports by the regions are presented in Annex 1 (Tables 1.1-1.10).

2.1 Achara Autonomous Republic

According to the obtained information, Achara generates 326,676 m³ of solid household waste annually. Details for the districts and cities are presented in Annex 1 (Table 1.1).



The region counts 13 landfills: 5 legal with total area of 24 ha, and 8 illegal (2 in Khulo, 3 in Shuakhevi and 3 in Keda) – total area and volumes of disposed off waste unknown.

Batumi landfill is located 5 km away from city of Batumi, in Village Adlia of Khelvachauri District, in the immediate vicinity of River Chorokhi. The surface running waters wash the waste to the river ultimately polluting the sea. The area of the landfill makes 19 ha. It was created in 1965. Annually, some 280,000 m³ of waste are disposed off at the landfill. The total volume of waste stored at the landfill makes 2,640,000 tons approximately. The landfill is missing construction design, waste moistening circulating water supply system, precipitation drainage ditches; covering by the ground layer is not practiced. In order to avoid sea pollution, the bank protection works have been carried out.

Situation in Kobuleti is problematic. The waste is disposed off at the wetland and represents the serious pollution source. Situation in Khulo, Keda and Shuakhevi Districts is also hard from the standpoint of both waste collection and disposal. Landfills in Khulo and Shuakhevi Districts are located directly in River Acharistskali gorge.

At this stage, the plot (12 ha) for construction of the landfill in Chakvi settlement is selected. The design is drawn up and construction will be financed by the European Bank of Reconstruction and Development. In parallel, the design for safe conservation of the old landfill is under development. The landfill is intended for serving the entire Achara region.

The region has 39 sanitation trucks and 3 tractors engaged in the landfill operations.

Collection of waste in the region is implemented through container, refuse chute and tolling systems.

2.2 Guria Region

Volume of solid household waste annually generated in the region makes 14,890 m³. Distribution of volumes by districts and cities is given in Annex 1 (Table 2).

The region has 3 landfills with total area of 8.65 ha.

The region has 3 sanitation trucks and 2 tractors engaged in the landfill operations.

Collection, transportation and disposal of the waste practices do not comply with sanitary-hygienic requirements.

2.3 Samegrelo-Zemo Svaneti Region

According to the information collected during the inventory, annual volume of solid household waste generated in Samegrelo-Zemo Svaneti region makes about 203,270 m³. Distribution of volumes by districts and cities is given in Annex 1 (Table 3).

The region has 9 landfills. 6 of them are legal, with total area of 14 ha, and 3 illegal (1 in Martvili and 2 in Chkhorotsku) – total area and volumes of disposed off waste unknown.

The new landfill is planned for construction in Khobi District, at the adjacent territory of Pirveli Maisi Village. It will service Khobi District. Total area will make 1 ha. The respective permit is issued by the Ministry of Environmental Protection and Natural Resources.

It should be mentioned that obsolete landfill of Poti is located at the mouth of River Rioni and represents a serious source of environmental pollution. The area of the landfill makes 3 ha and it is in operation since 1967. Because of the frequent rains and flooding, the big share of the waste is washed into the sea. Some 180,000 m³ of waste are being disposed off at the landfill. The landfill receives all types of waste, including biological.

From the standpoint of environmental and hydrosphere pollution, the similar situation can be observed in Martvili, with illegal landfill located at the River Abasha bank.



The landfills existing in the region do not comply with sanitary-ecological requirements; territories lack fencing, allowing uncontrolled movement of the farm animals.

Region has 24 sanitation trucks and 5 tractors engaged in the landfill operations.

2.4 Imereti Region

According to the information collected during the inventory, annual volume of solid household waste generated in Imereti region makes about 191,650 m³. Distribution of volumes by districts and cities is given in Annex 1 (Table 4).

The region has 11 landfills. 10 of them are legal, with total area of 71.5 ha, and 1 illegal (Zestaponi) – total area and volumes of disposed off waste unknown.

City of Kutaisi has one landfill, which also services Baghdati and Tskaltubo Districts. The landfill is located some 500 meters away from the Nicaea Street settlement; its area makes 42 ha and it is functioning since 1962. Annually, some 150,000 m³ of the waste are disposed off at the landfill (total volume unknown). The operation term of the landfill has long expired. The waste is collected/transported/disposed off by 45 trucks, 7 of which are specialised and the rest are just open dump-body trucks. The motor car stock is obsolete. The landfill is in horrible condition: territory is only partly fenced, allowing free movement of farm animals and humans; the open combustion processes can be observed; covering with ground layers is not practiced. The landfill is overloaded and represents the serious source of insanitariness and pollution. Situation at other landfills of the region is quite similar. Some of the districts do not have landfills at all, and the waste is disposed off at the river banks.

None of the functioning landfills complies with the sanitary-ecological requirements.

The region has 64 sanitation trucks and 8 tractors engaged in the landfilling operations.

2.5 Racha-Lechkhumi and Kvemo Svaneti Region

There is no waste registration system in place. In consideration of the number of population, district centres generate estimated 2,000-2,200 m³ of solid household waste annually. There are 3 official landfills – Tsageri, Ambrolauri and Oni landfills. They do not comply with minimum sanitary-ecological requirements.

Lentekhi District does not have any landfill at all and the waste is disposed off into the river beds.

Based on the above, it can be said that the waste management system of the region is completely deteriorated and, accordingly, the questionnaires were unable to provide any information.

2.6 Samtskhe-Javakheti Region

According to the information received during the inventory, annual volume of solid household waste generated in Samtskhe-Javakheti region makes about 274,580 m³. Distribution of volumes by districts and cities is given in Annex 1 (Table 5). The Table indicates that volume of municipal waste makes 122,583 m³ annually. However, it is not clear what distinguishes municipal waste from household waste.

The waste management system (collection, transportation, disposal of waste; material and technical base, sanitary-ecological status and area of the landfills, etc.) is not described.

According to the information of the previous years, region has 7 landfills, which fail to comply with the sanitary-ecological requirements. None of the landfills is fenced and protected. Waste in region is disposed off at the river banks and along railroads.

Landfill for Town of Borjomi was created in 1990, near the Kvabiskhevi Village, 23 km away from Borjomi. The same year, the landfill was put into operation, and initially it was intended for two years. The landfill is overloaded and the waste is still being disposed off there.

Village Bakuriani does not have official landfill. The waste is still disposed off at the territory of former fox farm representing the substantial pollution source.

At the current stage, the territory for Bakuriani landfill is selected, the design is developed and the respective permit is issued.

2.7 Shida Kartli Region

According to the information received during the inventory, annual volume of solid household waste generated in Shida Kartli region makes about 161,090.6 m³. Distribution of volumes by districts and cities is given in Annex 1 (Table 6).

The region has 5 legal landfills, but there are more than ten illegal ones. Total area of five legal landfills makes 18.5 ha. The area and volumes of the disposed off waste for the illegal landfills is unknown. It should be mentioned that most of the illegal landfills are located near the villages and cause substantial pollution of rivers and ground waters.

The landfills do not comply with the sanitary-ecological requirements; territories are not fenced, allowing free access of farm animals.

Region has 23 sanitation trucks.

2.8 Kvemo Kartli Region

According to the information received during the inventory, annual volume of solid household waste generated in Kvemo Kartli region makes about 178,218 m³. Distribution of volumes by districts and cities is given in Annex 1 (Table 7).

Region has 9 legal landfills, and there is no information on existence of any illegal ones. Total area of the landfills makes 35.8 ha.

The landfills do not comply with the sanitary-ecological requirements; territories are not fenced, allowing free access of farm animals. Often, the waste is in a combustion action, thus, imposing the potential pollution hazard. This requires taking the mitigation measures, but there are not any activities in this direction so far.

Special attention shall be paid to Ialghuja landfill located in Marneuli District. This landfill services approximately 800,000 persons residing at the **Right Embankment of Rustavi City**. The waste is disposed off by Avtomobilisti 2003 Ltd. The area makes 5 ha, and the total volume of the disposed off waste amounts to about 6,650,000 m³; the landfill has two bulldozers; it has no ground water sampling wells.

We should also mention landfill of Gardabani District, servicing approximately 50,450 persons residing at the **Left Embankment of Rustavi City**. The waste is delivered by Ketilmotskoba Ltd. Its total area makes 600 m² and the average annual volumes of disposed off waste amount to 58,021.2 m³; the landfill has two bulldozers; it has no ground water sampling wells.

The region has 52 sanitation trucks.

2.9 Mtskheta-Mtianeti Region

According to the information received during the inventory, annual volume of solid household waste generated in Mtskheta-Mtianeti region makes about 161,090 m³. Distribution of volumes by districts and cities is given in Annex 1 (Table 8).

There are 3 legal landfills in the region and the illegal landfills are not registered. Total area of landfills makes 8.7 ha.



The landfills do not comply with the sanitary-ecological requirements; territories are not fenced, allowing free access of farm animals.

Region has 9 sanitation trucks.

2.10 Kakheti Region

According to the information received during the inventory, annual volume of solid household waste generated in Kvemo Kartli region makes about 60,500 m³. Distribution of volumes by districts and cities is given in Annex 1 (Table 9). The percentage composition of the waste is unknown.

The region has 11 landfills. 10 of them are legal, with total area of 28 ha, and 1 illegal (Tsnori) – total area and volumes of disposed off waste unknown.

The landfills do not comply with the elementary sanitary-ecological requirements.

Region has 27 sanitation trucks and 1 tractor engaged in the landfilling operations.

2.11 Tbilisi

In contrast to the other regions, the most comprehensive information on generated solid household waste has been obtained in Tbilisi. Waste management system of the city is also described most fully.

100% of Tbilisi population is covered by waste collection service. According to the information received through inventory, Tbilisi generates 1,095,000 m³ of waste, while data of the previous years show little different figures – 1,200,000-1,600,000 m³ per annum.

Total area of the landfills makes 24 ha.

The city has three waste collection systems: container, refuse chute and tolling.

Recently, waste management system of Tbilisi failed to comply with the sanitary-ecological requirements, but within the two previous years, due to the activities undertaken by the municipality, situation significantly improved. The modern waste collection and transportation machinery has been purchased, resulting in substantial improvement of sanitary status of the city.

Tbilisi is serviced by the two landfills – Gldani and Ialghuja. Unfortunately, these landfills do not comply with the sanitary-ecological requirements. It should be mentioned that conservation of the old landfills and construction of the new is planned.

Details of the inventory of solid household wastes in Tbilisi can be found in Annex 1 (Table 10).

Summary

Thus, according to the inventory materials, 45% of the household waste is generated in the capital. Other important waste-generating regions are Achara Autonomous Republic, Samegrelo-Zemo Svaneti, Imereti, Kvemo Kartli and Shida Kartli (Fig. 2.1).

Fig. 2.1

Annual household waste generation by the regions



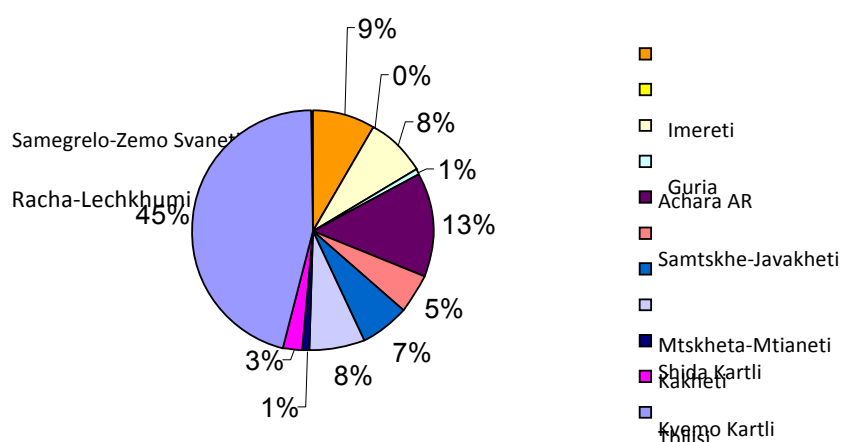


Table 1

RESULTS OF HOUSEHOLD WASTE INVENTORY IN GEORGIA BY REGIONS

Region	Population	Volume of generated waste (inventory data) m ³ /year	Volume of generated waste per capita		Volume of generated waste (expert assessment) m ³ /year	Number of landfills		Area of landfills ha
			inventory data	expert assessment		Official	Unofficial	
Achara AR	377 200	327 676	0.87	0.95	358 340	5	8	24
Curia	139 300	14 890	0.11	0.5	69 650	3	-	8,65
Samegrelo-Zemo Svaneti	472 900	203 270	0.43	0.6	283 740	8	5	14
Imereti	700 100	191 650	0.27	0.7	490 070	10	1	71,5
Racha-Lechkhumi and Kvemo Svaneti	49 100	1 850	0.04	0.4	19 640	3	-	-
Samtskhe-Javakheti	208 500	122 538	0.59	0.5	104 250	7	-	-
Shida Kartli	314 000	161 090	0.52	0.7	219 800	5	10	18.5
Mtskheta-Mtianeti	124 500	14 052	0.11	0.5	62 250	-	3	8.7
Kvemo Kartli	507 600	179 187	0.35	0.7	355 320	9	-	35.8
Kakheti	404 800	60 500	0.15	0.6	242 880	11	1	28
Tbilisi	1 103 300	1 095 000	0.99	1.1	1 213 630	2	-	24
TOTAL	4 401 300	2 371 700	0.54	0.66	3 419 570	63	28	233,15

3. Analyses of Household Waste Inventory Results

It should be mentioned that information collected throughout the country (except the City of Tbilisi) is insufficient, and this is due to the fact that the respective services of local authorities are incapable of controlling the existing situation. Unfortunately, the waste management system (collection, transportation, disposal, material and technical base, financial aspects, sanitary-ecological status of the system, planned measures, etc.) is not comprehensively presented and described. The full information in accordance with the prepared questionnaires has not been presented.

Despite the abovementioned, according to the information collected through the inventory and data previously existing in the Ministry, the situation can be characterised as follows:

3.1 Volumes of Waste

There is either no waste registration system in place or it is inefficient, therefore, the information on waste volumes is often doubtful. Assessment is based on number of population or sanitation track capacities, although these indicators are variable. According to the inventory data, the average annual volume of waste generated in Georgia makes approximately 2,767,311 m³. According to the data of previous years, the same amounted to approximately 5.5 million tons per annum.

To our understanding, since the waste registration system is far not perfect, at the current stage it is appropriate to calculate the waste volumes on basis of the number of population. However, in such case, certain differentiation between the large cities, district centres, large settlements and other types of villages shall be applied.

In consideration of the specifics of the regions and information accumulated in the past, and based on the expert analyses, the annual coefficient of waste generation per capita has been developed for each region. These coefficients and respective theoretical estimates of waste volumes are presented in Table 1. According to those estimates, waste volumes annually generated in the country equal to **3,419,570 m³**.

The discrepancy between inventory data and theoretical estimates is substantial, and this can be explained by the illegal landfills spontaneously arranged in almost every village, which were not covered by the current inventory.

3.2 Waste Collection

Waste collection in the cities, district centres and some settlements of Georgia is carried out by three systems:

Refuse chutes – are installed in the high-rise houses; they are non-standard and obsolete; do not comply with the sanitary requirements (are not washed, disinfected; there are lots of rodents and insects); discharging is not automatized; discharge frequency is low and thus it is ineffective.

Containers – are located in the streets, close to the buildings; they are mainly non-standard and obsolete; do not comply with the sanitary requirements; discharge is not automatized and is ineffective.

Tolling system is used in those parts of the cities, where there are no containers. Collection frequency is low; waste is disposed off in the streets and anti-hygienic hotbeds are created; system is ineffective.

The above systems are not used for collecting wastes in the villages; the population is disposing off the waste at the adjacent territories in gorges and river beds.

Waste collected in streets, parks, gardens, squares, beaches is placed into bunkers or accumulated at the adjacent territories. Often, the collected waste (leaves, paper, plastics, etc.) is burnt directly in streets, parks or gardens.

3.3 Transportation of Waste

The wastes are mainly transported by the open-body trucks; technological norms of waste transportation are violated; automobile stock is obsolete and amortised. Waste transportation by this system causes pollution of streets, roads and environment in general. It is also extremely ineffective. In some cities (Tbilisi, Batumi, Kutaisi, Gori) the waste is partly transported by the closed-body (container carrier) trucks.

3.4 Waste Disposal

The waste is delivered to the landfills not separated. The household waste is mixed with industrial, construction, medical, biological, toxic and other wastes.

According to the existing information, there are 69 landfills registered in Georgia, with total area of 280-300 ha.

In fact, none of the landfills existing on the territory of Georgia comply with environmental or sanitary requirements and norms. In particular they:

- do not have construction designs, which would be taking into account sanitary and environmental norms;
- do not have drainage systems;
- do not have waste moistening water supply system, and this results in spontaneous combustion. This is the matter of special concern of the population in settlements located in the vicinity of landfills;
- are not surrounded by the green zones;
- are not equipped with the wells or boreholes for sampling ground waters;
- do not practice ramming waste and covering it with the isolation ground layer;
- are located near the rivers and precipitants and floods wash the waste directly into surface waters;
- are not fenced and protected, allowing free access of farm animals and humans at their territories. The animals fed at the landfills are potential carriers of the hazardous microorganisms.

Based on the above, we can conclude that all stages of solid household waste management – collection, transportation, disposal – fail to comply with the sanitary and environmental requirements, thus resulting in pollution of the environment – cities, settlements, their adjacent territories, highways, streets, gardens, parks, squares, landscapes, beaches. Human health is exposed to the risk and development of tourism in the country is hindered.

3.5 Separation/Processing of Solid Household Waste

The wastes are not separated, and this is true for all stages of waste management. The population is collecting metal scrap from the various territories, including landfills, and selling it. Also, the timber pieces are used as fuel. The plastics are collected for their repeated use and not for processing.

Currently, waste processing (composting, safe incineration for the purposes of energy generation or use as a raw material for manufacturing production) is not practiced. Only German-Georgian joint venture started separate collection of macula-paper.

There were Gldani Waste Processing (composting) Plant and Ponichala Incineration Plant, but they ceased operations in 1991 and are not subject to rehabilitation.

3.6 Financing (collection-transportation-disposal)

Collection-transportation-disposal of the waste is financed from the following sources:

- Sanitation fee in the cities and districts of Georgia, making approximately 30-40 Tetris per person;
- Fees for organisations and enterprises that can vary and are determined on basis of bilateral agreements;
- Subventions from the local budgets.

If we consider situation in Tbilisi, rough estimates show that about 40% of the expenses are covered by the fees and the rest by the budget. The actual collection, transportation and disposal expenses substantially exceed aggregate amount of fees. Currently, the fees generate about EUR 3.00 per ton of the waste, while, according to the rough estimates, only collection and transportation of 1 ton of the waste costs about EUR 10.00.

From this standpoint, the situation is even more problematic in other cities and regions.

If we take into account the prime cost of the waste collection-transportation-disposal, the fees shall necessarily be increased.

3.7 Raising Public Awareness

Public awareness with regard to waste management and problems thereof is extremely low.

Conclusions:

Household waste landfills impose serious pollution risks, since none of them complies with the environmental safety principles. In most of the cases, the waste is just thrown to the specially allocated places, without separation and coverage by the protective ground layers. The bottom isolation is not provided. No drainage systems are in place. Therefore, the rain waters, after dripping through the waste mass, get to the surface and ground waters and pollute them. Besides, the self-combustion, representing serious atmosphere pollution source, is very frequent.

Majority of the existing landfills is constructed in the Soviet period. Selection of the locations has not been performed in consideration of the environmental risks. Therefore, often landfills are closer than acceptable to the settlements, rivers and sea.

In addition, the illegal dumps represent the serious pollution sources, although, from the standpoint of pollution risks, the legal landfills are not less dangerous for environment and human health. However, illegal landfills create additional sources of uncontrolled pollution and make registration of the wastes more difficult.

4. Results of Industrial Waste Inventory

4.1 Industrial Sector of the Country and Focus of Inventory

The respective industrial waste inventory questionnaire has been developed. The list of the industries subject to inventory has been predetermined. The main focus was made on the stationary sites, having potential of generating the substantial volumes of the respective waste, and this was done on basis of the following information:

According to 2005 data of the Department of Statistics of the Ministry of Economic Development of Georgia, currently there are 4,632 industrial industries in Georgia. 192 out of them are large, 497 – medium and 3,943 – small. It should be mentioned that the number of industries has significantly grown since 2000.

The main industrial regions are Tbilisi, Kvemo Kartli, Imereti, Shida Kartli and Kakheti. Main polluting industries are located in these regions. These are: oil refineries, mines, synthetic ammonia and varnishes and paints producing plants, construction materials processing enterprises etc. By the volumes of industrial production Tbilisi is a leader. It is followed by Kvemo Kartli, Imereti and Shida Kartli. Like it was in the Soviet period, the main industrial cities are Tbilisi, Kutaisi and Rustavi. Two thirds of the industrial employees and 66% of the production of the country fall on these cities². Kutaisi Automobile Plant, Zestaponi Ferroalloys Plant and Chiaturmanganese are the biggest enterprises in the region, although, their production volumes substantially decreased since the dismissal of Soviet Union. With this regard, Zestaponi Ferroalloys Plant is in a relatively better condition and works at 50% of its total capacity.

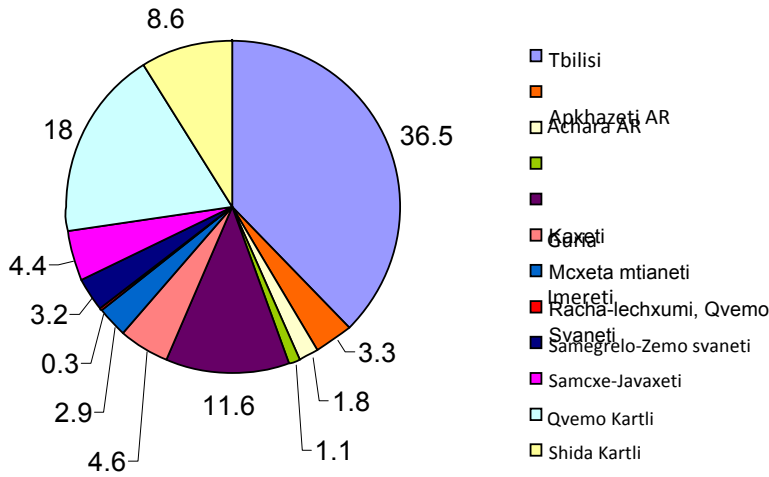
According to the research of 2003, majority of the industrial industries work at 5 to 50% of their maximal capacity. The only exceptions are Madneuli Mine and barite processing plant in Bolnisi, which work with the full load³. Besides these, there are coal, oil and natural gas producing industries in the country. There are only two oil refineries: in Batumi, and smaller – in Sartichala. The biggest coal deposits can be found in Tkibuli-Shaori basin. Besides this, coal is produced in Tkvarcheli and Akhaltsikhe.

Fig. 4.1

SHARES OF REGIONS IN TOTAL INDUSTRIAL PRODUCTION OF THE COUNTRY, %

² Environmental Performance Review of Georgia, UNECE, 2003, Chapter 9, Mining, Industry and Environment

³ Environmental Performance Review of Georgia, UNECE, 2003, Chapter 6, Waste Chemicals and Contaminated Sites



The most important polluters are mining (including coal extraction/processing) and oil production/processing industries, as well as ferrous and non-ferrous metallurgies. They are followed by processing industries and other sectors. Major part of Georgian industry is represented by processing enterprises.

4.2 Data Obtained through Industrial Waste Inventory

The summarised results of industrial waste inventory are presented by the regions, sectors and waste categories. For details on sites and generated and disposed off wastes see Annexes. The total volume of industrial wastes registered in Georgia is given in the Table 2 below, and details by regions are included in the Annex 2 (Tables 2.1-2.10).

Table 2. Industrial Waste Volumes by Categories, According to Inventory

No	Region	Number of sites covered by inventory	1. Oil production and refining wastes, t	2. Ferrous and non-ferrous metal scrap, t	3. Chemical industry and processing waste, t	4. Poly-ethylene and plastic waste, t	5. Glass silver, t	6. Fluorescent lamps, pcs.	7. Mining and mineral processing waste, t	8. Const. mater. prod. waste, t	9. Timber processing waste, t	10. Alcohol and non-alcohol beverages production waste, m ³	11. Other organic and non-organic wastes, t	12. Hazardous waste among these, t, pcs.
1	Achara AR	52	22 354	119	62	–	–	–	–	5 000	4 200	60	–	22 520
2	Guria	10	–	–	–	–	10	–	–	400	130	81	–	–
3	Samegrelo-Zemo Svaneti	30	4 515	10	–	–	15	–	–	20	210	30	1 310	4 515
4	Imereti	30	3	3	768 008	–	110	–	8 144 500	20	950	28	3	768 010
5	Racha-Lechkhumi and Kvemo Svaneti	–	–	–	–	–	–	–	–	–	10 000	–	–	100 000
6	Shida Kartli	16	–	60	–	–	–	–	–	2 460	250	100	–	–
7	Mtskheta-Mtianeti	16	–	–	–	–	–	–	–	55	370	–	–	–
8	Samtskhe-Javakheti	–	–	–	–	–	–	–	–	–	50	–	–	–
9	Kvemo Kartli	53	5	52	13 034	–	–	–	3 631 400	19 710	470	–	140	13 040
10	Kakheti	74	–	–	–	–	14	–	400	7 500	2 910	43 297	14	–
11	Tbilisi Rustavi	132 36	641	1 474	15	12,2	55	68 100	–	510	40	1 400	25	660 t, 68100 pcs
12	Total ⁴	449	27 500	1 720	781 100	12	200	68 100	11 780 000	35 700	19 600	45 000	1 500	908 740 t, 68100 pcs

⁴ Besides the data given in the Table, according to the 2006 information provided by the Customs Department, Georgia annually imports (and supposedly generates same amount of waste) the following amounts of technical oils, tyres and batteries: **technical oils – 13,170 tons, tyres – 11,170 tons and batteries – 3,280 tons**



5. Analysis of the Results of Industrial Waste Inventory

It should be mentioned that industrial wastes are mainly located at the industries and their adjacent territories; the environmental requirements usually are not observed and they represent the pollution sources.

In the Soviet period, when industrial sector was working with the full load, substantial waste volumes were generated, and respectively, the pollution sources arose, in cities like Rustavi, Kutaisi, Zestaponi, Bolnisi and others, where thousands of tons of waste from metallurgical, ferroalloy, mining and other industries (slag, gobs, etc.) were accumulated. As a result, the territories adjacent to such enterprises became the geochemical provinces with higher concentrations of toxic elements.

Consequently, due to reduction of industrial sector, the process has been slowed down, but it still imposes risks to the environment. Special attention shall be paid to those parts of the industries, which currently are out of operation, or which have changed their profiles, but still have significant volumes of obsolete wastes accumulated at their territories.

Inventory revealed the following types and volumes of the wastes at the territory of Georgia:

1. Oil refineries and oil product consumption wastes – 27,517.55 t.
2. Ferrous and non-ferrous metal scrap – 1,717.53 t.
3. Chemical industry and processing wastes – 781,118.46 t.
4. Polyethylene and plastic wastes – 12.2 t.
5. Glass slivers – 204.08 t.
6. Fluorescent lamps – 68,100 pieces.
7. Mining and mineral processing wastes – 11 780 000 t.
8. Construction materials production wastes – 35,678.65 t.
9. Timber processing wastes – 19,592.59 m³.
10. Alcohol beverages and soft drinks industry wastes – 44,996 t.
11. Other organic and inorganic wastes – 1,490.68 t.

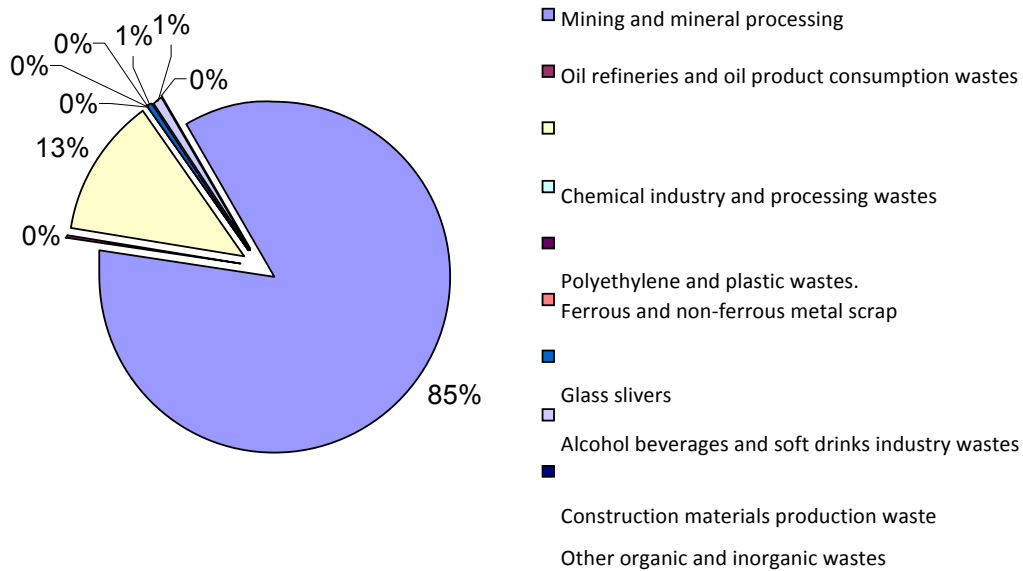
908,740 tons of the abovementioned volumes fall on hazardous wastes.

Summary:

According to the waste inventory data, the biggest share of the industrial waste falls on the mining. It is followed by chemical industry. Despite the fact that currently mining is not the leading industrial sector of the country the old mining wastes accumulated in the various regions of the country still represent the substantial pollution sources.

Fig. 5.1

TYPES OF INDUSTRIAL WASTES IN GEORGIA



It should be mentioned that Table 2 contains only the data on categories and volumes of the wastes found at the sites where the inventory has been carried out.

With regard to this issue, the inventory team continues working on basis of available statistical data. The inventory materials are weak in the part of commenting on issues of disposing, processing, recycling or sterilising the wastes. It seems reasonable to seek more information in this direction.

6. Results of Medical Waste Inventory

Foreword

The wastes represent the serious problem for many countries, including Georgia, especially in consideration of the fact that there are no accurate and comprehensive data on their generation, sterilisation, processing and disposal. There are no official statistical data on waste either. Within the pas years, no measures were taken for bringing landfills in compliance with environmental or sanitary-hygienic requirements and standards. The wastes are not separated. Because of this, the metal, glass, various polymeric and other types of wastes are mixed with medical wastes at the landfills.



6.1 Goal of Medical Waste Inventory

The goal of the research was inventory of medical waste in medical institutions of Georgia. The inventory has been carried out by the Ministry of Environment Protection and Natural Resources of Georgia, with the support of United Nations Development Program. Inventory was carried out in September-December 2006. Inventory of medical waste was the part of comprehensive waste inventory in Georgia.

6.2 Methods Applied

For the purposes of inventory of the waste in medical institutions of Georgia and reviewing their management practices, the respective Questionnaire on Inventory of Medical Waste has been developed in accordance with the Ordinance No 300/N on Approval of Rules for Collection, Storage and Sterilisation of Medical Wastes (dd. August 16, 2001) of Ministry of Labour, Health and Social Security of Georgia.

In order to facilitate the process of filling out the questionnaires, the Medical waste Classifier determined by the Ordinance on Approval of Rules for Collection, Storage and Sterilisation of Medical Wastes had been enclosed.

Collection of primary information on inventory and internal waste management practices in the medical institutions of Georgia on the basis of the abovementioned questionnaires was carried out in Tbilisi and all other regions of the country. 268 medical institutions (78 in Tbilisi and 190 in the regions) have been covered.

According to the 2005 Healthcare Statistics Reference Book, there were 85 stationary medical institutions in Tbilisi; 67 of them were medicals and 18 – scientific-research institutes; total number of beds was 7,122, including 5,047 in medicals.

Carrying out inventory in three out of 78 medical institutions of Tbilisi (Republican Medical, Children Medical No5 and Scientific-Research Institute for Cardiology) was impossible, since Republican Medical and Scientific-Research Institute for Cardiology are undergoing total reconstruction and rehabilitation, and Children Medical No5 ceased operation several years ago.

Prior to filling out questionnaire, the respective personnel (persons appointed by the administration) have been instructed in presence of the administration representatives in every medical institution of Tbilisi.

Each of the medical institutions of Tbilisi was given 10 days for filling out the questionnaires. After this term the questionnaires were collected and processed.

In order to ensure timely accomplishment of the works in the regions, prior to filling out the questionnaires, local medical staff has been instructed by the Regional Units of Ministry of Environmental Protection and Natural Resources.

Based on the information provided from the regions, the respective tables were drawn up, and the primary data on medical waste volumes have been entered into them without alteration (Tables 3.1-3.11, Annex 3).

Despite the fact that 75 Tbilisi and 193 regional medical institutions submitted the filled out questionnaires, it appeared that in most of them the additional consultations were needed, because they experienced difficulties with filling out certain fields, like 'volumes of the generated waste', 'classification', 'internal waste management', 'qualitative and quantitative analyses of waste', 'containers', 'disposal methods', etc.

10 out of 75 Tbilisi medical institutions practically failed to submit data in accordance with the classification determined by the Rules for Collection, Storage and Sterilisation of Medical Wastes; same problems were experienced by the 58 regional institutions: 3 out of three in Mtskheta-Mtianeti Region, 7 out of 21 in Kvemo Kartli, 8 out of 15 in Shida Kartli, 1 out of 2 in Racha-Lechkhumi and Kvemo Svaneti, 8 out of 17 in Kakheti, 11 out of 17 in Samtskhe-Javakheti, 14 out of 28 in Imereti and 6 out of 10 in Poti. 13 institutions submitted only part of the required data, and according to the information submitted by 45 medical institutions (including 3 in Mtskheta-Mtianeti, 6 in Kvemo Kartli, 8 in Kakheti, 11 in Samtskhe-Javakheti, 14 in Imereti and 6 in Poti), they are not keeping the records of waste at all.

Due to the fact that data submitted by 236 medical institutions of Tbilisi and regions were not full, some of the data was specified during the repeated visits at those institutions or through personal and phone interviews. Besides this, the additional researches and estimations were conducted for 20 medical institutions in various regions, including 3 in Guria, 6 in Racha-Lechkhumi and Kvemo Svaneti, 3 in Mtskheta-Mtianeti, 2 in Samtskhe-Javakheti and 2 in Kvemo Kartli. Ultimately, the works covered 268 medical institutions throughout the country (Table 3).

Medical institutions, in which the planned and additional medical waste inventory has been carried out.

Table 3

#	Number of Medical Institutions				
	City, Region	According to statistical data	Number of sites, in which the planned inventory has been carried out	Number of sites, in which the additional inventory has been carried out	Total number of sites, in which the inventory has been carried out, or the waste volumes have been determined on basis of statistical data
1.	Tbilisi	67	78	-	78
2.	Achara AR	22	20	-	20
3.	Guria	6	3	3	6
4.	Racha-Lechkhumi and Kvemo Svaneti	4	2	6	8
5.	Samegrelo-Zemo Svaneti	26	22	-	22
6.	Imereti	31	28	-	28
7.	Kakheti	22	17	-	17
8.	Mtskheta-Mtianeti	6	3	3	6
9.	Samtskhe-Javakheti	13	17	2	19
10.	Kvemo Kartli	22	21	4	25
11.	Shida Kartli	13	15	2	17
12.	Poti	4	10	-	19
13.	Other Agencies	12	-	12	12
14.	Georgia	248	236	32	268

Based on the above, the revised version of the volumes of waste generated in medical institutions has been developed, the special tables containing the name of the institution, number of beds, number of in- and outpatients served during one calendar year and estimated volumes of generated waste by the categories were drawn up (Tables 3.1-3.11, Annex 3). Ultimately, the two tables (Tables 4 and 5) were drawn up. They present both the primary and revised versions for Tbilisi and regions.

6.3 Results of Medical Waste Inventory in Medical Institutions of Tbilisi

Analyses of the medical waste inventory materials submitted by the medical institutions of Tbilisi demonstrated that, as a whole, show that 75 medical institutions of Tbilisi generate 2,174,543.5 kg of medical waste per year, including: Category A – 1,292,995 kg; Category B – 785,369.8 kg; Category C – 3,079.6 kg; and Category D – 93,099.1 kg.

Wastes containing radioactive elements, according to the submitted data, were not registered in the mentioned medical institutions.

The inventory process revealed that many medical institutions are unaware of the Rules for Collection, Storage and Sterilisation of Medical Waste approved by the Ordinance No 300/N of the Minister of Labour, Health and Social Security of Georgia (August 16, 2001); administrations do not appoint special persons in charge of waste management (sanitarian and/or epidemiologist); in many cases, the responsibility for waste management in medicals, instead of sanitarians or epidemiologists, is imposed on matrons. Some medicals do not employ the sanitarians and/or epidemiologists at all.

Majority of medical institutions is constructed and/or reconstructed before 1990, in the period when there were no sanitary rules and norms on collection, transportation and sterilisation of medical wastes, and the construction standards and norms did not require arrangement of temporary storage facilities for the medical wastes or facilities for safe utilisation of such wastes in medical institutions.

In order to create the picture that would be maximally close to the actual situation, we have recalculated the figures submitted from the sites⁵, and identified volumes of waste generated by 75 Tbilisi medical institutions during the year (Table 3.12, Annex 3). Based on this methodology, It was identified that 75 medical institutions of Tbilisi generate 5,199,799.5 kg of medical waste per annum, including: Category A – 4,505,425.1 kg; Category B – 545,053.1 kg; Category C – 75,782.2 kg; and Category D – 73,539.1 kg.

In consideration of the fact that the medical institutions, due to the existing socio-economic situation, do not work at the full capacities, the received results shall be corrected in accordance with the respective percentage indicators.

According to the official data, average workload of the medical institutions varies from 40 to 60% (in some cases to 70%), and in regions, between 30 and 40%. Based on this, the general results received through analyses of inventory carried out in Tbilisi medical institutions shall be recalculated in accordance with these percentage indicators.

Hence, in consideration of 65% workload, Tbilisi medical institutions produce 3,379,869.7 kg of medical waste (65% of 5,199,799.5) per annum, including : Category A – 2,928,526.2 kg; Category B – 354,284.5 kg; Category C – 49,258.4 kg; and Category D – 47,800.4 kg.

Correctness of these figures is approved by the calculations included into Healthcare Statistical Reference Book, which states that 7,122 beds of 85 medical institutions of Tbilisi generate 3,379,389 kg of medical waste annually.

It can be said that there are various methods of calculating the waste generation rates in medical institutions, although the preferences shall be given to the results of the works carried out by specialists and special services at the sites. Unfortunately, in Tbilisi, this is not considered serious and very few activities are performed in this direction.

6.4 Results of Medical Waste Inventory in Medical Institutions of Georgian Regions

Analyses of the medical waste inventory materials submitted by the medical institutions of Georgia demonstrated that, as a whole, these medical institutions (including those of Tbilisi) generate 2,433,390.5 kg of medical waste per annum, including: Category A – 1,516,044 kg; Category B – 818,089.4 kg; Category C – 4,526.6 kg; and Category D – 94,720.1 kg (Table 4).

Volumes of medical wastes in Georgia, according to the information submitted by the medical institutions

Table 4

#	City, region	Waste volumes by the categories, kg				Total
		Category A	Category B	Category C	Category D	
1.	2	3	4	5	6	7
1.	Tbilisi	1292995	785369,8	3079,6	93099,1	2174543
2.	Achara AR	77850	13750	780	246	94626
3.	Guria	680	425	50	70	1225
4.	Racha-Lechkhumi and Kvemo Svaneti	450	70	-	-	520
5.	Samegrelo-Zemo Svaneti	39704,4	3759,6	-	651	44115
6.	Imereti	16755	4092	117	120,5	21085
7.	Kakheti	2603	730	300	306,6	3940
8.	Mtskheta-Mtianeti	-	-	-	-	-
9.	Samtskhe-Javakheti	33960	925	-	204	35089

⁵ V. G. Akimkin, *Sanitary-Epidemiological Requirements for Organising Collection, Sterilisation, Temporary Storage and Disposal of Hospital Wastes in Medical Institutions*, Moscow, 2004.

10.	Kvemo Kartli	16240	3075	200	23	19538
11.	Shida Kartli	33260	3780	-	-	37040
12.	Poti	1550	115	10	-	1650
13.	Total	1516044,4	818089,4	4526,6	94720,1	2 433 390

Wastes containing radioactive elements, according to the submitted data, were not registered in the mentioned medical institutions.

6.5 Summary and Evaluation of the Situation Revealed by Medical Waste Inventory

The inventory process revealed that many medical institutions, including those in Tbilisi, are unaware of the Rules for Collection, Storage and Sterilisation of Medical Waste approved by the Ordinance No 300/N of the Minister of Labour, Health and Social Security of Georgia (August 16, 2001); administrations do not appoint special persons in charge of waste management (sanitarian and/or epidemiologist); in many cases, the responsibility for waste management in medicals, instead of sanitarians or epidemiologists, is imposed on matrons. Some medicals do not employ the sanitarians and/or epidemiologists at all.

The medical institutions have not developed and approved instructions on waste management and waste disposal plan; training of personnel in these issues is not organised; often, personnel is unaware of waste classification issues, etc. This, of course, indicates towards the unsatisfactory condition of epidemiological regime.

Majority of medical institutions is constructed and/or reconstructed before 1990, in the period when there were no sanitary rules and norms on collection, transportation and sterilisation of medical wastes, and the construction standards and norms did not require arrangement of temporary storage facilities for the medical wastes or facilities for safe utilisation of such wastes in medical institutions.

In order to create the picture that would be maximally close to the actual situation, Based on Akimkin methodology⁴ we have recalculated the figures submitted by the sites, and identified volumes of waste generated by medical institutions of the country during the year (Table 5).

Revised version of volumes of medical wastes in Georgia

Table 5

#	City, region	No of beds	Waste volumes by the categories, kg				Total, kg
			Category A	Category B	Category C	Category D	
1.	2	3	4	5	6	7	8
1.	Tbilisi	7122	2928526,2	354284,5	49258,4	47800,4	3 379870
2.	Achara AR	1642	779129	93495,5	780	246	873650
3.	Guria	345	163702,5	19644,3	50	70	183467
4.	Racha-Lechkhumi and Kvemo Svaneti	255	120997,5	14519,7	70	-	135587
5.	Samegrelo-Zemo Svaneti	1230	583635	70036,2	-	651	654322
6.	Imereti	2266	1075217	129026	117	120,5	1204480
7.	Kakheti	775	367737,5	44128,5	300	306,5	412472
8.	Mtskheta-Mtianeti	183	86833,5	14962,1	-	-	101795
9.	Samtskhe-Javakheti	686	490899,1	58907,9	53144	-	602 951
10.	Kvemo Kartli	1094	519103	62292,4	200	23	581618
11.	Shida Kartli	909	431320,5	51758,5	-	-	483079
12.	Poti	266	126217	15146	10	-	141373
13.	Other Agencies	1307	620171,5	74420,6	-	-	694592
14.	Georgia	17841	8293490	1002620	103930	49220	9 449 260

As a whole, 268 medical institutions of Georgia generate 9,449,260 kg of medical wastes per year, including: Category A – 8,293,490 kg; Category B – 1,002,620 kg; Category C – 103,930 kg; and Category D – 49,220 kg.

In consideration of the fact that the workload rates of medical institutions in the regions vary in the range of 30 to 40%, and based on the data contained in Table 5, the 40% indicator has been calculated, according to which the regional medical institutions generate 2,427,755.52 kg of medical wastes per year, including: Category A – 2,145,985.24 kg; Category B – 259,335.08 kg; Category C – 21,868.4 kg; and Category D – 566.8 kg.

In consideration of 65% workload, Tbilisi medical institutions produce 3,379,869.7 kg of medical waste (65% of 5,199,799.5) per year, including : Category A – 2,928,526.2 kg; Category B – 354,284.5 kg; Category C – 49,258.4 kg; and Category D – 47,800.4 kg.

As a whole, for the entire country, medical institutions generate 5,807,625.02 kg of medical wastes per annum, including: Category A – 5,074,511.44 kg; Category B – 613,619.58 kg; Category C – 71,126.8 kg; and Category D – 48,367.2 kg.

According to the joint official statement of the Ministry of Labour, Health and Social Security of Georgia and the Ministry of Economic Development of Georgia (January 11, 2007), the old, depreciated medical building that are not subject to rehabilitation will be privatised shortly, and 100 new medicals equipped by modern facilities will be constructed. This will certainly promote the medical waste management at a country scale.

Supposedly, introduction of new, modern treatment methods and technologies will result in reduction of the above figures revealed by the medical waste inventory, and general situation will improve.

However, the current non-satisfactory waste management practices existing in the medical institutions make necessary adoption of specific regulations on internal management, disposal and utilisation of such wastes, and current existing capacities and number of employed personnel shall be taken into consideration.

6.6 Recommendations

- In order to improve the medical waste management in medical institutions, it is necessary to ensure staff training in these issues.
- The issues of utilisation of medicines with expired shelf life and counterfeit medicines shall be resolved.
- Problem of utilisation of materials, instruments, and other wastes of vaccination process, purification/sterilisation of waters from isolation and phthiological departments also require resolution, especially taking into account far not perfect conditions of sewage and water treatment systems.
- It is necessary to include the waste management issues into the conditions of licenses issued to medical institutions.

7. Results of Biological Waste Inventory

Inventory of biological waste mainly includes information by the number of perished animals, including: cattle, pigs, sheep, goats, poultry and caught stray dogs. The mentioned information was submitted by the veterinary services of the respective regions. The inventory experts did their best to ensure collection of maximum information.

The aggregate volumes of biological wastes (perished animals) by the regions are as follows:

Shida Kartli (in four districts): 347 heads of cattle, 278 pigs, 272 sheep and goats, 5,320 birds, 93 caught stray dogs.

Kvemo Kartli (in one city and six districts): 2,690 heads of cattle, 475 pigs, 5,113 sheep and goats, 10,538 birds, 1,351 caught stray dogs.

Mtskheta-Mtianeti (in two districts): information on cattle, sheep, goats and caught stray dogs not available; 50 pigs and 200 birds.

Achara AR: information on sheep, goats and pigs not available; 220 heads of cattle, 1,611 birds, 1,351 caught stray dogs. Besides this, 3,431 kg of spoiled animal products were confiscated from the retail network.

Guria (in three districts): 7 heads of cattle, 54 pigs, 115 sheep and goats, 1,680 birds, 94 caught stray dogs.

Samegrelo (in eight districts): 1,237 heads of cattle, 358 pigs, 351 sheep and goats, 5,318 birds, 636 caught stray dogs. Besides this, 1,097 kg of spoiled animal products were confiscated from the retail network.

Unfortunately, receiving information from some regions (Imereti, Samtskhe-Javakheti, Kakheti, Racha-Lechkhumi and Svaneti) was impossible. The information received from the other regions is also extremely shallow. Particularly, it does not show how the biological wastes are destroyed, sterilized. The dangerous diseases (foot-and-mouth disease, rabies, bird flu, etc.) caused by burials of perished animals are not registered.

Despite official requests and attempts, we failed to receive information from the respective service (Veterinary Department) of the Ministry of Agriculture, who shall be in a possession of more comprehensive and systemic information on these issues.

Based on the above, it is necessary to continue attempts with Veterinary Department of the Ministry of Agriculture and Department of Statistics, in order to ensure receiving more accurate information.

References:

1. *Environmental Performance Review of Georgia*, UNECE, 2003, Chapter 9, Mining, Industry and Environment;
2. *Environmental Performance Review of Georgia*, UNECE, 2003, Chapter 6, Waste Chemicals and Contaminated Sites;
3. *Sanitary-Epidemiological Requirements for Organising Collection, Sterilisation, Temporary Storage and Disposal of Hospital Wastes in Medical Institutions*, Akimkin V. G., Moscow, 2004.
4. To be supplemented!