

Inventory report

Tools and Possibilities for Reduction of Use of Hazardous Chemicals and Replacing them by Non-hazardous Chemical Substances, Including Non-chemical Alternatives in Georgia, Caucasus and Central Asia Regions

An analysis of the chemical legislation and the situation regarding hazardous chemicals and their alternatives in the agricultural and construction sectors



This project is funded by the QSP (UNEP)

Implemented by



Manual prepared by:

Rusudan Simonidze
Avtandil Geladze
Antonina Mxsiladze
Rostom Gamisonia
Beso Kalandadze
Anna Samwel

Inventory report is prepared by the NGO's: the Greens Movement of Georgia/Friends of the Earth-Georgia, Rural Community Development Agency – RCDA and Ecological Farming Association SEMA in cooperation with WECF – Women in Europe for a Common Future.

The project, “Tools and Possibilities for Reduction of Use of Hazardous Chemicals and Replacing them by Non-hazardous Chemical Substances, Including Non-chemical Alternatives in Georgia, Caucasus and Central Asia Regions” is financially supported by the Strategic Approach to International Chemicals Management – SAICM quick start Program (QSP TF)

"This publication has been produced with the assistance of the Quick Start Program within the SAICM program. The contents of this publication are the sole responsibility of 'Women in Europe for a Common Future' and can in no way be taken to reflect the views of the UNEP



Table of Content

Introduction	4
1 Legislation analysis.....	6
1.1 Analysis of the legal base related to the hazardous chemicals:	6
1.2 Enforcement status of the hazardous chemical import regulations..	9
2 Harmful Chemicals in Agriculture and their substitution.....	13
2.1 Pesticide use in Georgia	13
2.2 Alternatives and Biological Pesticides	15
3 Chapter 3 Construction materials in Georgia – from a chemical point of view	16
3.1 Overview	16
3.2 Imports	17
3.3 Asbestos	18
3.4 Asbestos and Alternatives.....	19
3.5 Substitutes for Asbestos-cement roofing	19
3.6 Production of Construction materials in Georgia.....	20
3.7 Manufactured imported construction materials	20
3.8 Natural construction materials.....	21
4 Conclusions and recommendations – (NGO Declaration)	23

Introduction

Introduction to chemicals

Chemicals are an integral part of everyday life with over 100,000 different substances in use. Industries producing and using these substances have an enormous impact on employment, trade and economic growth worldwide. There is hardly any industry where chemical substances are not implicated and there is no single economic sector where chemicals do not play an important role.

However, besides the benefits from chemicals, it is increasingly recognized that many of them also have the potential to adversely impact human health and the environment if not managed properly. The health related effects range from acute poisoning to long term effects, and can be linked to chemicals, such as:

- Persistent, bio-accumulative and toxic substances (PBTs);
- Chemicals that are carcinogens or mutagens, e.g. heavy metals, or that adversely affect the reproductive, endocrine, immune, or nervous systems;
- Chemicals that have immediate hazards (acutely toxic, explosives, corrosives);
- Chemicals of global concern such as persistent organic pollutants (POPs), greenhouse gases and ozone-depleting substances (ODS)

This report summarizes a study on the hazardous chemicals used in construction and in agriculture in Georgia. In the agricultural sector, pesticides use is not controlled or supervised neither on state nor farm level, and farmers have no proper advice to ensure correct use of the relevant pesticides. In the construction sector, asbestos is widely used and the awareness of its danger to the population is extremely low, even though asbestos is banned in more than 50 countries and in international conventions Georgia participates in. In general, a dissatisfactory legislative situation on hazardous chemicals is found in Georgia. There are alternative, organic pesticides and construction materials available that do not harm human health and the environment, but there are no political or economic incentives in place to promote the use of these alternatives.. Policy recommendations are presented in the last chapter as a conclusion.

The study summarized in this inventory report was carried out by three Georgian NGOs: Greens Movement of Georgia, Rural Community Development Agency (RCDA) and Georgian Ecological Farmers Agency (SEMA) and supervised by Women in Europe for a Common Future (WECF) in the frame of the SAICM global strategy and policy. The implementing NGOs have complementary knowledge on agriculture (SEMA), construction (RCDA), education and policy advocacy (Greens).

An introduction to SAICM

The Strategic Approach to International Chemicals Management (SAICM) is an international policy, strategy, and global plan of action that was adopted in 2006 by Environment Ministers, Health Ministers and other high level delegates from more than 100 governments. It has also been endorsed by relevant intergovernmental organizations, NGOs and industry trade associations. SAICM addresses both agricultural and industrial chemicals.

Its overall objective is to achieve the sound management of chemicals throughout their lifecycle so that, by 2020, chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment. In order to achieve this overall objective, SAICM stabilises subsidiary objectives under five headings: risk reduction, knowledge and information, governance; capacity-building and technical cooperation; and illegal international traffic.

In accepting SAICM, governments and intergovernmental organizations have agreed that those chemicals which pose an unreasonable and otherwise unmanageable risk to human health and the environment should no longer be produced; in addition to the use of these chemicals in practice. Governments have also agreed that all sectors of civil society should be given meaningful and active participation in regulatory and other decision making processes that relate to chemical safety, particularly women, workers and indigenous communities.

The current study and related project addresses the following activities of the Global Plan of Action:

27. Promote the use of low-risk pesticides and biocides including non-chemical alternatives and the substitution of the highly toxic, persistent and bioaccumulative ones.

20. Protect workers from chemicals causing asbestosis, other asbestos related diseases and occupational cancers, those chemicals included in the Rotterdam Convention because of their occupational risks and other hazardous chemicals based on their occupational health risks.

17. Promote exchange of information on successful experiences and projects related to chemical occupational safety and health.

164. Work to ensure broad and meaningful participation of stakeholders, including women, at all levels in devising responses to chemicals management challenges and in regulatory and decision-making processes that relate to chemical safety.

242. Promote the transfer of technology and knowledge for cleaner production and manufacture of alternatives.

1 Legislation analysis

The Nation of Georgia has made commitments, through a number of international and national legal acts, on bringing its national chemical management strategy into compliance with the international standards for chemical regulation.

Correct management of chemicals, and especially of hazardous chemicals, requires the **existence of a respective legal base, systematisation of information** (possession of accurate information on production, import-export), **dissemination of information** (informing users and population on the regulations of use, impact in human health, associated risks, etc), **appropriate disposal and very strict monitoring**.

The present chapter covers:

1.1 Analysis of the legal base

1.2 Status of enforcement of the hazardous chemical import regulations

1.1 Analysis of the legal base related to the hazardous chemicals:

Production, use and disposal of chemicals that are hazardous to human health and the natural environment in Georgia is regulated by the Constitution of Georgia, international acts recognised by Georgia, laws of Georgia and other standard acts.

Such regulations include:

- I. Constitution of Georgia
- II. International conventions, treaties and agreements
- III. Laws of Georgia
- IV. Ordinances of President of Georgia
- V. Decrees of Government of Georgia
- VI. Ordinances of ministers of Georgia

With regard to the hazardous chemicals, Georgia's legislation can be divided into two periods: before and after 2003.

Before 2003, Georgia's legislation was mainly based on the approaches and norms remaining from Soviet times, which made the requirements for production, use and disposal of hazardous chemicals stricter than in the following period. However, these norms were not perfect and did not take into consideration the findings and conclusions of recent studies. Besides, the previous norms were frequently and severely violated due to the deficiencies of the previous government.

After 2003, in correlation to the general liberalisation of legislation, the laws pertaining to the production, use and disposal of hazardous chemicals were also liberalised. This had a negative influence on the issues regarding human health and the environment. However, in this period, one could observe the attempts (unfortunately, with minimum effect) to comply with the international requirements and commitments.

Unfortunately, liberalisation of legislation in the field of hazardous chemicals in Georgia was carried out through a very simplistic approach, and in many cases, the only action was abolishing certain laws.

The following laws were abolished:

1. **The Law on Licensing of Activities in the Field of Production of Agrochemicals, Trade with Agrochemicals, Laboratory Activities in the Field of Agrochemistry**

and Soil Protection and Detecting the Quality of Agrochemicals and on Issuance of Import and Export Permits for Agrochemicals;

2. The Law on Licensing Production of and Trade with Pesticides and Permits for their Export/Import, as well as for Import and Transit of Phytogenous Products Subject to Control;

3. The Law on Hazardous Chemicals;

4. Georgian Sanitary Code

These laws were not in compliance with the international requirements, but they could have been improved.

In the same period, Georgia became party to a number of international conventions and treaties, and the country made important commitments, including those in the field of hazardous chemicals.

Hence, at the current stage, the existing laws and regulations of Georgia regarding hazardous chemicals are oriented towards implementation of the requirements and commitments under the respective international conventions and agreements, although these laws and regulations are extremely insufficient and inefficient.

Based on the above reality, the Stockholm Convention (adopted in 2001, entered into force in 2004, ratified by more than 150 countries) should serve as a legal milestone in the field of production use and disposal of POPs.

The Stockholm Convention's requirements for the member states are:

Prohibiting production and use of the pesticides and industrial chemicals listed therein;

Taking measures to reduce emissions of dioxin and similar hazardous chemicals, with the target of achievement of the permanent minimisation and, where possible, elimination of the emissions;

Taking measures that will result in reduction of the emissions of hazardous chemicals from the existing stocks or elimination of such stocks.

The Convention also sets out:

The procedures for including the new chemicals into the lists of the chemicals controlled by the Convention;

Measures for raising public awareness, educating and informing the populations of the countries on hazardous chemicals and cooperation between the countries in this area;

Measures for improving efficiency of hazardous chemical monitoring and studies.

Convention also allows for the exemptions:

Upon the request of the country, it can use one of the banned pesticides for the certain period of time;

If the country registers its intention, it can for instance produce or use DDT within the strictest framework of WHO requirements and only in cases, when the purposes are local and the substance cannot be replaced by other accessible, efficient and allowable alternative means.

At the current stage, the level of compliance in Georgia towards its commitments and responsibilities under this and the other international instruments (Annex 1) is far from satisfactory, the main reason for this being imperfect and irrelevant legal base.

By the imperfections of the legislation, we mean that dozens of laws and standard acts still need to be passed in order to achieve compliance with the commitments before the international community; while "irrelevant" means that the existing legal and standard acts require serious revision in order to ensure:

- Distribution of responsibilities between the respective state structures;
- Definition of tasks and responsibilities of the relevant actors
- Creation of respective financial, technical and intellectual base;
- Definition of legislation enforcement mechanisms;
- Etc.

The Ministry of Foreign Affairs in Georgia has recognised and notified the international community and Stockholm member states that the focal Georgian governmental entity for the Stockholm Convention requirements is the Ministry of Environment Protection and Natural Resources, and it is endowed with the respective responsibilities.

However, these responsibilities are not based on any national regulation. Furthermore, despite the fact that issues covered by the Stockholm Convention in Georgia are regulated by more than 4 ministries and many lower level state authorities, there are still no legal acts in place that would aim towards:

- Regulating relations between these structures;
- Defining the rights and responsibilities of the Focal Point;
- Setting the requirements for the coordinated activities by the respective state authorities;
- Setting the requirements for accountability and creation of unified national database;
- Developing the mechanisms for notifying the respective authorities and implementers on the requirements of the Convention and other news;
- Setting the mechanisms for informing the public and division of responsibilities with this regard;
- Etc.

The process of development and adoption of the various laws and regulations that would ensure compliance with the requirements of the Stockholm Convention is fragmented and depends on the interests of the specific state body.

There is no unified strategy of legal acts' development and adoption in place; up to now, the interagency coordination group that would work on these issues has not been established.

A clear example of such uncoordinated activities is the Law of April 8, 2010 on Control of Technical Hazard. This law was supposed to replace the Law on Safety of Hazardous Industrial Sites and the Law on hazardous Chemical Substances, but entered into force only a year after the laws it was supposed to replace were banned, creating a legislation vacuum for one year. There also are the problems with the content:

The new Law on Control of Technical Hazard does not, even to the minimum extent, reflect the norms of the abolished Law on Hazardous Chemical Substances.

For instance, the subject regulated by the Law of Georgia on Hazardous Chemical Substances was:

“Article 1. This Law regulates legal relations between state authorities and natural and legal persons in the field of creation, testing and state examination, standardisation, registration, production, packaging, marking and labelling, transportation, use, export and import, processing, sterilisation, disposal, limitation, prohibition, banning, removal from use of, as well as applying the state and agency control rules to the hazardous chemical substances.”

While the subject regulated by the Law of Georgia on Control of Technical Hazard is:

“Article 2/1. This Law regulates the sites with higher technical risks and associated processes, production, construction, storage, transportation, circulation, use and disposal of which contains the risk of destruction, explosion, emission and intoxication and imposes the higher risks on human life, health, property or environment.”

It is clear that the abolished law includes a wider range of activities that apply to hazardous chemical substances, whereas the new law includes limited activities related to “higher technical risks.” Furthermore, the new law’s term of “higher technical risks” is ambiguous and could result in interpretations that would exclude chemical substances from this term when

contemplating its definition.

The weak preparation of the Law on Control of Technical Hazard is witnessed by the fact that the first major amendment to it was introduced two months after the Law was passed, and the second major amendment 5 months after that.

The only aim of these amendments was to postpone the date of initiating the Law, and this, along with the imperfection of the act, resulted in a legislative vacuum.

The aforementioned issues confirms that there is no comprehensively considered, respectively systematised and codified legal base set in Georgia that would ensure fulfilment of the commitments under Stockholm Convention and other international treaties and agreements. This phenomenon also causes serious deficiencies in practical implementation.

1.2 Enforcement status of the hazardous chemical import regulations

The strategic approach towards international regulation of hazardous chemicals and correct management implies possession of the accurate information on the kind and quantities of hazardous chemicals imported/exported to/from the country; in addition to where they are used, are the safety norms observed or not, and is the local population informed on the health impact risks and safety measures.

Georgia is a party to a number of international agreements limiting the use of chemicals that are hazardous to the environment. These agreements include:

1. The 2001 Stockholm Convention on Persistent Organic Pollutants (POPs) that obliges Georgia to ban 21 most hazardous chemicals. POPs possess a particular combination of physical and chemical properties that once they are released into the environment, they:

- remain intact for exceptionally long periods of time (many years);
- become widely distributed throughout the environment as a result of natural processes involving soil, water and, most notably, air;
- accumulate in the fatty tissue of living organisms including humans, and are found at higher concentrations at higher levels in the food chain; and
- are toxic to both humans and wildlife.

(2. Since 2004, Georgia is a party to the 1998 Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, which regulates international trade procedures for 43 hazardous chemicals. In order to arrange the international transportation of the listed chemicals, the exporting country shall notify the importing country and receive the official consent from the latter. In Georgia, the substances regulated by this Convention are included into the so called “List of Materials with Limited Circulation” and their production, international or domestic transportation requires special permit (the respective provision is suspended till June 1, 2012). Besides this, the substances regulated by the Stockholm and Rotterdam Conventions, are banned for production, use in and import/export to/from Georgia based on the 2001 Ordinance 133/n by the Minister of Labour, Health and Social Security of Georgia.

The parties to the Rotterdam Convention are trying to significantly improve the flow of information on hazardous chemicals and pesticides through introduction of the “Right to Know” mechanism that provides the population of a country with the necessary information on human health and environmental health risks associated with chemicals. Based on this information, the country makes a decision to ban or continue importation of the chemicals in question.

Despite the fact that the Rotterdam Convention, unlike the Stockholm Convention, does not imply banning, it still represents a powerful instrument for protection of the country and its population from the negative impacts of hazardous chemicals. The parties to the Convention

shall reveal its goals and make them nationally practical through introduction of the mechanisms. These mechanisms will allow countries to make correct decisions and ensure protection of human health and the environment from the adverse effects of certain hazardous chemicals and pesticides in the field of international trade.

In 1992, the development process of a labelling and classification system for consumers' goods commenced. The 2002 World Summit in Johannesburg decided that the states shall introduce the harmonised labelling and classification system for chemicals on a global level in 2008. They agreed that the global system would be in accordance with the 1992 labelling and classification system for consumers' goods. However, this has not been fully implemented. The process of registry development for the chemicals existing in the market that are in accordance with GHS standards is still underway.

Here are additional Georgian instruments that are in use:

1. The National Nomenclature of Commodities for Foreign Economic Activities (NNC FEA) developed on the basis of the 2007 edition of the International Convention on Harmonised Commodity Description and Coding System. The mentioned Nomenclature is detailed to eleven digits, in consideration of the specificities of the national economy.
2. The National Nomenclature of Commodities for Foreign Economic Activities (NNC FEA) is used for tariff and non-tariff regulation of foreign economic activities.
3. Provision of statistical service and improvement of exchange of the statistical information.

Besides the substantial systematic violations existing in the field of import, the need for ensuring accessibility of information to a broad range of population was revealed.

Information on import of hazardous chemicals is public, and theoretically, everybody can have access to it through the Internet. However, the analysis of this information requires very specific knowledge and experience, which makes it practically inaccessible for the common public. No other means of accessing this information are provided.

Unfortunately, the only way citizens are notified of the possible adverse effects hazardous chemicals have on the human health is based upon the verbal warning and recommendations from the sales persons in the retail chain. This also applies to citizens' awareness of hazardous chemical's rules of use.

The study on import/export of the substances listed in the Rotterdam Convention and Stockholm Convention and the Georgian documentation (substances subjected to ban or strict limitation for production, use in and import/export to/from Georgia) to Ordinance No 133/n (26.03.2001) of the Minister of Labour, Health and Social Security of Georgia has been conducted. The information has been obtained from the web-site of the Ministry of Finance of Georgia: [http://www.mof.ge/show_law.aspx?id=348] (tax and customs information on import/export – <http://www.mof.ge/2066>; <http://www.mof.ge/3321>).

On these sites, we were able to obtain the respective codes of the abovementioned chemicals (*National Nomenclature of Commodities for Foreign Economic Activities (NNC FEA)*), and based on these codes, we have checked the situation with import/export of these substances to/from Georgia.

The results are included in the Tables below and annex 1.

The Study demonstrated that none of the banned pesticides under the general code 3808 50 000 have been imported/exported in 2009; (*annex1*)

While the situation for 2010-2011 is shown in Tables 1 and 2

June-December 2010

Table 1

Import of Chemicals Regulated by Rotterdam and Stockholm Conventions to Georgia (Based on the Customs Office data)

Code	Country		Quantity, kg	Price USD	Quantity in other units
38085000000	Germany	Import	172	1288,37	172
38085000000	Germany	Import	24	405,92	24
38085000000	Germany	Import	110	1161,642412	110
38085000000	Germany	Import	46	494,63	46
38085000000	Germany	Import	34	260.27069	34
38085000000	USA	Import	1	1	1
38085000000	Germany	Import	29	317	29
38085000000	Germany	Import	16	145	16
2010		Import	432	4073,83	432

January-February-March 2011

Table 2

Import of Chemicals Regulated by Rotterdam and Stockholm Conventions to Georgia (Based on the Customs Office data)

Code	Country		Quantity, kg	Price, USD	Quantity in other units
38085000000	Import	Turkey	220	535,5231833	220
38085000000	Import	Armenia	1	2,238975173	1
38085000000	Import	Germany	11	71,07634474	11
38085000000	Import	Germany	18	176	18
38085000000	Import	China	310	959	310
38085000000	Import	Ukraine	1	11	1
38085000000	Import	Germany	3	48,29578616	3
2011	Import		564	1803,04	564
29231000000	Import	France	50	1563	50

Despite the fact that import of asbestos is prohibited in Georgia, asbestos containing materials are freely imported.

2010 - 2011

Table 3

Import of asbestos containing materials to Georgia
(based on the Customs Office information)

Code	Country		Quantity, kg	Price, USD	Quantity in other units
68114000000	Ukraine	Import	328900	77979,00	328900
68118100000	Turkey	Import	4500	2419.88	4500
68114000000	Bulgaria	Import	2630	737.01	2630
68114000000	Ukraine	Import	187050	41088.00	187050

Inventory report: An analysis of the chemical legislation and the situation regarding hazardous chemicals and their alternatives in the agricultural and construction sectors

68114000000	Import	Ukraine	197340	48963	197340
68114000000	Import	Iran	273	570	273
68114000000	Import	Russia	50	2132	50
68132000005	Import	United Arab Emirates	13,81	239,1855934	13,81
68132000005	Import	Turkey	66	1952,980442	66
68132000005	Import	Russia	1	356,7712799	1
68132000005	Import	Ukraine	35	35,00113843	35
68132000005	Import	China	64	257	64
68132000005	Import	India	489	1127	489
68132000005	Import	United Arab Emirates	31	1904	31
68132000005	Import	Turkey	605	7243	605
68132000005	Import	Ukraine	1	3	1
8114000000	Import	Ukraine	190480	46592	190480
29031500000	Import	Ukraine	16790	14275	16790
14000000	Import	Ukraine	253020	58779	253020
68114000000	Import	Ukraine	3134	13051	3134

As it can be seen from the obtained documents, large quantities of some chemicals included in the list of the banned materials of the Ordinance No 133/n are still imported to Georgia despite the legal banning (see Tables 1-3). The investigation demonstrated that:

- Number of chemicals banned by the NNC FEA are represented just by the generalised code and it is impossible to identify which of the banned chemicals are imported; for instance, code 3808 50 000 00 includes the list of banned pesticides – aldrin (ISO), binapacryl (ISO), chlorinated camphene (ISO) (toxaphene), captafol (ISO), chlordane (ISO), chlordimeform (ISO), chlorobenzilate (ISO), DDT (ISO) (chlorfenotan (INN)), dieldrin (ISO, INN), dinoseb (ISO), its salts and esters, ethylene dibromide (ISO) (1,2 dibromoethane), ethylene dichloride (ISO) (1,2 dichloroethane), fluoroacetamide (ISO), heptachlor (ISO), hexachlorobenzene (ISO), 1,2,3,4,5 hexachlorocyclohexane (ISO), including lindane (ISO, INN), mercury compounds, methamidophos (ISO), monocrotophos (ISO), epoxide (ethylene oxide), parathion (ISO), parathionmethyl (ISO) (metalparathion), heptachlorophenol (ISO); phosphamidon (ISO), 2,4,5T (ISO) (2,4,5 trichlorophenolacetate acid), its salts and compound esters. All of the listed chemicals could be imported despite the ban and it is impossible to identify which substance and in what quantities has been imported.
- Some of the chemicals included in the list of Ordinance No 133/n are not coded at all (see Table 1).

Based on the above information, it is necessary to improve and rearrange the codification system. To sum up:

- Despite requirements agreed upon in the international conventions, there is no legal mechanism in place that would allow us to control imports of asbestos containing materials. This is the reason for rather large inflow of asbestos containing materials.
- Besides, there are serious deficiencies in the field that inform consumers about the allowed and registered pesticides and other agro-chemicals. There are several problems in this regard: mistrust between the suppliers and consumer, content and form of the provided information, its clarity, names and dosing of the chemicals, etc.
- Consumers are not provided with recommendations on the application of pesticides, and indication of the associated risks and possible adverse effects are not communicated. This results in a superficial attitude among consumers to regard the rules.

2 Harmful Chemicals in Agriculture and their substitution

2.1 Pesticide use in Georgia

The greatest quantities of harmful chemicals are consumed in agriculture. Contemporary agriculture is characterized by wide application of industrial technologies for the growing and processing of agricultural crops. This implies extensive consumption of chemicals through different types of pesticides (insecticides, herbicides, fungicides, etc.).

Making decisions with respect to pesticides' application is a complex process, even in cases of well-organized management systems (legislative basis, transportation, storage, distribution, wastes decontamination, awareness of consumers, safety etc.). This phenomenon is associated with numerous difficulties in any country.

The Georgian market is saturated with various chemical pesticides, especially when considering its size. Currently, up to 190 active substances and about 400 of their various derivative complex preparations are registered. Most of them are low quality chemical pesticides produced in China, India, Turkey and Bulgaria. Also, various pesticides from Europe are sold on the Georgian market, produced by the big companies: BASF, Syngenta, Bayer, Newfarm, Dupont. Pesticides originating from Russia and Ukraine are presented in relatively small quantities.

In the experts' opinion, the European products are of a higher technical quality, because the toxins are technologically purified and relatively expensive. As for the Chinese, Indian and Turkish products, both their price and quality are quite low, and hence, their reliability is doubtful. Quality of chemical pesticides depends on the technological purity of their active substance. Substances produced in Europe are maximally purified from the admixtures in costly technological processes (this determines expensiveness of such pesticides). In the cheap pesticides with doubtful origin purity of the active substance, the quality is very low (i.e. they have little share in the aggregate weight), and they contain great quantities of the residual and ballast substances. Therefore, their quality in terms of efficiency and toxicity due to by-products, in many cases, is quite doubtful. It should be noted, that pesticides from the EU, can also be very toxic and harmful to the environment and human health.

For the purpose of importing cheap chemical preparations some importers register several analogues of one and the same preparation produced by China, India or Turkey. For example:

- Fungicide "ridomil" is produced in Switzerland. Its analogue "vasalaxyl" is produced by China. Fungicide "acrobat" produced in China is much cheaper and its quality is much lower compared with the European analogue.
- Use of insecticide "B-58 New" is very limited in the EU, at most twice in the vegetation period, while in Georgia this preparation has 12 analogues and it is used very frequently.
- The fungicide "Cichom" containing copper and zink is available in Georgia, while it was banned in the EU countries long ago. This preparation is imported from China.
- Active substance of preparation "dust" is deltamethrin. It is registered in veterinary fields but is applied for plant protection as well. It works against various sucking mites and gnawing bugs, and its reason for use is completely unacceptable due to its toxicity to aquatic life, particularly fish. It is neurotoxic to humans and has been found in human breast milk worldwide. In Georgia, it is widely available in most markets and comes without any instructions or labelling.

Although there are about 150 specialized shops, farmers' houses, and distribution networks of the companies: "Bayer", "Agrogeorgia", "BodunAgroChemistry", "Environment and Analytics" in the country, most consumers are unaware of the risks related to pesticide application, storage and disposal. In addition, risky behaviour towards pesticides has been

observed in many cases.

The total per annum quantity of imported pesticides is the only known Georgian pesticide statistic, comprising 1000-1300-1500 tons – Table 6. There are no records about quantities and types of pesticides consumed by regions, or the types of land in the regions (individual homestead lands, privatized plots of tens of ha areas). Collection and analysis of such information is necessary to assess the pesticide effect towards land parcels and hence condition, with respect to environmental pollution and harm to human health.

Improper application of the mineral and organic fertilizers, and chemical means of plants protection, in the process of agricultural production causes significant environmental pollution, contamination of the soil and atmosphere, vegetable and animal products, and potable and irrigation waters. These various toxic substances can result not only in poisoning and severe illnesses, but in many cases, death.

All this is caused by the facts, that unlike currently, *in the past*:

1. There was an effective operating plant protection service;
2. Plant protection measures were implemented by professionals according to short- and long-term prognosis based on monitoring;
3. Products imported into the country were inspected by the specialists who accepted or rejected them;
4. Quantities of pesticides imported from foreign countries were regulated, their transportation, distribution and consumption were subjected to control;
5. Distribution of any pesticide was allowed only in case of intensive testing with positive results, resulting in registration;
6. Chemicals were applied mostly by specialists or under their supervision.

Currently:

1. The number of pesticides consumers increased many times while the majority of its users lack awareness and vital information;
2. Because of the absence of binding legal requirements, business interests dominate the overall management of chemicals.
3. Irresponsible attitude towards the general requirements of chemicals management resulted in lack of trust between suppliers and consumers;

This data demonstrates the extreme gap in chemicals management, whereas the issue was regulated better in the past. The cause of this development is a general liberalisation, decrease of control, and partly due to ignorance.

The quantities of imported pesticides with their possible use in Georgia were analyzed (tables 4-5) in order to get a better picture of the ‘real’ situation regarding pesticides.

Import of Pesticides into Georgia by Years and Types
(Source: web page of the Ministry of Finance)

Table 4

Year	Insecticides (kg)	Fungicides (kg)	Herbicides (kg)	Means against sprouting (kg)	Rodenticides (kg)	Other (kg)	Total kg)
2011	264589	773051,6	328076,2	32917	25775	84920,4	1509329

2010	240 337	804 266	166 387	780	39054	54 640	1 305 464
2009	264	391	----	---	3527		4182

Import of Pesticides (Not Prohibited) into Georgia by Years
(Source: Chemical Profile of Georgia 2005-2007 and 2008-2011 Web Page of the Ministry of Finance)

Table 5

Year	2005	2006	2007	2008	2009	2010	2011
Ton	3756	1008	802	---	4,182	1 305, 464	1 509, 329

According to statistical data, the total area of tilled soil in Georgia is 472 thousand ha, with 100.215 ha under perennial crops. Up to 370.000 ha of this area (excluding the farms with small parcels up to 0.2 ha) potentially uses pesticides.

Considering that certain parts of the land parcels have a small surface are not cultivated, and that some of the population can not afford pesticides (non-consumers), it is clear that a significant part of imported pesticides is excessive.

Excessive pesticide use, in any case, cause significant problems for a country.

For example, they can be sold for the following years, now as low effectiveness preparations, or they are at first stored and later buried.

Thus, the reasonable doubt arises that some manufacturers, through some distributors (importers to Georgia) use the territory of Georgia first as a warehouse and later as a site of disposal for the harmful chemical substances. This doubt is further strengthened by absence of facts in regards to there turn of the excessive pesticides to the country of origin as per international regulations.

At the current stage, the safe use of pesticides is not regulated in Georgia. This conclusion is made based on the following circumstances: quality, packaging and marking (Georgian text and application instructions on the labels) of pesticides are not controlled; and no market control is provided. These measures are voluntary and no obligatory control mechanisms exist.

Lack of trust between suppliers and consumers is another problem. There were numerous cases of bitter life experience where: the information provided to the consumers was far from reality; the form of information presentation was ineffective; and information was inconceivable. Every year, information provided about a particular preparation changes by listing its chemical composition, name and dosage different.

These facts let us conclude that drastic changes in legislation, distribution, retailing, use, information distribution, labelling, storage and disposal need to be achieved at all levels of the sector.

2.2 Alternatives and Biological Pesticides

“Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved.” (IFOAM, 2006)

The organic agriculture movement promotes farm methods that rely on crop rotation, green manure,2 compost, biological pest control and mechanical cultivation. In this way, growers can maintain soil productivity and control pests while excluding or strictly limiting the use of synthetic fertilizers and synthetic pesticides, plant growth regulators, livestock feed additives and genetically modified organisms.

Currently organic agriculture and pesticide reduction is significantly promoted, and demand and prices for organically produced crops grow annually all over the world.

Georgia is a country of ancient agrarian culture and traditions. A reasonable approach is desired for Georgian peasants and farmers to manufacture biological products, and replace chemical plant protection with the integrated, biological measures.

Traditionally, various tinctures and solutions of various plants are prepared, like tobacco, datura, henbane, garlic, tomato and others. Though they have proven their effectiveness, these measures are mostly for prophylactics and proper monitoring and planning is required. Measures of crop rotation (don't grow the same crop on the same plot of land, but rotate and include green fertilizers in the rotation), intercropping (planting plant species beneficial to each other in each other's proximity) and other means of planning and positioning of plants are of great importance for plant health. Much of the traditional knowledge on plant protection has been lost during the communism era, and organic agriculture has to be revived now for the protection of people and the environment.

Very few organic pesticides are sold at Georgian markets. Distributors state that this is caused by high prices and low demands, while low demand actually is caused by lack of information among the public or its complete absence.

Several official bio-pesticides are registered, e.g.: "Nimazal", "Bioxybacillin", "Lepidocide" etc.

Regarding the above, import into Georgia and the adoption of the plant protection means produced by KOPPERT, the largest manufacturer of world famous biological pesticides, is of great significance. The company also produces the means for plant protection from insects – so called pheromones, which are able to play a big role in the reduction of pests.

The demand for biological preparations for crop protection, as well as the demand for organic food is expected to increase in Georgia, and therefore, it is significant to:

- Provide correct information about alternative pesticides, their reliability and effectiveness, with respect to dealing with the harmful pathogens and environmental safety.
- Promote practices which reduce risks in the handling of pesticides, including minimizing adverse effects on humans and the environment and preventing accidental poisoning caused by improper pesticide handling.
- Provide advisory services and farmers' organizations with adequate information about practical organic methods
- Allow the consumers to make an informed choice on the basis of correct and comprehensive information.

3 Chapter 3 Construction materials in Georgia – from a chemical point of view

3.1 Overview

The construction material's sector provides inputs to develop buildings and infrastructure, facilities to which all sectors of the economy depend. Any growing economy needs a source for construction materials, either domestic or international. The global construction materials market grew by 1.8 percent in 2010 to reach a value of USD 639.3 billion. The global construction materials market is forecasted to have a value of USD 823.3 billion in 2014, an

increase of 52.7 percent from 2009.

The construction sectors in Georgia remain relatively robust due to oil and gas, infrastructure, and public sector projects. Therefore, it is commercially viable to manufacture several bulk or low value added materials or products (e.g. aggregates, metal/wood/plastic components, stone, ceramic products) in the country instead of importing them to avoid high transport costs. Georgia has deposits of some raw materials that are important construction material inputs. It has the locational advantages and a strong business environment to think realistically about opportunities that would serve the region in terms of construction materials. Growth in the sector has a significant impact on employment levels.

There are potential opportunities in the construction sector which can boost the Georgian economy. One opportunity is that the construction sector is attracting more foreign investments than any other Georgian sectors. Another opportunity is to work with actors and policy makers in the industry to set standards on contents and energy efficiency for products and for buildings. Currently, there are limited standards that are not well-enforced, which encourages cheap imports of substandard materials from low-cost countries such as China and Turkey. Improved standards might encourage increased value added investment in construction materials in Georgia. A third opportunity is to develop domestic resources of basalt, perlite and other natural construction materials like reed, straw and clay for domestic and to a certain extent, export markets.

3.2 Imports

In Georgia, Imports of construction materials and equipment are growing rapidly, totalling more than USD 1.3 billion in 2008. Between 2000 and 2007, this sector grew by 494 %, but it then declined between 2007 and 2009. The value of Georgia's construction material imports is five times greater than the value of its exports. The construction materials imported to Georgia are comprised of adhesives, claddings, concrete, electrical equipment, extrusions, fastening materials, iron and steel products, ironmonger, joinery, locks, paints, partitions, plywood, roofing materials (corrugated asbestos sheets, ceramic tiles, cast iron, steel), stairs, different stones, paving materials, pipes and tubes, PVC materials, timber products, tools, waterproofing, windows and doors, glass and glazing, shutters, gutters, skylights, and etc. (*Annex 1. List of imported construction materials*)

Big amounts of construction materials are imported from Turkey, Ukraine, Iran, Kazakhstan, China, Poland, Czech Republic, and Germany.

Due to an absence of control measures and procedures, most of the imported construction materials are not checked and analysed at the customs, and therefore, import of construction materials containing hazardous chemical substances is carried out without restrictions. According to the Georgian association "Construction Materials and Construction without Counterfeit," none of the construction materials imported are monitored on its content of hazardous substances and chemicals, and in addition, Georgia has become an attractive market for the export of construction materials containing hazardous substances and chemicals. China exports hazardous materials using the labels of Germany, France, Italy, and Great Britain. Big amounts of cement, some 145000 tons per year, are imported from Turkey while other countries refuse to import this cement due to high content of hazardous substances, mainly radon. Last year, big amounts of metal fittings and steel reinforcement materials that contain radioactive substances were imported from Ukraine, company "Krivoi Rog" of which many apartment buildings and private houses are built. Most of the paints, adhesives, plaster, paint fillers, fibreboard, plastic products, solvents, some spray packs, varnishes, wax, cleaning products, disinfectants, and manufactured timber glues containing different hazardous substances, especially lead and VOC's, are also imported mostly from Turkey and China. Limited awareness and information exists in the country on producers of alternative non-toxic construction materials, though there are number companies throughout the world and in the

country that provide this information.

3.3 Asbestos

The existing international regulation, known as decree # 133/n of the Ministry of Health and Social affairs from 26 March, 2001, titled "Strict prohibition of Production, use and import-export of hazardous substances and chemicals in Georgia" prohibits the import and use of asbestos. However, asbestos and other chemical substances are still imported without any restrictions, and no registry of dangerous chemicals exists. In 2010-2011, 7438 tons of asbestos containing materials were imported to Georgia according to customs data. The major exporters of asbestos and asbestos containing materials to Georgia are Ukraine, Bulgaria, India, Turkey, Iran, China and Arab Emirates. Insufficient control and legislative gaps allow the sale of asbestos products without labels warning that asbestos dust causes cancer.

Up until now, asbestos has been intensively applied in construction and throughout the building industry in Georgia. For domestic dwellings, asbestos cement sheeting for roofs and walls is common in garages, sheds and houses. It is also widely used in insulation, piping, heat and corrosion resistant coatings, welders, electric insulators (e.g. for clutch and breaks parts), special protective gear, gas masks, and etc. Short asbestos fibres and dust are used as fillers to improve strength of different items, e.g. asbestos-vinyl floor coatings. Corrugated asbestos-cement sheets represent the main imported asbestos containing product and are widely used in Georgia. The majority of the residential houses are covered with it.

Workers of numerous industries and residences are exposed to asbestos dust, including the following types of exposure:

- "construction" - construction and installations works, e.g. installation of boilers, construction of pipelines, arranging roofs,
"De-construction" - demolition of old constructions made with the use of asbestos and asbestos-containing materials in violation of applicable regulations; uncontrolled disposal and release of asbestos waste and dust; Both workers and residents are exposed frequently in such cases.
- "environmental" - emissions of asbestos production facilities affecting nearby residents;
- "household" - household applications of asbestos and asbestos-containing materials, e.g. use of corrugated asbestos-cement sheets for roofing and roof repairs.

In most cases, safety measures are neglected while working with asbestos. People are not aware of asbestos's hazardous properties, asbestos related diseases, asbestos emissions of industrial facilities, or asbestos dust in the air due to their own unprotected and inadequate handling of asbestos. The use, deposition and trade of asbestos containing waste are not regulated in the country. As a result, job safety measures are not properly undertaken and people at work places and nearby residences are exposed to asbestos dusts and other substances. There is no information available about asbestos-induced diseases in Georgia. According to data provided by the national Oncological Centre within the period of 2000-2010, the registered cases of Mesothelioma, lung and bronchi cancer comprise: 28 cases of mesothelioma and 2400 cases of cancerous growth of bronchi. The increase in number of lung cancer to 800 cases per year is alarming, especially considering that Georgia has a population of less than 4 million people.

Local industries, developers and the population in general have no information about substitutes of asbestos, although they are widely available. These will be discussed in the next chapters.

3.4 Asbestos and Alternatives

Asbestos can be easily substituted by:

- Materials based on thermo stable polymers, carbon and inorganic fibres
- Non-woven materials at the base of ultrathin chemical fibres
- Fibreglass, carbon fibre plastics.
- Cellulose fibre

The range of modern industrial substitutes for chrysotile asbestos include cellulose, aramid, PVA (polyvinyl alcohol), polypropylene, polyethylene, mineral wool, glass and ceramic fibres.

The most common substitutes for asbestos include aramid fibres, nomex and cellulose.

3.5 Substitutes for Asbestos-cement roofing

Traditionally, Georgian houses had strong roofs made of natural materials that lasted for hundreds of years. The modern industry has also added several other lasting non-harmful options for roofing as alternatives for asbestos-cement roofing.

Slivered wood / Kavari

Kavari are wooden roof plates used in different areas of Georgia. They are traditionally not impregnated, but it can be easily maintained. Conifurios Trees are most suited for Kavari but beech and acaciaare also used. It is still practiced in some remote areas of Georgia, but not widely common.

The price is about GEL 7 per m².

Stone roofs

In mountainous areas, stone slates are used for roofing through traditional techniques. The technology has become also available as a designer option in Tbilisi – but very expensive (80 GEL/m²).

Ceramic roof tiling

Is a very durable, sustainable and accessible option for roofing. Consisting of baked clay, ceramic tiles are made of a natural material. The roof is easy maintained and lasts for a long time. Ceramic tiles give good protection against all kind of weathers, including heat. Prices vary from 16-25 GEL/m²

Onduline

Onduline roofs are made of bitumen (a kind of unrefined asphalt) + resin + mineral pigments + cellulose fibers. They are not toxic to the environment, although deposition of Onduline waste is a problem. Another advantage is that the sheets are easy to install and light weight. They are available in very different qualities, with some lasting very well but others might be worn off by the wind after a few years.

Prices can vary from 8-10 GEL/m²

Corrugated metal sheets

'Sheet materials like stainless steel, copper, zinc and aluminium are inherently durable; the oxidization of the base material forms a protective patina. Some modern steel roof sheeting materials are coated with an alloy of zinc and aluminium to give it some of the durability of each of those materials at a lower cost and higher strength. Corrugated metal sheets are also easy to install and light weight and reasonably priced (8-14 GEL/m²)

Reed roofs

In former times, reed roofs were applied in wet regions of Georgia, and all over the world. In industrialised countries such as the Netherlands, there is a revival of the technology, producing beautiful protective roofs with a great thermal insulation effect. There, it is an expression of status and ecological thinking. In Georgia, the technology is not applied anymore and it will be very difficult to find suitable craftsmen. There could be a potential for the technology due to the abundance of reed, the suitable climate and the beautiful appearance. Reed roofs are totally natural and don't harm the environment or human health, and if harvested, are sustainable. Reed is very resistant to moisture, and reed roofs can last up to 100 years. Regular maintenance is required. For the time being reed can be harvested for free in Georgia, but as the technique is so delicate, an experienced craftsman (from abroad) should be hired until the technology is known in Georgia.

3.6 Production of Construction materials in Georgia

Georgia has deposits of some raw materials that are important construction materials inputs. The construction sector is based on these resources.

The most frequently used local raw materials for production of construction materials are perlite, basalt, pumice, slate and tuff: Georgia possesses significant reserves of these materials

There are 950 deposits of mineral resources in Georgia. 62.8% of the deposits are large (national and international importance).

Metallurgical, inert and other construction material resources (gravel-sand, volcanic slag, gauge sand, glass sand, lime, metallurgical dolomites, lithographic stone, cement lime, construction stones, anhydride, gypsum, spackle, flame proof clay, slates) are used by medium and small enterprises for production of construction materials.

There are over 2450 companies and businesses in different parts of Georgia that produce construction materials based on these resources.

3.7 Manufactured imported construction materials

Polystyrene (Foam Plastic) - Polystyrene is widely used in Georgia, mostly by private citizens for insulation of houses, rather than by construction companies. The polystyrene is imported from Turkey, Finland, Poland by GRC LLC and a few other businesses. "The biggest environmental health concern associated with polystyrene is the danger associated with Styrene, the basic building block of polystyrene. Styrene is used extensively in the manufacture of plastics, rubber, and resins. About 90,000 workers, including those who make boats, tubs and showers, are potentially exposed to styrene. Acute health effects are generally irritation of the skin, eyes, and upper respiratory tract, and gastrointestinal effects. Chronic exposure affects the central nervous system showing symptoms such as depression, headache, fatigue, and weakness, and can cause minor effects on kidney function and blood. Styrene is classified as a possible human carcinogen by the EPA and by the International Agency for Research on Cancer (IARC)" (Wikipedia, 2012). When burned, polystyrene emits highly toxic gasses. Besides the problems for human health, polystyrene is a significant polluter of the environment. When becoming waste, it does not decompose and will remain in the environment for thousands of years, being especially harmful towards marine life.

PVC panels -Demand on PVC panels is growing from year to year due to increased consumer awareness of PVCs thermal insulation features. One of the biggest importers of PVC panels is Dio Ltd., which subsequently assembles panels and sells PVCs.

Glass wool -is imported to Georgia from Turkey, Ukraine and Germany by Knauf distributors and by GRC LLC. Demand on glass wool grows as thermal insulation materials are becoming more popular in Georgia.

Stone wool -There is no production of mineral wools in Georgia. It is imported from Turkey. Currently, demand on stone wool is steadily growing in spite of its relatively high price.

'Handling a fibre product can irritate the eyes, skin and respiratory tract. Prolonged exposure could lead to long term effects and some types of mineral wool are considered a possible carcinogen to humans, similar to asbestos. This effect may depend upon the fibre diameter and length, chemical composition and persistence within the body.' (wikipedia) The mineral fibres that are used in Georgia are not tested for carcinogenicity and are not certificated or labelled. Precaution measures need to be taken when working with them, the skin must be covered, including the hands and a proper dust mask for the mouth. Other widely used building materials are metal-plastic profiles, plastic pipes, laminated floor, Metal-Tiles, Sandwich-Panels, PVC panels, Pvc Door, Pvc Windows, Block, Foam Plastic, Foam Rubber, Water System Pipe, Sewer Pipe and are produced by the company "LTD Interplast".

3.8 Natural construction materials

Natural materials that are locally available can be used to build liveable houses, flooring and interior decoration; and to arrange insulation. They are either renewable (wood, hemp, wood cellulose, sawdust, straw, reed, wool), or non-renewable (dry or baked clay, stone, lime and the other minerals mentioned above), but often abundantly available. Employing these materials avoids the use of synthetic chemical products and enables the construction of safe and energy efficient homes; notably in their capacity to ensure comfortable room temperatures both in summer and winter and an acceptable humidity level which avoids mould and diseases relating to them: asthma, rhinitis, pharyngitis and eczema.

Pumice

Production of pumice blocks is relatively well developed, as pumice is one of the traditional light construction materials of Georgia. The demand on pumice blocks by construction companies is almost 95% more than on other light construction materials such as perlite blocks.

Georgia is rich in pumice reserves that are located in different regions, where some small pumice block manufactures appear and disappear from time to time.

Present consumers of pumice blocks and pumice bricks are following construction companies: Axis, Centre Point Group and other players of the construction sector in Georgia.

The main players of this market segment are: Geokabadoki Ltd, Delta Ltd and Karier Ltd.

Perlite

Perlite sand is produced for manufacturing wall perlite blocks of a 500-800 kg/ m³ density, and for production of monolith perlite concrete of a 400-500 kg/ m³ density. Due to its low density, environmental safety and accessible price, perlite has found many commercial applications. In particular, it is used in lightweight plasters and mortars, insulation and ceiling tiles in the construction and manufacturing fields, agro industry, metallurgy, and for filtration of alcoholic and non-alcoholic drinks.

Currently, perlite products-blocks, insulation, facing tiles are produced by three companies:

“Semi Ltd” , “Akhali Tekhnologiebi LTD”,”HB Ltd” and one mining Company “PARAVANPERLITE” located in the Ninotsminda district.

Straw

When baled, straw has good insulation characteristics. It can be used alone, or in a post-and-beam construction, to build straw bale houses or insulate existing houses. When bales are used to build or insulate buildings, the straw bales are commonly finished with earthen plaster. The plastered straw walls provide thermal mass, compressive and ductile structural strength and acceptable fire resistance. With straw, better insulation values can be reached more than any other comparable building material. Straw is an abundant agricultural waste product, and requires little energy to bale and transport for construction, and is therefore very cost efficient. Furthermore, straw and earth houses do not deliver any disposal problems after demolition. For these reasons, straw bale construction is gaining popularity for energy efficient, naturally beautiful non-toxic buildings. In Georgia, the annual amount of straw, based on rough calculations, comprises some 100-120 thousand tons that could be a significant resource for the construction sector and represents a good business opportunity.

Reeds

When properly cut, dried, and installed, different types of reed can be used as a waterproof roof. The reed roofing (thatch) was traditionally used throughout Georgia until the 20th century. Traditionally, thatcher's used locally available materials. If local farmers were growing wheat, then wheat reed or straw was used. Rye, barley and oat straw, and even heathers have been used for roofing. In wet lowlands, sedge has been a traditional thatch, particularly for ridging material.

The most durable thatching material is water reed. Moisture typically does not absorb into the thatch bundles. Water reed is naturally waterproof. This is no waterlogged plant, soggy and bloated with water. In fact, the inside of a natural water reed is hollow. The water is kept out by the tight overlapping of cells on the plant's outer layers. If bundled enough of these water shedding plants together, water simply cannot penetrate. Moisture typically does not absorb into the thatch bundles. One of the great attractions of reed thatch is that is thermally efficient – warm in winter and cool in summer. Unlike conventional roofing systems that trap heat and moisture vapour in attics, thatched roofs require no attic ventilation.

A water reed thatched roof is 30 centimetres thick at a pitch angle of 45 degrees and meets most of the modern insulation standards. The U-value of a properly thatched roof is 0.35, which is equivalent to 10 centimetres of glasswool insulation between the joists.

Another potential use for reed is the production of reed panels for different kinds of insulation in construction. In other countries, reed panel production is a developed business, however in Georgia, both supply and demand still need to be created.

Reed is abundantly available in Georgia and in many cases old reeds are burned on purpose.

Clay

Clay is one of the oldest building materials on Earth, among other ancient, naturally-occurring geologic materials such as stone and organic materials like wood. Between one-half and two-thirds of the world's population, in traditional societies as well as developed countries, still live or work in a building made with clay as an essential part of its load-bearing structure. Also a primary ingredient in many natural building techniques, clay is used to create adobe (sun dried clay and straw bricks), cob (a mix of straw and clay used to construct walls), cordwood, and rammed earth structures and building elements such as wattle and daub, clay plaster, and clay render case, clay floors and clay paints.

The resources of different types of clay are represented in almost every part of Georgia.

Sawdust

Sawdust is a by-product of cutting lumber with a saw, composed of fine wood particles. It can present a hazard in manufacturing industries, especially in terms of its flammability. Sawdust is the main component of particleboard. Sawdust has a variety of practical uses, including serving as mulch, as an alternative to clay cat litter, as a fuel, or for the manufacture of particleboard. It is also sometimes used to soak up liquid spills, allowing the spill to be easily collected or swept aside. It is used to make Cutler's resin. Saw dust can be used as insulation in solar boxes and in insulating houses.

An overwhelming majority of sawdust is produced as a result of carpentry, is not used in Georgia and pollutes the environment.

Wool

Processed wool is available in many parts of Georgia. Wool can be used as insulation in construction. Wool insulation is a natural resource that is environmentally friendly.

Wool is naturally flame resistant. Different research conducted by the Wool Research in Australia has shown that wool is a better thermal insulator than other fibres under typical weather conditions because of its ability to absorb and desorb moisture from the air. It can help keep a building cool in summer and warm in winter. When outside temperatures increase the wool is heated and releases moisture which has a cooling effect on the fibre and the building. Wool insulation absorbs sound and therefore reduces noise levels considerably. Wool is non-carcinogenic and does not cause irritation of the skin, eyes or respiratory tract. It can be installed without the use of gloves or protective coating. Research has shown that it can absorb and permanently retain high levels of formaldehyde, emitted from some common building materials and furniture, and nitrogen dioxide and sulphur dioxide, which are normal by-products of combustion processes (e.g., gas or wood stoves and heaters).

4 Conclusions and recommendations – (NGO Declaration)

In the last decades, rapid growth of the chemical production and trade in these sectors, and the possible risk associated with use of the harmful chemical substances, including the pesticides, caused concern of the world community and official circles.

In this respect, the situation is especially deplorable in the countries where there are no mechanisms in place for import monitoring and for regulating use of these substances.

Though Georgia is a party to numerous conventions and international agreements regulating these issues, we, the NGOs of Georgia assess that the Georgian situation is deplorable in this respect and therefore:

We are concerned about the numerous laws that allow the Georgian Market to be saturated with untested harmful chemical substances of doubtful origin, including those prohibited by the international conventions.; about the fact of saturation of Georgian market with the untested harmful chemicals (pesticides) of doubtful origin and composition.

The old legislative system for regulation and monitoring of harmful chemical substances used for agricultural, domestic, cosmetic, industrial and other purposes has been dismantled and has not been replaced by the new one. Institutional and personnel training systems have also not been implemented.

We would like to remind the government of Georgia that the states, parties to the international conventions and agreements, should fulfil their international obligations, and they bear responsibility for non-compliance with their international obligations associated with protection of human health, environment and conservation thereof;

1. Being convinced that the Georgian state shall ensure proper fulfilment of their obligations to the international community in the regulation of the harmful chemicals and other substances circulating without restrictions;
2. Relying upon the principle recognized by the international conventions stating that each state shall have the sovereign right to prohibit import and placement of the dangerous and other wastes into its territory. We call for the government and parliament of Georgia to unambiguously and positively prohibit import and re-export of the chemicals and wastes prohibited by the conventions and impose strict regulations on import and consumption of the other potentially dangerous substances.
3. We call for the international community to influence the Georgian government to overcome negligence in the regulation of harmful chemicals, and at the same time, provide financial, material and intellectual assistance to drastically improve the existing situation within the shortest period possible;
4. We regard that the legislative and economic promotion of development and replication of the clean technologies is reasonable in regards to environmental issues, recycling facilities, bio-farms and management systems.

Aware of the increasing danger caused by trans border transportation and domestic consumption of harmful chemical substances and other dangerous wastes towards human health and the environment, we offer the government of Georgia the following recommendations:

- Developing a new legislative frame for the regulation of harmful chemicals and chemical substances harmonized with the European legislation and mechanisms for actual enforcement of these legislative norms;
- Regarding full exclusion of the conflict of interests, the rights and obligations should be clearly distributed between the state structures with the functions of regulation of the harmful chemical substances;
- Both legislative and institutional basis of flexible testing, registration and monitoring systems of the dangerous chemicals and chemical substances subjected to import into the country should be improved and activated to the maximal possible extent;
- Coordinated action of all authorized state regulating structures should be achieved and all kinds of departmental interests should be excluded;
- Material and technological basis required for testing, approbation and monitoring of the dangerous chemicals and chemical substances should be established urgently;
- Approaches to the system of collection and dissemination of information about dangerous chemicals and chemical substances, as well as the compounds and materials containing thereof, should be drastically changed. The goal should be to achieve full and in-depth awareness of each individual, and especially considering children, with the said substances;
- Common information base should be established with the information posted in a clearly understandable format for the entire population;

- The strictest regulations of marking and labeling the harmful chemicals and chemical substances, or the compounds and materials containing thereof, should be established, providing maximum information about harmful properties of such substances;
- Current regulations of storage, packaging and distribution of harmful chemicals and chemical substances should be reviewed, in addition to strict administrative and criminal requirements for violation of these norms; such norms should be applicable to the users as well;
- Requirements, with respect to consumption of the harmful chemicals and chemical substances, should be made stricter to have better awareness of the population;
- The government should investigate the legal situation of the harmful chemical substances imported into Georgia in 2010-2012, and apply the measures provided for by the law;
- To achieve full transparency in the turnover of the harmful chemicals; the codification system and mechanisms should also be improved
- Mechanisms necessary to implement the monitoring of harmful chemical turnover within the country should be introduced urgently;
- Create a system of study for the arable lands in Georgia to measure the soil and atmosphere pollution resulting from consumption of harmful chemicals, and have permanent monitoring of these parameters;
- Unconditionally, without any reservations, urgent and unambiguous import of asbestos containing construction materials and other materials should be prohibited, and simultaneously, the stocks available at the market should be utilized in full compliance with the regulations;
- List of the pesticides permitted for import into Georgia should be reviewed and their number should be minimized, taking into consideration their reasonability;
- Stocks of unused pesticides available in Georgia should be re-registered and transported to the countries of origin;
- Mechanisms for financial support of the farmers should be developed and adopted to allow them access to, though expensive, effective pesticides instead of cheap pesticides of low effectiveness and doubtful origin that cause significant damages to humans and the environment;
- Strict obligatory legislative requirements dealing with recording, collection and utilization of the pesticides' packaging should be adopted;
- Significant steps should be made with respect to legislative and economic support of the bio-farms;
- Production and import of personal protection equipment for dealing with the chemical compounds should be supported in legislative and economic respects, for the purpose of achieving their distribution at low prices;
- During the current year, the government of Georgia should conduct special study in relation with environmental safety of the construction, repair and installation materials, as well as domestic articles, materials and substances sold in Georgia and relevant measures should be taken for publicity of the results of such study;

Chemicals Regulated by Rotterdam and Stockholm Conventions and Imports to Georgia

#	Chemical	International Registration Number (CAS)	Commodity Code according to NNC FEA	Information on import/export
1	The compounds containing mercury, including non-organic mercury compounds, alkyl mercury compounds, as well as alkyl-oxyalkyl and arylated mercury compounds		3808500000 2805 40 100 00	
2	Aldrin	309-00-2	29035200000	No import/export in 2009-2011
3	Chlordane	57-74-9	29035200000	No import/export in 2009-2011
4	Dieldrin	60-57-1	3808500000	
5	DDT	50-29-3	29036200000	No import/export in 2009-2011
6	Endrin	72-20-8	Code not found in the database	
7	HCH hexachlorocyclohexane	608-73-1	29035100000	<i>In 2009 import from USA, 23 kg, price USD 105.47; In October 2009 from USA 120 kg In 2009 from Germany 219 kg (195) USD 1,167.45 2009 – Netherlands 143 kg (120), USD 706,34 February 2010 – from Spain 1 kg USD 19.1, Germany 11 kg, USD 58.36 April 2010 38 kg, USD 283.73; 42 kg USD 211.57; November 2010 149 kg, USD 724 December 2010 – Netherlands 330 kg, USD 1,021</i>
8	Heptachlor	76-44-8	3808500000	No import/export

Inventory report: An analysis of the chemical legislation and the situation regarding hazardous chemicals and their alternatives in the agricultural and construction sectors

9	Hexachlorane	118-74-1	29036200000	No import/export
10	chlorinated camphene (toxaphene)	8001-35-2	38085000000	
11	Nitrophenene	1836-75-5	Code not found in the database	
12	1,2 dibromoethane	106-93-4	38085000000	
13	1,2 dichloroethane	107-06-2	38085000000	
14	Pentachlorophenol	87-86-5	29081100000	No import/export
15	Ethylene oxide	75-21-8	38085000000	
16	Dinoseb	88-85-7	29089100000	No import/export
17	Binapacryl	485-31-4	29163600000	No import/export
18	Captafol	2425-06-1	29305000000	No import/export
19	Quintozene	82-68-8	Code not found in the database	
20	2,4,5 T	93-76-5	29189110000	No import/export
21	Lindane	58-89-9	Code not found in the database	
22	Fluoroacetamide	640-19-7	38085000000 2924 12 000 00	
23	Chlordimeform	6164-98-3	38085000000 2925 21 000 00	
24	Chlorobenzilate	510-15-6	38085000000 2918 18 000 00	
25	Mirex	2385-85-5	Code not found in the database	
26	Chloropicrin	76-06-2	2904 90 400 00	No import/export
27	Monocrotophos	6923-22-4	38085000000 2924 12 000 00	
28	Metamidophos	10265-92-6	38085000000	
29	Phosphamidon	13171-21-6	38085000000 2924 12 000 00	
30	Methylparathion	29988-00-0	2920 11 000 00	No import/export
31	Parathion	56-38-2	2920 11 000 00	No import/export
32	Dicofol	115-32-2	Code not found in the database	
33	Maleic acid hydrazide and its salts Choline, potassium, malenic acid hydrozide and its salts	123-33-1	2923 10 000 00 - Choline	December 2010 – France 62 kg USD 1,705; (2923 10 000 00 – Choline) March 2010 – France 50 kg, USD 1,563
34	Polychlorinated biphenyls, except mono and dichlorophenyls	1336-36-3	2902 90 300 00 <i>biphenyls</i> <i>terphenyls</i>	No import/export
35	Polychlorinated Terphenyls	61 788-33-8	2902 90 300 00 <i>biphenyls</i> <i>terphenyls</i>	
36	Preparations PCB or PCT			
37	Polybrominated Biphenyls	59080-40-9 27858-07-7 13654-09-6		

Inventory report: An analysis of the chemical legislation and the situation regarding hazardous chemicals and their alternatives in the agricultural and construction sectors

		36355-06-8		
38	Asbestos fiber Crocidolite, amosite, anthophyllite Actinolite Tremolite	12001-28-4 12172-73-5 77536-67-5 77536-66-4 77536-68-6	2524 6812 80 6811 40 000 00_ asbestos containing	Respective data on import/export is given separately
39	Ugilec 121	81161-70-8	Code not found in the database	
40	DBBT	99688-47-8		
41	2 naphthylamine	91-59-8	2921 45 000 00	No import/export
42	Benzidine	92-87-5	Code not found in the database	
43	4 nitrobiphenyl	92-93-3	2902 90 300 00 biphenyls terphenyls	
44	4 aminobiphenyl	92-67-1	2902 90 300 00 biphenyls terphenyls	
45	Trisdibromopropyl phosphate	126-72-7	2919 10 000 00	No import/export
46	Trisazirindilphospine oxide	545-55-1	Code not found in the database	
47	Ugilec 141	76253-60-6	Code not found in the database	
48	Dinitro-ortho-cresol (DNOC) and its salts (such as ammonium salt, potassium salt and sodium salt)	534-52-1 2980-64-5 5787-96-2 2312-76-7	Code not found in the database	
49	Tetraethyl lead	78-00-2	3811 11 10000	No import/export
50	Tetramethyl lead	75-74-1	Code not found in the database	
51	Ethylene chloride	107-06-2	2903 15 000 00	2010 – Spain, 1 kg, USD 19.13 June 2010 – Ukraine 16,790 kg, USD 14,275.00
52	Benomyl Carbofuran Thiram	17804-35-2 1563-66-2 137-26-8	Code not found in the database	
52	Methamidiphos	6923-22-4	2930 50 000 00	No import/export

WECF Netherlands

Biltstraat 445
NL - 3572 AW Utrecht
Postal Address: PO Box 13047
3507 LA Utrecht
Phone: +31-30-2310300
Fax: +31-30-2340878

WECF Germany

St.-Jakobs-Platz 10
D - 80331 Munich
Phone: +49-89-23239380
Fax: +49-89-232393811

WECF France

1, Place de l'Eglise St André
BP 100
74103 ANNEMASSE Cedex
Phone: +33-450-499738
Fax: +33-450-499738