




International POPs Elimination Project

Fostering Active and Efficient Civil Society Participation in Preparation for Implementation of the Stockholm Convention

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Country Situation Report on POPs Republic of Bulgaria

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Bulgaria
February 2006

International POPs Elimination Project – IPEP
Website- www.ipen.org

About the International POPs Elimination Project

On May 1, 2004, the International POPs Elimination Network (IPEN http://www.ipen.org) began a global NGO project called the International POPs Elimination Project (IPEP) in partnership with the United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Program (UNEP). The Global Environment Facility (GEF) provided core funding for the project.

IPEP has three principal objectives:

- Encourage and enable NGOs in 40 developing and transitional countries to engage in activities that provide concrete and immediate contributions to country efforts in preparing for the implementation of the Stockholm Convention;

- Enhance the skills and knowledge of NGOs to help build their capacity as effective stakeholders in the Convention implementation process;

- Help establish regional and national NGO coordination and capacity in all regions of the world in support of longer term efforts to achieve chemical safety.

IPEP will support preparation of reports on country situation, hotspots, policy briefs, and regional activities. Three principal types of activities will be supported by IPEP: participation in the National Implementation Plan, training and awareness workshops, and public information and awareness campaigns.

For more information, please see http://www.ipen.org

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The views expressed in this report are those of the authors and not necessarily the views of the institutions providing management and/or financial support.

This report is available in the following languages: English language and Bulgarian language

Website- **www.ipen.org**

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List of Abbreviations

POP - persistent organic pollutant, as defined in the Stockholm Convention
EEA – Executive Environmental Agency
MoEW – Ministry of Environment and Water
MoAF – Ministry of Agriculture and Forestry
MoH – Ministry of Health
RIoEW – Regional Inspectorate of Environment and Water
NPPS – the National Plant Protection Service
EU - European Union
B-B Cube – a reinforced concrete container for storage of hazardous substances
DDT – Dichlorodiphenyltrichloroethane – a synthetic chloro-organic insecticide of the group of halogen aromatic compounds
PCB – Polychlorinated Biphenyl – a persistent organic pollutant
PCDD (dioxins) – Polychlorinated Dibenzo-p-dioxins
PCDF (furans) – Polychlorinated Dibenzo-p-furans
HCB – Hexachlorbenzene – a persistent organic pollutant

Contents

I. Introduction

1. Sources of information on Persistent Organic Pollutants (POPs)

A review of the information on POPs published in Bulgaria and worldwide in scientific magazines, Internet and other publicly accessible sources was carried out to prepare the present report.

It includes data provided by the regional branches of the Friends of the Earth National Movement (NM), collected as a result of the stocktaking and inspections of some warehouses for obsolete pesticides which are the main source of pollution by POPs pesticides.

The official information on POPs, collected from the respective institutions was required and summarized in the present report as well.

The official information available in the country concerning POPs in Bulgaria is chiefly the responsibility of the Ministry of Environment & Waters (MoEW). Based on the existing legislation concerning POPs *(see IV)*, the Ministry of Environment & Waters is obliged to control the import, use, quantities, emissions, storage and treatment of POPs. In this connection, MoEW through its regional inspectorates collects and keeps information on separate POPs in components of the environment. Under some international projects and arrangements MoEW evaluates the POPs emissions which are not directly measured.

Apart from MoEW, the Ministry of Agriculture & Forests (MoAF) through the National Plant Protection Service (NPPS), as well as the Ministry of Health (MoH) carry out other policies for assessment of the situation and control on POPs in Bulgaria. A contact list of the responsible institutions in the Republic of Bulgaria (RB) is provided in *V*.

Unfortunately, the information collected in pursuance of the respective institutions' obligations is not publicly available. It can only be accessed under the order of the Access to Public Information Act (APIA) requiring performance of quite a complicated procedure.

Official requests for information access to prepare the present report have been made to the following institutions:

- The National Plant Protection Service (NPPS);
- The Ministry of Environment & Waters (MoEW);
- Executive Environment Agency (EEA);
- 15 Regional Inspectorates of Environment & Waters (RIoEW).

2. Evaluation of the accessibility of the information on POPs

From **the National Plant Protection Service (NPPS)** – We received the requested information falling within their competency and within the time-limits provided for by the law, whereby formal access was actually granted to us for all the available information. The administration and the experts concerned were extremely kind and rendered full assistance to us in the process of preparing the present report.

From the main institution in charge – the Ministry of Environment & Waters (MoEW) – We received official refusal to access the available information with the explanation that the inventory of POPs was currently under way. In fact, the requested information has been collected and summarized as early as the last year and the National Implementation Plan (NIP) is being currently worked out based on it, with a delivery deadline of 31.03.2006. (Besides, MoEW is carrying out an assessment of dioxin emissions under certain international agreements and has systemized data on POPs with respect to other, already completed projects).

Since no information which is currently being processed can be formally supplied according to the Access to Public Information Act (APIA), a possible appeal of the refusal in court would only be a useless procedure.

So we were forced to file a second request for information access on the grounds of the Environment Protection Act (EPA) and waited for the respective 14-day reply deadline as well as for the additional 30-days term for granting thereof.

This time the access was permitted formally, but the delivered information contained only a small part of the required information that was requested – mainly about application, registration, imported quantities and years of banning of POPs pesticides and also the methods that MoEW uses to deal with obsolete pesticides in the country.

The MoEW team working on the NIP in Bulgaria blocked all our attempts at cooperation and assistance regarding the present report. In addition, on 1st December, 2006 an official request for including a representative of ours in the NIP workgroup was filed by NM Friends of the Earth. Finally at the end of February, three months later, we received a formal refusal.

This seems incompatible with Article 7 of the Stockholm Convention which states that Parties shall, "…consult their national stakeholders, including women's groups and groups involved in the health of children, in order to facilitate the development, implementation and updating of their implementation plans."

From Executive Environment Agency (EEA) –Data from the Monitoring of Ground and Surface water were provided, as well as the pesticide residues in soil. Some data about emissions of toxic substances in the air and stores for obsolete pesticides were summarized by district for 2004.

From Regional Inspectorates of Environment & Waters (RIoEW) - In the country there is no process or laboratory equipment for regular monitoring of PCBs, dioxins and furans. The information that was provided to us was only for pesticide storage.

* * *

Based on the above, despite our wish to refer to official current data, the information summarized in the present report contains a literary overview, data generated by NM Friends of the Earth, data from the National Plant Protection Service (NPPS); Executive Environment Agency (EEA) and 15 Regional Inspectorates of Environment & Waters (RIoEW).

The present report is a synthesis of the information collected. We hope it will contribute to clarifying the existing situation and system for POPs management in the Republic of Bulgaria and serve as a source of information for the farmers, citizens and all persons concerned, and other non-government organizations. We hope that the description of POPs pollution in endangered regions causes actions to undertake steps or set up behaviour models in order to reduce the risk of environmental pollution and reduce the already existing POPs pollution.

Our main goal was to present this information in simple form but with sufficient arguments about the current situation in Bulgaria. We did not want to duplicate the work of the ministries and institutions for which the POPs control is a main duty according to the legislation in force.

II. Persistent organic pollutants. Stockholm Convention on POPs

1. Essence

The persistent organic pollutants are a group of chemicals with proven toxic properties, and are extremely resistant to disintegration. They accumulate along the food chain primarily in the fatty tissues in growing concentrations. This makes them particularly harmful to human health and to the environment.

After they have been initially used or released their further spread cannot be controlled any more. Thanks to some specific properties, they can travel thousands of kilometres away from the point of origination, being a great threat to the people and ecosystems in the Arctic zones.

Thus POPs are one of the greatest ecological threats on the global level. In this regard, the international community has undertaken a series of steps to reduce or eliminate the production, use and release of these substances in the environment. Two international documents have been agreed to so far:

The Protocol of the Economic Commission for Europe at UNO (UNECE) under the Convention of Long-range Transboundary Air Pollution (CLRTAR) in force as from 23 October, 2003, and the Stockholm Convention on POPs signed on 23 May, 2001 by 92 countries and by the European Community. The Convention remained open for signing as from 24 May, 2001 to 22 May, 2002 when it was closed after being signed by a total of 151 countries.

On 17 May, 2004, three months after depositing of the 50th ratification document, the Stockholm Convention officially entered into force for the countries having ratified it. Currently there are 124 countries including some EU member states and the EU itself as a regional economic organization that has ratified or acceded to the Treaty.

Bulgaria signed the Stockholm Convention on POPs on 23 May, 2001 at the Conference of Plenipotentiaries held in Stockholm, Sweden. On 30 September 2004 the Convention was ratified by a law adopted by the National Assembly and by Decree № 309 of the President of the Republic of Bulgaria (State Gazette № 89/12.10.2004) promulgation thereof in the State Gazette was enacted.

These two documents establish strict requirements for an initial list of chemicals (16 as per the Protocol of UNECE and 12 as per the Stockholm Convention). Both documents provide for further expansion of the list by other substances.

They require performance of the following measures by the states:

- Prohibition or severe restriction of the production and use of intentionally produced POPs
- Restrictions on export and import of the intentionally produced POPs (Stockholm Convention)
- Provisions on the safe handling of stockpiles (Stockholm Convention)
- Provisions on the environmentally sound disposal of wastes containing POPs
- Provisions on the reduction of emissions of unintentionally produced POPs (e.g. dioxins and furans).

2. Chemical features of POPs

The "dirty dozen" include (Table 1):

Certain chemicals, including plant protection products, by-products, such as dioxins and furans, which are produced unintentionally from many forms of combustion that involve chlorine, including municipal and medical waste incineration, open burning of trash and industrial processes, are called the Dirty Dozen.

Table 1: The "Dirty Dozen"

[1]Pesticide	[2]Industrial Chemical [3]By-product
aldrin[1]	hexachlorobenzene[1,2,3]
chlordane[1]	mirex[1]
DDT[1]	toxaphene[1]
dieldrin[1]	polychlorinated biphenyls (PCBs)[2,3]
endrin[1]	polychlorinated dibenzo-p-dioxins (dioxins)[3]
heptachlor[1]	polychlorinated dibenzo-p-furans (furans)[3]

- **Plant Protection Products (Pesticides)**

DDT is may be the most familiar member of POPs pesticides. It is a typical example of all other organochlorine POPs Pesticides (Figure 1).

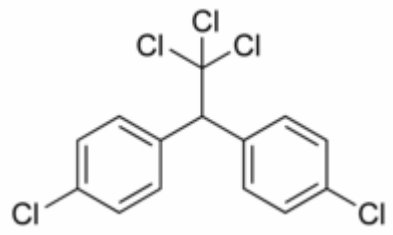


Figure 1. 4,4'-(2,2,2-trichloroethane-1,1-diyl)bis(chlorobenzene) – DDT

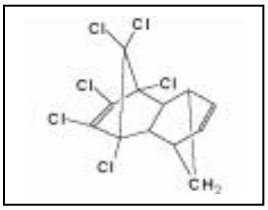
DDT, the first of the chlorinated organic insecticides, was originally prepared in 1873, but it was not used until 1939 that Paul Müller discovered the effectiveness of DDT as an insecticide.

DDT was developed as the first of the modern insecticides early in World War II. It was initially used with great effect to combat mosquitoes spreading malaria, typhus, and other insect-borne human diseases among both military and civilian populations. The Swiss chemist Paul Hermann Muller of Geigy Pharmaceutical in Switzerland was awarded the Nobel Prize in Physiology and Medicine in 1948 "for his discovery of the high efficiency of DDT as a contact poison against several arthropods."

In 1962, American biologist Rachel Carson published the book Silent Spring, which alleged that DDT caused cancer and harmed bird reproduction by thinning egg shells. It was subsequently banned for agricultural use in many countries in the 1970s due to what many believe is a negative environmental impact.

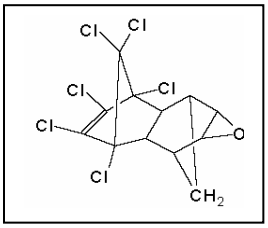
The other pesticides that form part of the dirty dozen family are as follows:
(**source:**http://www.panda.org/about_wwf/what_we_do/toxics/problems/pops/pop_alternatives/index.cfm)

Aldrin

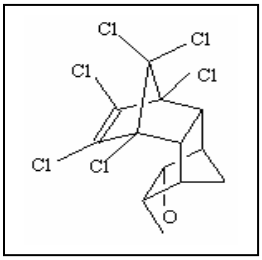


Aldrin and **Dieldrin** are synthetic organochlorine insecticides with similar chemical structures. Aldrin quickly breaks down to dieldrin in the environment or in the body. Dieldrin persists in the environment and bioaccumulates in body fat. Since the 1950s, aldrin and dieldrin have been widely used as agricultural insecticides, veterinary agents, termiticides, and vector control agents. Aldrin has been used as a soil insecticide to control root worms, beetles, and termites.

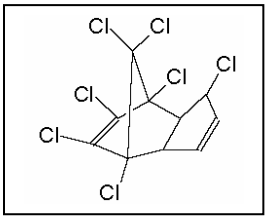
Dieldrin



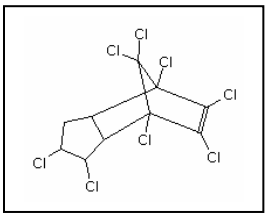
Dieldrin has been used for soil and seed treatment in agriculture, for control of disease vectors such as mosquitoes and tsetse flies, for veterinary purposes as a sheep dip, and for the treatment of wood and the mothproofing of woolen products. Many countries restrict or ban the use of aldrin and dieldrin. Some countries continue to permit import for termite control or other purposes. Animals and people may be exposed via consumption of fish, seafood, dairy products, fatty meats, and root crops grown in contaminated soil or water. Aldrin and dieldrin are highly toxic. Animal studies have linked these chemicals to liver damage, central nervous system effects, and suppression of the immune system. Aldrin and dieldrin also disrupt the endocrine system, with evidence that exposure of pregnant women may harm the developing fetus. Aldrin and dieldrin demonstrate very high acute toxicity to aquatic organisms such as fishes, crustaceans, and amphibians.



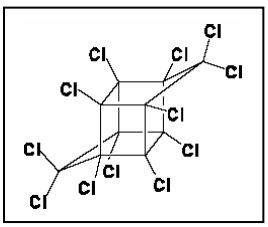
Endrin is a toxic organochlorine insecticide used mainly on field crops. It is estimated that endrin can remain in soil for more than 14 years. Endrin does not easily dissolve in water. Introduced in 1951, endrin has been used as a pesticide to control birds on buildings and insects and rodents in fields and orchards. Endrin is applied in the production of cotton, maize, sugarcane, grains, apples, and ornamentals. Many countries banned the use of endrin in the 1980s. However, many other countries continue to permit the import and use of endrin. Human exposure takes place primarily through consumption of contaminated food and water, or in occupational settings. Exposure to endrin can cause endocrine effects, liver damage, and disorders of the nervous system. Endrin exhibits very high acute toxicity among crustaceans, fishes, and other aquatic organisms.



Heptachlor is primarily used to kill soil insects and termites. It has also been used against cotton insects, grasshoppers, some crop pests, and to combat malaria. Heptachlor is now banned in many countries throughout the world. Some countries are using heptachlor in wood treatment or for control of termites underground. Heptachlor is also used to protect underground cable boxes from fire ants. Contaminated food is probably the major exposure route for most species including humans. This can include eating crops grown in soil that contains heptachlor or eating fish, dairy products, and fatty meats from animals exposed to heptachlor. Inhalation may be an exposure route, particularly in homes treated for termites. Drinking contaminated water or dermal contact can also result in exposure. Heptachlor residues have been measured in the tissue and eggs of wild birds.

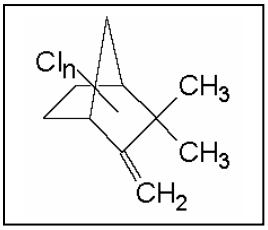


Chlordane is a broad-spectrum organochlorine insecticide known for its toxic effects and its capacity to persist and bioaccumulate in the environment. It is stable in soil and breaks down very slowly when exposed to the ultraviolet action of sunlight; chlordane can remain in the soil for decades. Chlordane does not readily dissolve in water. The chemical builds up in the fatty tissues of fish, birds, and mammals. Chlordane was used in the greatest quantities as a soil insecticide for controlling termites and soil-borne insects whose larvae feed on the roots of plants. It has been used as a pesticide on corn, citrus, and other crops. Exposure to chlordane may occur through consumption of contaminated meats, fish, shellfish, root crops, and other foods; maternal transfer; contact with soil around the foundation of chlordane-treated homes; and by living near chlordane-contaminated waste sites. Occupational exposures may occur among persons involved in the chemical industry and among farmers, lawn-care specialists, and pest-control workers. Chlordane has been linked to liver and blood disorders, severe neurological effects, and damage to the endocrine and reproductive systems. Effects on the kidneys and on the cardiovascular, respiratory, and gastrointestinal systems have also been observed. The chemical is very highly toxic to aquatic organisms, particularly crustaceans and fishes.



Mirex is considered to be one of the most stable and persistent pesticides in soil, sediment, and water, with a half life in soil of up to 10 years. It does not dissolve easily in water, but sticks to soil and sediment particles such that it is not likely to travel far through the soil and into underground water. Mirex was formerly used as an insecticide to kill ants in the southeastern U.S., South America, and South Africa. It has been used to combat fire ants, leaf cutters, harvester termites. Mirex also had extensive use as a fire retardant

in plastics, rubber, paint, paper, and electrical goods. Most exposures now occur thorough eating contaminated food, particularly fish and other animals living near contaminated sites. Exposure to mirex can affect liver and endocrine function and reproduction in wildlife. It may also increase the chance of miscarriage in pregnant women. At high concentrations mirex is lethal to fish and birds. Residues have been measured in many wildlife species including gulls, frogs, shrews, lizards, fish, seals, and turtles.



Toxaphene is an insecticide containing more than 670 chemicals. It does not dissolve well in water, so it is likely to be found in air, soil, or sediment at the bottom of lakes or streams. Toxaphene was one of the world's most widely used pesticides in the 1970s. It was used to control insect pests on cotton, cereal grains, fruits, nuts, and vegetables. Fish and game agencies also used toxaphene in the 1970s to kill fish species that were considered undesirable. In addition, it was used to control ticks and mites on livestock and poultry. In the early 1990s, toxaphene was produced in Africa and Central America; the heaviest current use is thought to be in Africa. Exposure may result from eating contaminated animals, particularly fish and shellfish, drinking water from contaminated wells, or ingesting contaminated soil. Breathing air near hazardous waste sites where toxaphene has been disposed, or near other contaminated sites or obsolete stockpiles, can also result in exposure. At high exposures, toxaphene has been associated with kidney and liver damage, central nervous system effects, possible immune system suppression, and cancer.

- **Polychlorinated biphenyls (PCBs)**

PCB were discovered and enthusiastically welcomed in 1929 owing to a number of positive features. They are not readily inflammable, have high electric resistance, good insulation parameters and stability at even very high temperatures and pressure. Being considered 'the perfect oil', their use grows at high rate. A number of products include PCB in their composition – hydraulic and transformer oils, special types of paper, pints, glues, wax, heat transfer fluids, etc.

PCBs are aromatic compounds in which the hydrogen atoms of the two benzene rings joined by a simple carbon-carbon bond may be replaced with up to ten chlorine atoms (figure 2). This predetermines the existence of 209 isomers. Their toxicity and ability to decompose depends on both the type and disposition of the chlorine atoms in the molecule.

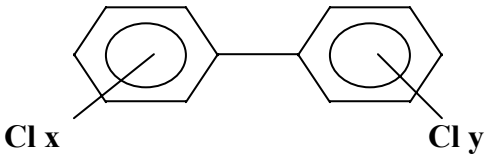


Figure 2: PCB structure

Their high thermal and chemical resistances making them so attractive for the practice are features that have turned them into one of the greatest threats for life on Earth.

- **Dioxins and furans**

Initially dioxin was an abbreviation for a single substance, with the formidable chemical name, 2,3,7,8-tetrachlorodibenzo-p-dioxin – figure 3-A.

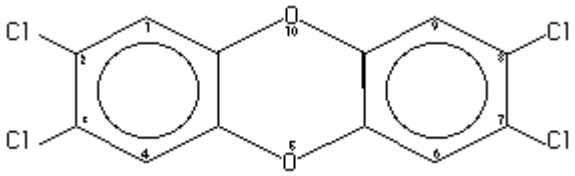
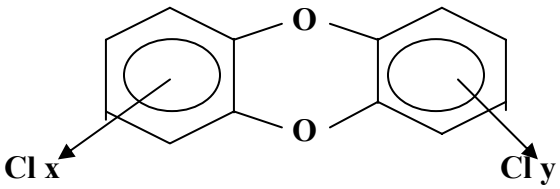
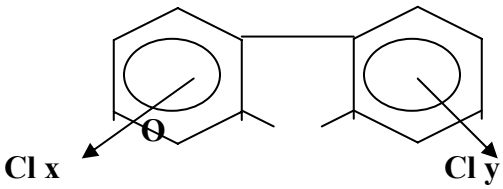


Figure 3-A: 2,3,7,8-tetrachlorodibenzo-p-dioxin.

Now it is only one member of a "family" of chemical compounds with an identical carbon-oxygen framework.



Polychlorinated dibenzodioxins



Polychlorinated dibenzofurans

Figire 3-B: Polychlorinated dibenzodioxins and dibenzofurans

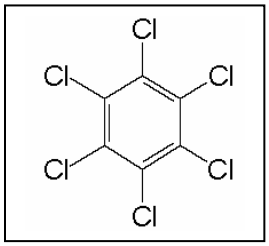
The polychlorinated dibenzodioxins and dibenzofurans (PCDD/PCDF), more popularly known as *dioxins and furans*, are three-cyclic aromatic compounds where the hydrogen atoms may be replaced by up to eight chlorine atoms (figure 3-B). The number and location of the chlorine atoms determines their physical, chemical and toxicological indexes. There are 75 types of dioxins and 135 types of furans.

Dioxins are not readily dissolved in water, they are highly volatile, easily sticking to the surface of hard particles and decompose very slowly. As a result of these properties, dioxins are found in the soil, deposits and sediments in very high concentrations.

They are derived as a result of incomplete combustion or chemical reactions with the participation of organic substances and chlorine. Sources of such emissions may be e.g. combustion processes in power production and transformation; incineration; production processes; transport; waste treatment and dumping.

- **Industrial chemicals**

(source:http://www.panda.org/about_wwf/what_we_do/toxics/problems/pops/pop_alternatives/index.cfm)



Hexachlorobenzene (HCB) is a synthetic crystalline compound first produced in the 1940s for use as a fungicide. HCB is characterised by its toxicity, very high environmental persistence and long-range transport ability, and significant bioaccumulation in wildlife. HCB has been widely used as a fungicide to protect the seeds of onions, wheat, and sorghum. It has also been used as a solvent and as a manufacturing intermediate or additive in the production of synthetic rubber, PVC plastic, pyrotechnics, ammunition, wood preservatives and dyes. HCB continues to be created as a by-product in the manufacture of many chlorinated solvents and pesticides and in other chlorination processes. It is found as a contaminant in several pesticides. HCB is also released in the burning of municipal, hazardous and medical waste. Contaminated food is probably the major route of exposure for most organisms. HCB accumulates in fish; whales and other marine mammals; birds; lichens; and animals that eat fish or lichens, e.g. caribou. It can also build up in wheat, grasses, certain vegetables such as carrots, and other plants. Sources of human exposure include the consumption of fish, meat, dairy products, grains, and breast milk. Some people are also exposed via occupational sources or by living near industrial facilities where HCB is produced, or near hazardous waste sites. HCB is toxic and can damage the liver, thyroid, kidneys, as well as the endocrine, immune, reproductive, and nervous systems.

III. POPs in Bulgaria

Of the POPs already discussed, various products containing POPs have been imported or used in the Republic of Bulgaria in various years. Currently, the official statement is that any POPs pesticides or industrial chemicals are prohibited – not in use or produced .
The unintentionally produced POPs are monitored or assessed by indirect methods.

Therefore, the information on the quantities of POPs in the Republic of Bulgaria falls mainly within the category of hazardous waste presented by type and quantity in Table 2.

Table 2: Type and quality of POP containing hazardous waste in 2003

№	Waste type	Units	Quantity
1.	Waste from agriculture (orchards, flowers and gardening), forestry, hunting and fisheries		
1.1.	Agrochemical waste containing hazardous substances (obsolete and expired plant protection chemicals)	tons	12 394
2.	Waste hydraulic oil		
2.1.	PCB containing hydraulic oil - fresh transformer oils in storage, containing 100% PCBs - fresh transformer oils in storage, 100% PCB assumed	tons	43,64 6,8 36,84
3.	Used insulation and heat transferring oils		
3.1.	Transformers and condensers - transformer oils, containing 100% PCB - transformer oils with assumed PCB content	tons tons tons	20,12 10,24 9,88
4.	Waste from electrical and electronic equipment		
4.1.	Transformers and condensers containing PCB - used condensers containing PCBs - assumed PCB containing used condensers	number number	844 614 230

The individual POPs as systematized in Table 1 are discussed in detail below in the following order: pesticides, PCBs, dioxins and furans, with their production, import, registration, application, storage, residue in water, air, etc**.**

1. Plant protection agents

1.1. IMPORT, REGISTRATION AND APPLICATION

The greatest part of POPs pesticides are imported and used in the country mainly as plant protection agents. Their use was on the largest scale during the 1960s. During that period over 20,000 squares metres of farming land, forests, etc. were treated yearly.

The bans of organochlorine insecticides such as DDT, aldrin, dieldrin, endrin and HCH (α, β and γ) happened when they were included as "banned for use in agriculture in Bulgaria" (1969). One of the alternatives to organochlorine insecticides available that time was parathion but it was evaluated as highly hazardous and was also banned in 1970. In 1985 toxaphene was banned (camphechlor) and in 1991 - heptachlor. Chlordane, chlordecone, HCB, and mirex have never been registered for use in Bulgaria.

Despite the fact that all the pesticides listed as POPs have been banned or never registered for production and use they still represent potential source of pollution. The major problem now is the storage of relatively large quantities of banned pesticides due to the lack of proper waste disposal technologies. The inventory of pesticides in stocks in 1996 showed that there were about 35 tons of banned organochlorine pesticides which is relatively high quantity for the small territory of Bulgaria.

Data about the application, registration, imported quantities, and prohibitions for POPs pesticides in Bulgaria are given in Table 3.

Table 3: Data about the application, registration, importation and prohibitions for POPs pesticides in Bulgaria

Preparation	Application	Import/ registration period	Imported quantities t/y	Year of prohibition
Aldrin	insecticide	1960-1970	135 - 220	1969
Dieldrin	insecticide	1960-1970	100	1969
Endrin	insecticide	1960-1970	100	1969
Mirex	insecticide	Not imported or registered		
Toxaphene	insecticide	1960-1970	100 - 150	1985
Hexachlorobenzene	fungicide	Not imported or registered		
Heptachlor	insecticide	1960-1990	100	1991
Chlordane	insecticide	Not imported or registered		
DDT	insecticide	1950-1965		1969

Aldrin (cas 309-00-2) had been imported and used in Bulgaria early in the 1960s in annual quantities of 135-220 tons. Following 1969, this chemical has not been imported or used in Bulgaria and is part of the List of Active Substances Prohibited for use in Plant Protection Chemicals, prepared by the MoAF.

Dieldrin (cas 60-57-1) had been imported and used in Bulgaria early in the 1960s in annual quantities of 100 tons. Following 1969, this chemical has not been imported or used in Bulgaria. It is listed in the List of Substances Prohibited for use in Plant Protection Chemicals, prepared by the MoAF.

Endrin (cas 72-20-8) had been imported and used in Bulgaria early in the 1960s in annual quantities of 100 tons. Following 1969, endrin has not been imported or used in Bulgaria and is part of the List of Active Substances Prohibited for Introduction in Plant Protection Chemicals, prepared by the MoAF.

Mirex (cas 2385-85-5) has not been imported or used in Bulgaria.

Toxaphene (cas 8001-35-2) had been imported and used in Bulgaria early in the 1960s in annual quantities of 100-105 tons. Following 1985, toxaphene has not been imported or used in Bulgaria and is part of the List of Active Substances Prohibited for Introduction in Plant Protection Chemicals, prepared by the MoAF.

Hexachlorobenzene (cas 118-74-1) is the only fungicide in the pesticides group. It has not been imported or used in Bulgaria.

Heptachlor (cas 76-44-8) had been imported and used in Bulgaria early in the 1960s in annual quantities of 100 tons. It is part of the Ministry of Agriculture and Forest's list of plant protection chemicals (containing up to 10% technical product) for agriculture use during 1988-1990, for processing of seeds of maize, sunflower, wheat and sugar beet. Following 1991, its use was prohibited and it is part of the List of Active Substances Prohibited for Introduction in Plant Protection Chemicals, prepared by the MoAF.

Chlordane (cas 57-74-9) have not been imported or used in Bulgaria.

DDT (cas 50-29-3) had been used in the 1950s in Bulgaria in various preparations (technical product content of 5% to 20%, most frequently 5,5%). Its use was limited in the 1960s, and completely prohibited in 1969. Import into Bulgaria of preparations containing more than 1 g/DDT per kilogram of preparation is prohibited. It is listed in the List of Active Substances Prohibited for Use in Plant Protection Chemicals, prepared by the MoAF.

As a result of the non-rational planning and overstocking on the national scale, during the 1960s large quantities of these pesticides have been accumulated. These accumulated pesticides are stored and treated as hazardous waste these days.

1.2. STORAGE

The present report contains a summary of the data on the available quantities of plant protection agents by regions, including the years 2002, 2003, 2004 and 2005 Table 4) systemized on the basis of the existing territorial division of the country: municipalities, districts and planning regions.

The comparison of the data by years of the districts gives an idea of the tendencies for solving the problem of obsolete pesticides. One part of them has been moved to BB-cubes, another has been moved to special stores and the third has been robbed by the people near the sites.

Some interesting features, such as the number of non-guarded warehouses or the number of warehouses on private land, the number of stores in bad condition, etc., have been considered, too. Quantities of liquid and solid agents, etc., are also present in the report. In our opinion this is one of the important factors determining the risk of pollution with POP pesticides.

There are 264 municipalities in the Republic of Bulgaria forming 28 districts. Each district covers an average of 10-11 municipalities, with the district names coinciding with the names of the towns-administrative centers. Generally, the country's territory is divided into 6 planning regions comprising the respective districts [1].

Table 4: General characteristics of the planning regions and of the municipality

№	Planning regions	District	Municipality	Total number of municipalities by district
1.	North-western region	Vidin	11	**32**
		Vraca	10	
		Montana	11	
2.	North-central region	Veliko Tarnovo	10	**41**
		Gabrovo	4	
		Lovech	8	
		Pleven	11	
		Ruse	8	
3.	North-eastern region	Varna	12	**49**
		Dobrich	8	
		Razgrad	7	
		Silistra	7	
		Targovishte	5	
		Shumen	10	
4.	South-eastern region	Burgas	13	**22**
		Sliven	4	
		Iambol	5	
5.	South-central region	Kurdjali	7	**67**
		Pazardjik	11	
		Plovdiv	18	
		Smolian	10	
		Stara Zagora	11	
		Haskovo	11	
6.	South-western region	Blagoevgrad	14	**52**
		Kustendil	9	
		Pernik	6	
		Sofia (capital)	1	
		Sofia	22	

The data has been supplied as follows: for 2002 and 2004 - by Executive Environment Agency (EEA); for 2003 and 2005 - by the National Plant Protection Service (NPPS). The Regional Inspectorate of Environment & Waters (RIoEW) supplements the information on the situation in the individual districts beginning in 2005.

The data for 2004 were given as a summary for the whole country. That is why it is impossible to compare the distribution by municipalities with the other years here (2002, 2003 и 2005). The data for 2004 are used and discussed in he General Conclusions see page 47.

The different regions will be discussed below in the same order as in Table 4.

- **North-western region consist following 3 districts**

A. Vidin District

Vidin District includes 11 municipalities (see stores by district - №1).

In 2002 there were all together 23 warehouses for obsolete plant protection agents. The quantities are: 155 150 kg of solid and 130 l of liquid plant protection agents (Table 5-A).

Two warehouses were found in poor condition with 53 500 kg of solid POPs pesticides stored in them.

4 of the rooms are on private territory.

20 stores are not safe-guarded (Table 5-B).

In 2003 the number of warehouses was decreased by one and the quantity of pesticides was as follows: 186 620 kg of solid and 11 110 l liquid.

Only one warehouse was found in poor condition.

All of the rooms are on municipal territory.

16 stores are not safe-guarded.

In 2005 the number of rooms in which the pesticides are kept was 16 with the following quantities: 100 560 kg of solid and 5 110 l of liquid agents.

Table 5-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	23	155 150	130
2003	22	186 620	11 110
2005	16	100 560	5 110

Table 5-B: Pesticides in <u>non guarded</u> stores, for 2002 and 2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
23	20	2	1	148 300	130
Total for the district in all stores:				155 150	130
Year 2003					
28	19	9	-	46 315	11 020
Total for the district in all stores:				186 620	11 110

B. Vraca District

Vraca District includes 10 municipalities (see stores by district - №2).

Summary data on the number of stores for plant protection agents and the quantities stored in them is presented in Table 6-A.

In 2002 there were all together 23 warehouses for obsolete plant protection agents. The quantities established are as follows: 448 046 kg of solid and 65 361 l of liquid plants protection agents.

In 2003 the number of stores was the same and the quantities of pesticides were as follows: 389 800 kg of solid and 55 985 l of liquid agents.

The data for 2005 shows that the number of rooms in which the agents were kept was 22 with the following quantities: 394 800 kg of solid and 69 805 l of liquid agents.

Table 6-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	23	448 046	65 361
2003	23	389 800	55 985
2005	22	394 800	69 805

As of 2005 a decrease in the quantity of solid POPs pesticides by 53 246 kg is noted. The proportion of the liquid quantities in the district is by 4 444 l more for the last year compared to 2002.

According to the data from the regional environment inspectorate in Vraca, in 2005, 377 070 kg solid and 137 310 l liquid quantities are stored in the district which is by 17 730 kg more and 67 505 l less than the data of the National Service for Plants protection.

The number and quantities of plants protection agents stored in unguarded warehouses are presented in Table 6-B. In 2002 the number of guarded warehouses prevails but in 2003 the data points to a reverse tendency with a high proportion of unguarded warehouses.

Table 6-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
23	5	18	-	9 940	915
			Total for the district in all stores:	448 046	65 361
Year 2003					
23	14	5	-	45 000	8 200
			Total for the district in all stores:	389 800	55 985

C. Montana District

There are 11 municipalities in Montana District (see stores by district - №3).

In 2002 there were all together 29 warehouses (Table 7-A) for obsolete POPs pesticides. The quantities established are as follows: 127 900 kg of solid and 22 105 l of liquid plants protection agents.

In 2003 the number of warehouses was one less and the quantity of pesticides was as follows: 172 530 kg of solid and 23 255 l of liquid agents.

The data for 2005 shows that the number of rooms is 23, with the following quantities: 32 225 kg of solid and 3 500 l of liquid agents.

Table 7-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	29	127 900	22 105
2003	28	172 530	23 255
2005	23	32 225	3 500

In 2002 compared to 2005 the quantities of POPs pesticides has decreased by 95 675 kg of solid and 18 605 l of liquid, respectively.

Table 7-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
29	17	5	7	79 550	10 770
			Total for the district in all stores:	127 900	22 105
Year 2003					
28	19	9	-	46 315	11 020
			Total for the district in all stores:	172 530	23 255

In 2002 more than half of the agents were stored in unguarded rooms (Table 7-B) with this tendency decreasing in the next year.

In the North-eastern region the largest quantities of obsolete plant protection agents are found on the territory of Vraca District (Figure 4).

Figure 4-A: Solid pesticides by district - North-western region

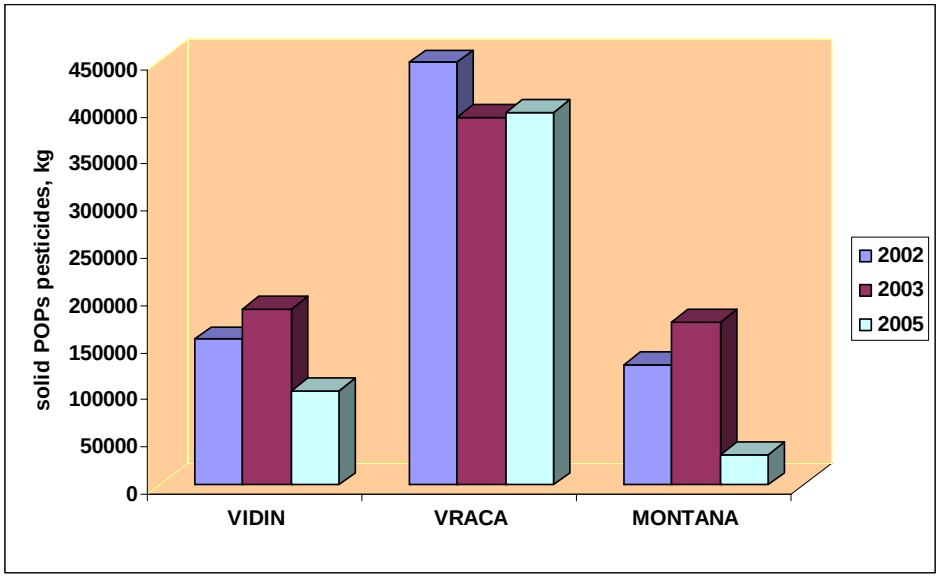
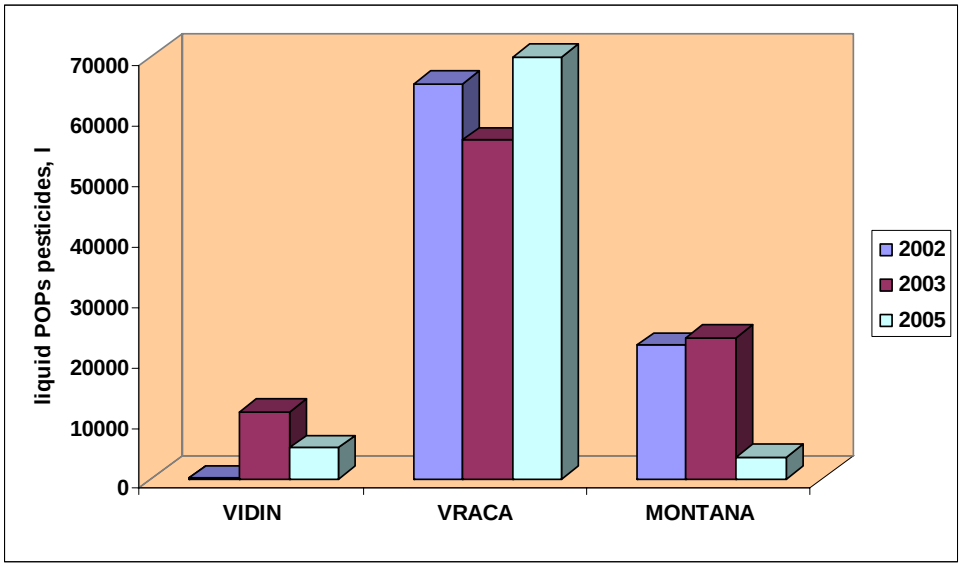


Figure 4-B: Liquid pesticides by district – North-western region



- **North-central region consists of the following 5 districts**

A. Veliko Tarnovo District

Veliko Tarnovo District includes 10 municipalities (see stores by district - №4). POPs pesticides management in the territory of the district has resulted in a decrease of the solid agents by 617 191 kg and by 18 466 l of the liquid ones (Table 8-A).

In 2002 here were 16 warehouses for storage of obsolete plant protection agents. The quantities established in them were as follows: 982 346 kg of solid and 108 316 l of liquid plant protection agents.

The number of warehouses in 2003 decreased by one and the quantity of agents is as follows: 399 392 kg of solid and 111 146 l of liquid agents.

The data for 2005 shows that the number of rooms in which the agents were stored was 11, with the following quantities: 365 155 kg of solid and 89 850 l of liquid agents.

Table 8-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	16	982 346	108 316
2003	15	399 392	111 146
2005	11	365 155	89 850

According to the data of the Executive Environment Agency (EEA) in 2002 there were 600 000 kg of solid POPs pesticides of unknown composition found in the Svishtov Municipality. No data on their storage has been entered into the records of the

stocktaking in 2003 and 2005, supplied to the National Service for Plants Protection. After the inquiry made by the Regional Inspectorate of Environment & Waters - Veliko Tarnovo they were reported to have been moved to another warehouse in the territory of the same municipality.

The number of guarded storerooms prevails (Table 8-B).

Table 8-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
16	1	12	3	1 000	1 000
			Total for the district in all stores:	982 346	108 316
Year 2003					
19	1	16	2	1 030	150
			Total for the district in all stores:	399 392	111 146

B. Gabrovo District

Gabrovo District includes 4 municipalities (see stores by district - №5).
In 2002 there were 4 warehouses for storage of obsolete plant protection agents (Table 9-A), with the following quantities: 70 374 kg of solid and 12 605 l of liquid agents.

All of stores are in good repair, with protection.

All of stores are in municipal territory (Table 9-B).

In 2003 the warehouses decreased by one and quantities are absolutely the same as in 2002.

The data for 2005 shows that the number of rooms in which the agents were stored was again 3, with the following quantities: 83 104 kg of solid and 12 020 l of liquid agents.

Table 9-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	4	70 374	12 605
2003	3	70 374	12 605
2005	3	83 104	12 020

Table 9-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
4	0	4	-	0	0
			Total for the district in all stores:	70 374	12 605
Year 2003					
3	0	3	-	0	0
			Total for the district in all stores:	70 374	12 605

D. Lovech District

There are 8 municipalities in the district (see stores by district - №6).

In 2002 there were all together 54 warehouses (Table 10-A) for obsolete stockpiles of POPs pesticides. The quantities established are as follows: 126 195 kg of solid and 4 700 l of liquid plants protection agents.

Eleven warehouses were found in poor condition with 21 850 kg of solid and 500 l of liquid POPs pesticides stored in them.

2 of the rooms are on private territory.

49 stores are not guarded (table 10-B).

In 2003 there were 50 warehouses for storage of obsolete plant protection agents (Table 9-A), with the following quantities: 225 220 kg of solid and 48 530 l of liquid agents.

Not guarded - 44 stores, with the following quantities: 161 500 kg of solid and 34 990 l of liquid agents.

16 of the rooms are in bad conditions.

The data for 2005 shows that the number of rooms in which the agents were stores was 43, with the following quantities: 197 320 kg of solid and 35 430 l of liquid agents.

Table 10-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	54	126 195	4 700
2003	50	225 220	48 530
2005	43	197 320	35 430

Table 10-B: Pesticides in unguarded stores, for 2002 and 2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
54	49	5	-	110 831	4 700
			Total for the district in all stores:	126 195	4 700
Year 2003					
50	44	6	-	161 500	34 990
			Total for the district in all stores:	225 220	48 530

E. Pleven district

There are 11 municipalities in the district (see stores by district - №7). Reduction of the number of storage rooms is noted but not of the very quantities of agents stored in them (Table 11-A).

In 2002 there were all together 89 warehouses (table 11-A) for obsolete of POPs pesticides. The quantities established are as follows: 265 415 kg of solid and 129 764 l of liquid plants protection agents.

In 2003 the number of warehouses was 94, with the agents quantity stored in them as follows: 271 345 kg of solid and 113 748 l of liquid agents.

The data for 2005 shows that the number of rooms in which the agents were stored has decreased by 18 to reach 71, compared to 2003, with the following quantities: 266 326 kg of solid and 95 323 l of liquid agents.

Table 11-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	89	265 415	129 764
2003	94	271 345	113 748
2005	71	266 326	95 323

In 2002 none of the warehouses was guarded (Table 11-B), but in the following year guards were positioned at half of them.

Table 11-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
89	89	0	-	265 415	129 764
			Total for the district in all stores:	265 415	129 764
Year 2003					
93	47	46	-	94 340	51 455
			Total for the district in all stores:	271 345	113 748

F. Ruse District

There are 8 municipalities in the district (see stores by district - №8).

There was a drastic decrease of the number of storage rooms and of the quantities of agents stored in them as noted (Table 12-A).

In ***2002*** there were all together 28 warehouses for obsolete POPs pesticides. The quantities established are as follows: 73 641 kg of solid and 28 753 l of liquid pesticides.

Five warehouses were found in poor condition with 24 430 kg of solid and 9 733 l of liquid POPs pesticides stored in them.

4 of the rooms are on private territory.

14 warehouses are not guarded (table 12-B).

According to the official data from NSPP there were not any stores left in region Ruse for 2003. All of them have been liquidated and pesticides have been stored in BB cubes.

The data for 2005 shows that the number of rooms in which the agents were stored has decreased by 21 to reach 7, compared to 2005, with the following quantities: 23 540 kg of solid and 9 520 l of liquid agents.

Table 12-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	28	73 641	28 753
2003	0	0	0
2005	7	23 540	9 520

Table 12-B: Pesticides in unguarded stores, for 2002

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
28	14	14	-	54 840	17 485
			Total for the district in all stores:	73 641	28 753

In the Central region the largest quantities of obsolete plant protection agents are found on the territory of Veliko Tanovo District and Pleven (Figure 5). In 2002 there were 1 517 971 kg of solid and 284 138 l of liquid quantities. 935 445 kg of solid and 242 143 l of liquid quantities have been established in 2005.

Figure 5-A: Solid pesticides by district – Central region

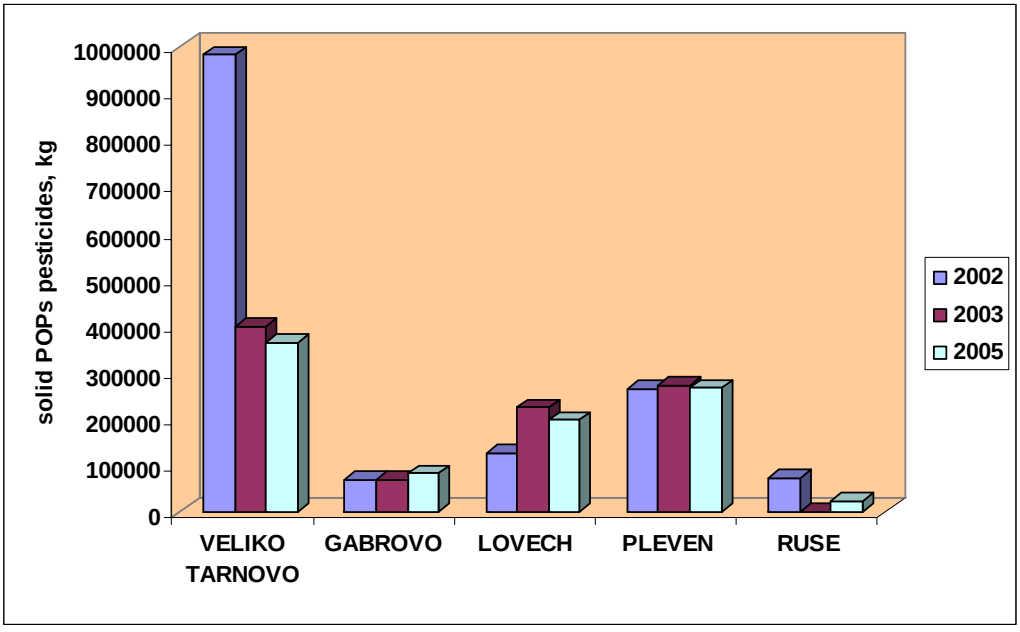
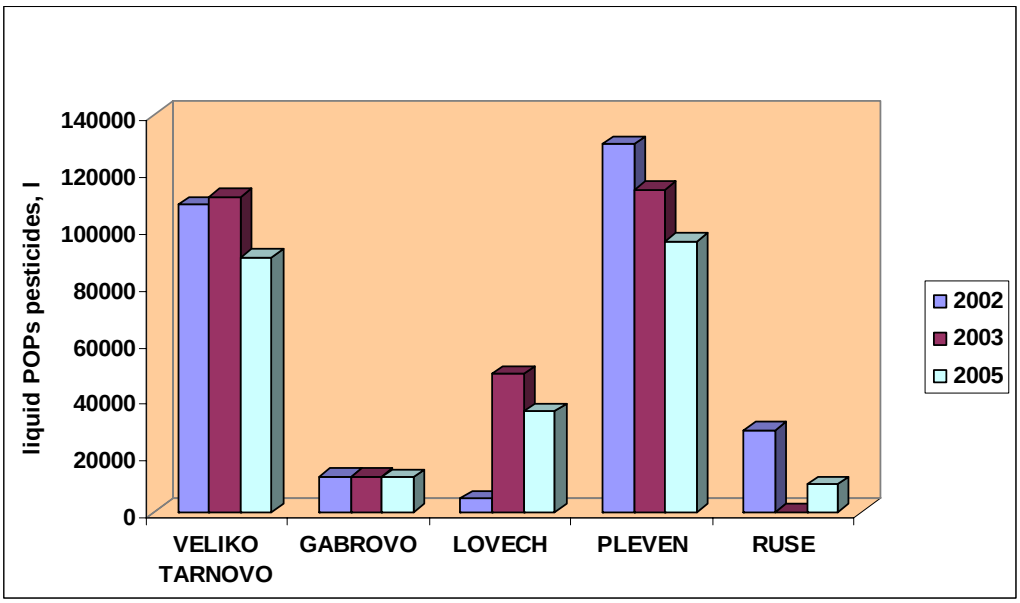


Figure 5-B: Liquid pesticides by district - Central region



- **North-eastern region consist following 6 districts**

A. Varna Distinct

There are 12 municipalities in the district (see stores by district - №9). During the years under consideration the quantity of liquid agents has drastically increased by 29 800 l (Table 13-A).

In 2002 there were 21 warehouses for storage of obsolete plant protection agents. The quantities established are as follows: 239 070 kg of solid and 20 800 l of liquid plants protection agents.

In 2003 the number of warehouses was 20, with the agents quantity stored in them as follows: 207 230 kg of solid and 43 000 l of liquid quantities.

The data for 2005 shows that the number of rooms in which the agents were stored was reduced by half, that is, 9, with the following quantities: 218 430 kg of solid and 50 600 l of liquid quantities.

Table 13-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	21	239 070	20 800
2003	20	207 230	43 000
2005	9	218 430	50 600

Almost half of the quantities are stored in unguarded rooms (Table13-B).

Table 13-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
21	7	10	4	106 130	13 000
			Total for the district in all stores:	239 070	20 800
Year 2003					
20	11	9	-	93 330	9 200
			Total for the district in all stores:	207 230	43 000

B. Dobrich District

There are 8 municipalities in the district (see stores by district - №10).

An increase of the number of storage rooms is noted (Table 14-A).

In 2002 there were 34 warehouses for storage of POPs pesticides. The quantities established are as follows: 132 248 kg of solid and 57 868 l of liquid plants protection agents.

Eighteen warehouses were found in poor condition with 85 156 kg of solid and 17 645 l of liquid POPs pesticides stored in them.

15 of the rooms are on private territory.

18 warehouses are not guarded (Table 14-B).

In 2003 the number of warehouses was 37 and the quantities were as follows: 38 820 kg of solid and 53 990 l of liquid pesticides. Twenty-two warehouses with 19 700 kg of solid and 19 450 l of liquid pesticides are unguarded.

The number of stores in 2005 is 36 – with 1 more than in 2003, with quantities: 38 720 kg of solid and 47 530 l of liquid pesticides.

5 stores are in very bad conditions.

Not protected are 11 warehouses with quantities: 18 700 kg of solid and 15 250 l of liquid pesticides.

Table 14-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	34	132 248	57 868
2003	37	38 820	53 990
2005	36	38 720	47 530

Table 14-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
34	18	16	-	90 704	24 530
			Total for the district in all stores:	132 248	57 868
Year 2003					
37	22	15	-	19 700	19 450
			Total for the district in all stores:	38 820	53 990

C. Razgrad District

There are 7 municipalities in the district (see stores by district - №11).

In 2002 there were 8 warehouses for storage of POPs pesticides. The quantities established are as follows: 121 275 kg of solid and 63 743 l of liquid plants protection agents (Table15-A).

There are no warehouses in poor condition on the territory of the district.

Only 1 of the storerooms is on private property.

2 warehouses are not guarded (table 15-B).

In 2003 there were 7 warehouses for storage of obsolete plant protection agents. The quantities established are as follows: 97 655 kg of solid and 76 614 l of liquid plant protection agents.

4 of all stores are not protected with almost half of all quantities in them: 50 740 kg of solid and 40 740 l of liquid plants protection agents.

There is one store on private territory.

In 2005 the number of warehouses was 5, with the quantity stored in them as follows: 53 839 kg of solid and 62 816 l of liquid pesticides.

Table 15-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	8	121 275	63 743
2003	7	97 655	76 614
2005	5	53 839	62 816

Table 15-B: Pesticides in unguarded stores, for 2002 and 2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
8	2	6	-	72 870	3 502
			Total for the district in all stores:	121 275	63 743
Year 2003					
7	4	3	-	50 740	40 740
			Total for the district in all stores:	97 655	76 614

D. Silistra District

There are 7 municipalities in the district (see stores by district - №12).

In 2002 there were 29 warehouses for storage of POPs pesticides. The quantities established are as follows: 65 931 kg of solid and 41 590 l of liquid plant protection agents (Table16-A).

There are 2 warehouses in poor condition in the territory of the district with POPs pesticides quantities of 18 000 kg solid and 6000 l liquid ones.

4 of the warehouses are on private property.

More than half of the warehouses are unguarded – 22 (Table 16-B).

In 2003 the number of warehouses was by 9 less, reaching 20, with the amount stored in them as follows: 92 425 kg of solid and 24 195 l of liquid.

The data for 2005 shows that the number of rooms in which the agents were stored is 21, with the following quantities: 91 765 kg of solid and 23 895 l of liquid agents.

Half of all buildings are not protected and contain 44 005 kg of solid and 6 450 l of liquid agents.

2 of the rooms are in bad conditions.

Table 16-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	29	65 931	41 590
2003	20	92 425	24 195
2005	21	91 765	23 895

Table 16-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
29	22	6	1	40 516	11 345
			Total for the district in all stores:	65 931	41 590
Year 2003					
20	9	11	-	51 315	44 665
			Total for the district in all stores:	92 425	24 195

F. Targovishte District

There are 5 municipalities in the district (see stores by district - №13).

In 2002 there were 5 warehouses for storage of POPs pesticides. The quantities established are as follows: 147 600 kg of solid and 34 040 l of liquid plants protection agents (table 17-A).

There are no warehouses in poor condition or privately owned on the territory of the district.

2 of the warehouses are unguarded (Table17-B).

In 2003 the number of warehouses was 6 and the quantity was as follows: 155 650 kg of solid and 44 365 l of liquid.

For 2005 no data have been found.

Table 17-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	5	147 600	34 040
2003	6	155 650	44 365
2005	-	-	-

Table 17-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
5	2	2	1	15 000	7 000
			Total for the district in all stores:	147 600	34 040
Year 2003					
6	3	3	-	13 650	10 220
			Total for the district in all stores:	155 650	44 365

G. Shumen District

Shumen District includes 10 municipalities (see stores by district - №14). The tendency in the district is of increasing the quantity of liquid plants protection agents (Table18-A). In 2005 there was 23 320 l more of obsolete pesticides than in 2002.

In 2002 there were 20 warehouses for storage of obsolete plant protection agents. The quantities established are as follows: 65 000 kg of solid and 15 180 l of liquid.

In 2003 the number of warehouses was 16 and the quantity was as follows: 110 338 kg of solid and 50 718 l of liquid.

In 2005 the warehouses were 10 with the following quantities: 60 310 kg of solid and 38 500 l of liquid.

Table 18-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	20	65 000	15 180
2003	16	110 338	50 718
2005	10	60 310	38 500

There is no data available regarding the guarding of the warehouses in the records of the results of the monitoring carried out by the National Plant Protection Service (Table 18-B).

Table 18-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
20	5	7	8	23 000	3 800
			Total for the district in all stores:	65 000	15 180
Year 2003					
16	-	-	-	-	-
			Total for the district in all stores:	110 338	50 718

The quantities of liquid pesticides exceed by several times the solid ones in the North-eastern region (Figure 6).

Figure 6-A: Solid pesticides by district – Northeast region

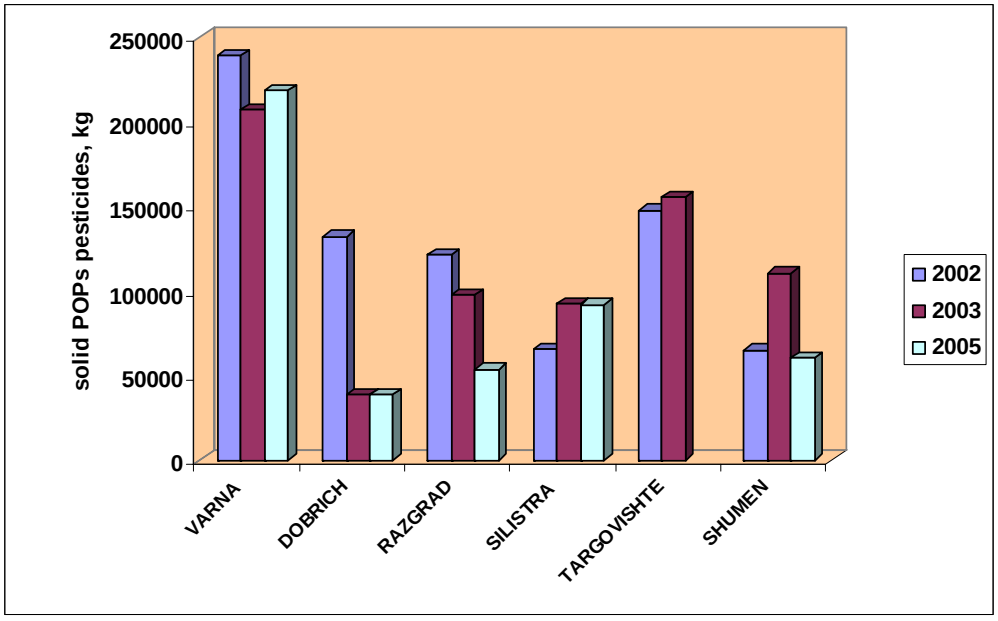
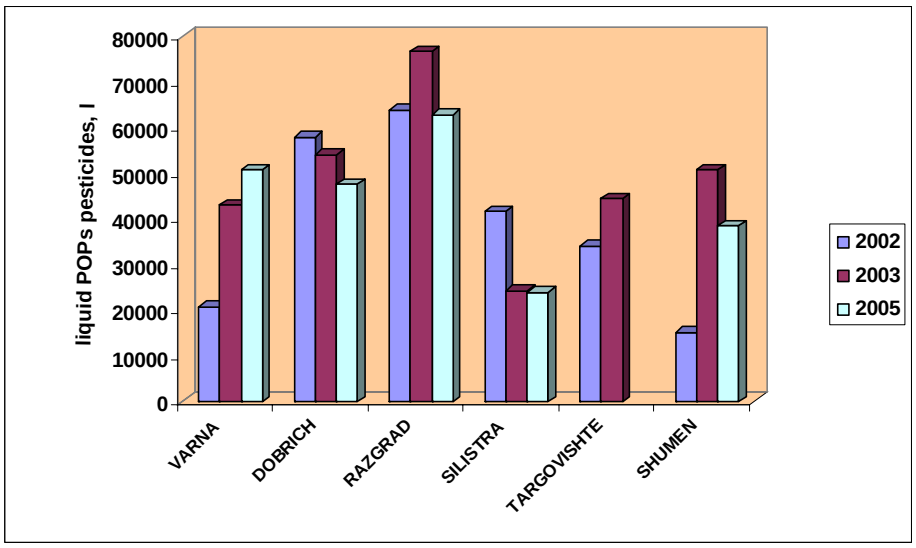


Figure 6-B: Liquid pesticides by district - Northeast region



- **South-eastern region consist of the following 3 districts**

A. Burgas District

Burgas District includes 13 municipalities (see stores by district - №15). In 2005 the solid agents have decreased by 85 157 kg and the liquid ones by 18 500 l compared to 2002 (Table 19-A).

In 2002 there were 37 warehouses for storage of obsolete plant protection agents. The quantities established are as follows: 293 970 kg of solid and 48 300 l of liquid.

In 2003 the number of warehouses was 41 and the quantity was as follows: 470 930 kg of solid and 55 035 l of liquid.

In 2005 the warehouses were 13 with the following quantities: 208 813 kg of solid and 29 800 l of liquid.

Table 19-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	37	293 970	48 300
2003	41	470 930	55 035
2005	13	208 813	29 800

In the period 2002-2003 the total number of warehouses increased by 4 and the agents quantities have increased as follows: solid by 176 960 kg and liquid by 6 735 l (Table 19-B).

Table 19-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
37	24	11	-	91 070	15 305
			Total for the district in all stores:	293 970	48 300
Year 2003					
42	29	13	-	81 080	6 070
			Total for the district in all stores:	470 930	55 035

B. Sliven District

There are 4 municipalities in the district (see stores by district - №16).

In 2002 there were 6 warehouses for storage of POPs pesticides. The quantities established are as follows: 100 kg of solid and 550 l liquid plant protection agents (Table 20-A).

There is only one functioning warehouse on the territory of the district in which all the available quantities of POPs pesticides are stored. It is in poor condition and is not guarded (Table 20-B).

There are no private warehouses.

In 2003 the number of warehouses was 3 and the quantity was as follows: 975 kg of solid and 1 830 l of liquid.

Two of the warehouses are in poor condition and 1 is on private land.

In 2005 the number of warehouses was 5 and the quantity was as follows: 117 800 kg of solid and 15 290 l of liquid.

Table 20-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	6	100	550
2003	6	975	1 830
2005	5	117 800	15 290

Table 20-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
6	1	-	5	100	550
			Total for the district in all stores:	100	550
Year 2003					
6	4	2	-	450	400
			Total for the district in all stores:	975	1 830

C. Iambol District

Iambol District includes 5 municipalities (see stores by district - №17). During the years under consideration the number of warehouses has decreased by 1 while the quantities are almost the same (Table 21-A).

In 2002 6 warehouses for POPs pesticides with the following quantities were found in the district: 336 810 kg of solid and 87 790 l of liquid.

In 2003 the number of warehouses was the same, 6, and the quantity was as follows: 338 910 kg of solid and 87 790 l of liquid.

In 2005 the warehouses were reduced by one - 5, with the following quantities: 301 000 kg of solid and 99 853 l of liquid.

Table 21-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	6	336 810	87 790
2003	6	338 910	87 790
2005	5	301 000	99 853

In 2002 almost the whole quantity of agents in the district was stored in unguarded warehouses (table 21-B), while in the next year it decreased by half.

Table 21-B: Pesticides in non guarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
6	4	1	1	323 010	79 590
			Total for the district in all stores:	336 810	87 790
Year 2003					
6	4	2	-	192 010	52 190
			Total for the district in all stores:	338 910	87 790

In the South-eastern region the largest quantities of obsolete plants protection agents are found on the territory of Iambol District (Figure 7).

Figure 7-A: Solid pesticides by district – South-eastern region

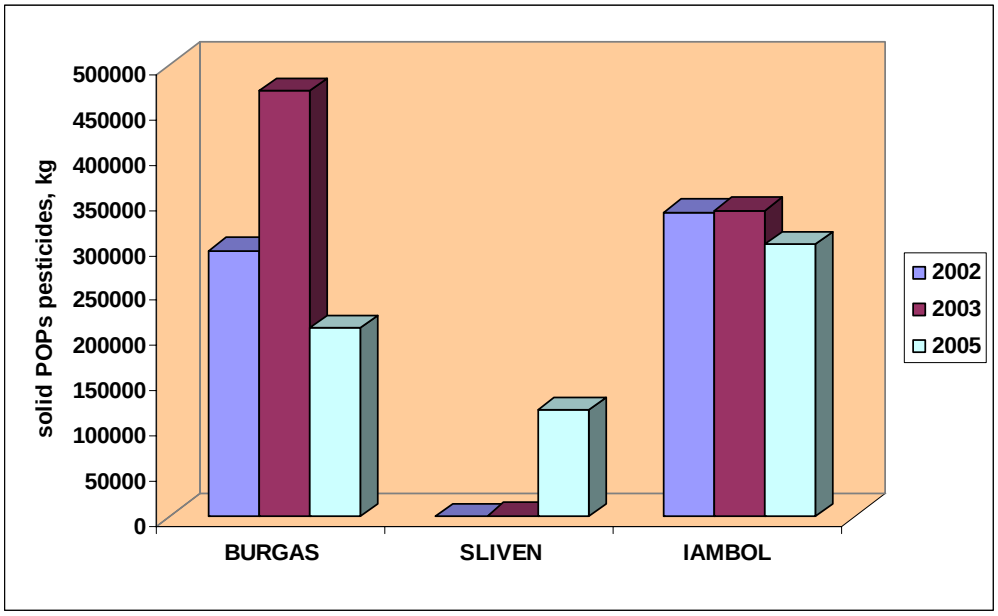
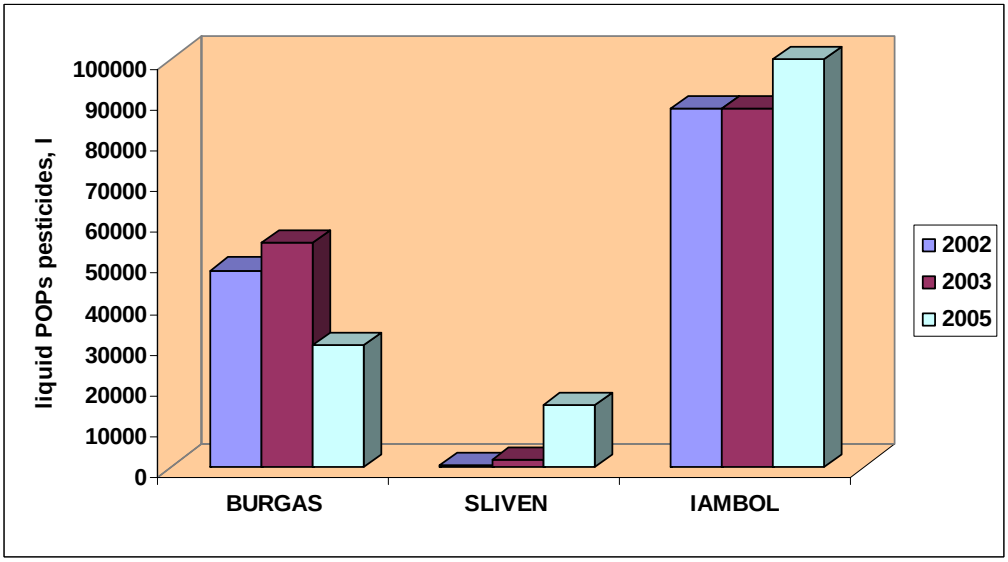


Figure 7-B: Liquid pesticides by district - South-eastern region



- **South - central region consist of the following 6 districts**

A. Kardjali District

There are 7 municipalities in the district (see stores by district - №18).

In 2002 there were 7 warehouses for storage of obsolete POPs pesticides. The quantities established are as follows: 216 099 kg of solid and 19 150 l of liquid (Table 22-A).

All warehouses on the territory of the district are in good condition.

There are no warehouses on private territory.

7 warehouses are not guarded (Table 22-B).

In 2003 the number of warehouses was increased by 3 reaching 10, with the agents quantity stored in them as follows: 289 874 kg of solid and 38 080 l of liquid.

The data for 2005 shows that the number of rooms in which the agents were stored are same as in 2003, 10, with the following quantities: 272 274 kg of solid and 38 080 l of liquid.

Nine are not protected and 1 of all the warehouses is in private territory.

Table 22-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	7	216 099	19 150
2003	10	289 874	38 080
2005	10	272 274	38 080

Table 22-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
7	7	-	-	216 099	19 150
			Total for the district in all stores:	216 099	19 150
Year 2003					
10	9	1	-	283 172	38 080
			Total for the district in all stores:	289 874	38 080

B. Pazardjik District

The District includes 11 municipalities (see stores by district - №19).

In 2002 there were 24 warehouses for storage of obsolete POPs pesticides. The quantities established are as follows: 29 210 kg of solid and 17 082 l of liquid plant protection agents (Table 23-A).

Five warehouses were found in poor condition with 4 230 kg of solid and 1 130 l of liquid POPs pesticides stored in them.

10 are privately owned.

4 of the storerooms are unguarded (Table 23-B).

For 2003 no data have been found.

In 2005 there were 14 functioning warehouses storing 21 235 kg of solid and 12 413 l of liquid agents for the district.

Table 23-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	24	29 210	17 082
2003	-	-	-
2005	14	21 235	12 413

Table 23-B: Pesticides in unguarded stores, for 2002

Total number of stores	Non guarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
24	4	20	-	2 040	1 050
			Total for the district in all stores:	29 210	17 082

C. Plovdiv District

Plovdiv District includes 18 municipalities (see stores by district - №20). As a whole, a tendency for an increase in obsolete POPs pesticides is noted in the district (Table 24-A).

In 2002 there were 46 warehouses for storage of POPs pesticides: 366 014 kg of solid and 21 376 l of liquid.

In 2003 the number of warehouses was 38 and the quantity was as follows: 850 158 kg of solid and 56 697 l of liquid.

In 2005 the warehouses were 17 with the following quantities: 599 136 kg of solid and 31 767 l of liquid.

Table 24-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	46	366 014	21 376
2003	38	850 158	56 697
2005	17	599 136	31 767

During the period 2002 – 2003 the quantity of solid agents in unguarded warehouses increased by 484 144 kg and by 35 321 l of liquid (Table 24-B).

Table 24-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
46	18	28	-	127 303	2 700
			Total for the district in all stores:	366 014	21 376
Year 2003					
37	18	19	-	459 554	20 653
			Total for the district in all stores:	850 158	56 697

D. Smolian District

Smolain District includes 10 municipalities (see stores by district - №21).
In 2002 there were 6 warehouses for storage of obsolete POPs pesticides. The quantities established are as follows: 94 150 kg of solid and 5 020 l of liquid (Table 25-A).

There are no warehouses in poor condition in the territory of the district.

There are no private warehouses.

All warehouses are unguarded (Table 25-B).

The data for 2003 shows that the number of rooms in which the agents were stored and the following quantities are identical with the previous year: 93 750 kg of solid and 6 220 l of liquid.

Two of all stores are unguarded with the agents quantity stored in them as follows: 29 000 kg of solid and 1 400 l of liquid.

In 2005 there were 4 functioning warehouses storing 71 250 kg of solid and 5 170 l of liquid agents.

Table 25-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	6	94 150	5 020
2003	6	93 750	6 220
2005	4	71 250	5 170

Table 25-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
6	6	-	-	94 150	5 020
			Total for the district in all stores:	94 150	5 020
Year 2003					
6	2	4	-	29 000	1 400
			Total for the district in all stores:	93 750	6 220

F. Stara Zagora District

Stara Zagora District includes 11 municipalities (see stores by district - №22). A tendency for an increase in the quantities of POPs pesticides is noted on the district territory. In 2005, the solid quantities have grown by 176 724 8 kg and the liquid ones by 8 189 l (Table 26-A).

In 2002 there were 81 warehouses for storage of obsolete POPs pesticides in the following quantities: 237 232 kg of solid and 76 591 l of liquid.

In 2003 the number of warehouses was 88 and the quantity was as follows: 219 300 kg of solid and 97 565 l of liquid.

In 2005 the warehouses were 54 with the following quantities: 413 956 kg of solid and 84 780 l of liquid.

Table 26-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	81	237 232	76 591
2003	88	219 300	97 565
2005	54	413 956	84 780

In 2002 and 2003 half of the available warehouses in the district were unguarded. The quantity/total quantity ratio is the same (table 26-B).

Table 26-B: Pesticides in <u>unguarded</u> stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
81	46	33	2	98 765	38 684
			Total for the district in all stores:	237 232	76 591
Year 2003					
88	48	40	-	106 990	43 350
			Total for the district in all stores:	219 300	97 565

G. Haskovo District

Haskovo District includes 11 municipalities (see stores by district - №23).

In 2002 there were 31 warehouses for storage of obsolete POPs pesticides in the following quantities: 214 090 kg of solid and 37 350 l of liquid (Table 27-A).

In 2003 the number of warehouses was 41 and the agent's quantity was as follows: 557 875 kg of solid and 85 231 l of liquid quantities (table 27-B).

In 2005 the warehouses were 41 with the following quantities: 557 875 kg of solid and 85 231 l of liquid.

Thirty-one of all stores are not protected.

Table 27-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	31	214 090	37 350
2003	41	557 875	85 231
2005	41	557 875	85 231

Table 27-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
31	26	4	1	173 290	26 290
			Total for the district in all stores:	214 090	37 350
Year 2003					
41	31	9	1	466 798	51 410
			Total for the district in all stores:	557 875	85 231

In the South-central region the largest quantities of solid plants protection agents are stored in the territory of Plovdiv District (figure 8-A). The largest quantities of liquid agents are stored in the territory of Stara Zagora District (figure 8-B).

Figure 8-A: Solid pesticides by district – South-central region

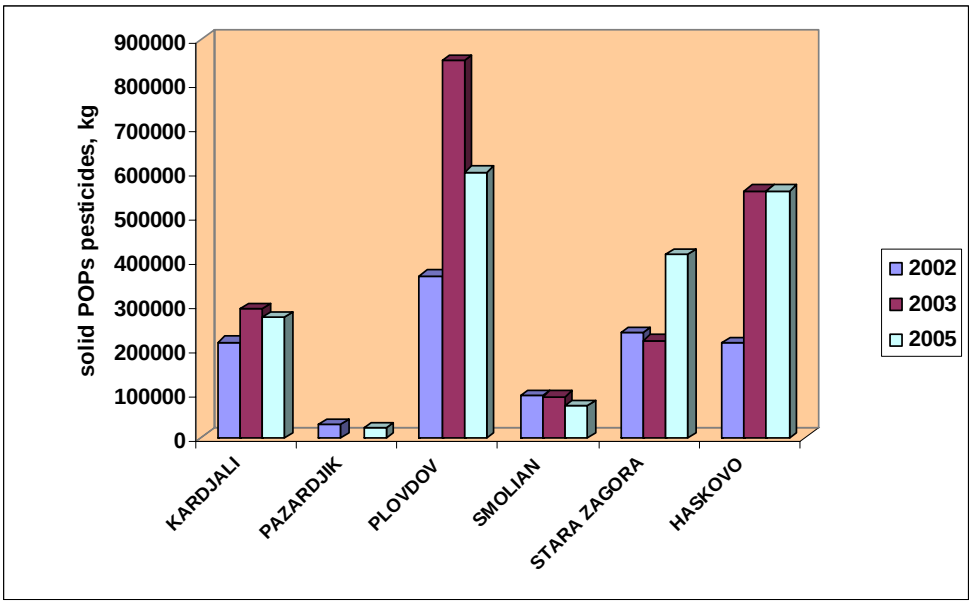
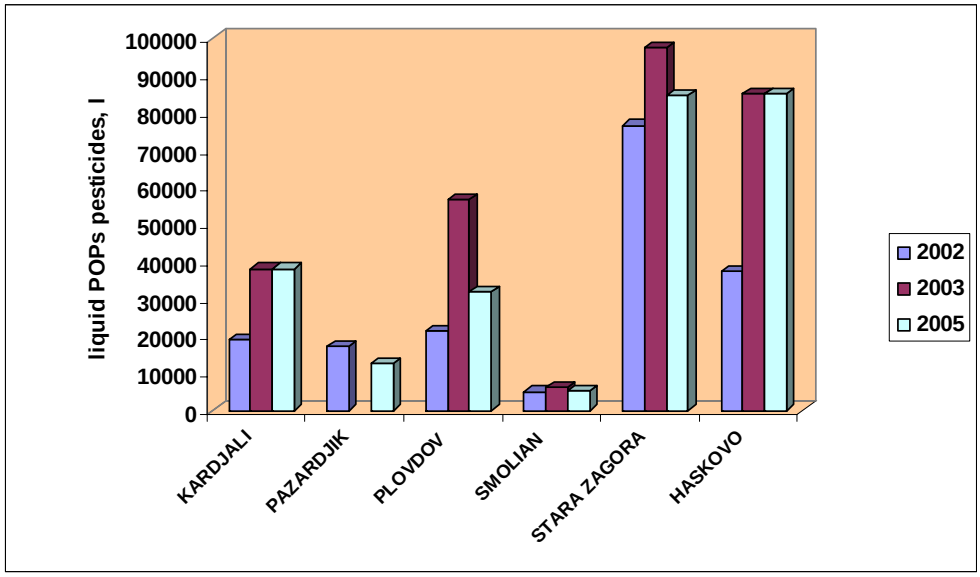


Figure 8-B: Liquid pesticides by district - South-central region



- **South-western region consists of the following 5 districts**

A. Blagoevgrad District

Blagoevgrad District includes 14 municipalities (see stores by district - №24).

In 2002 there were 22 warehouses for storage of obsolete POPs pesticides. The quantities established are as follows: 55 415 kg of solid and 18 620 l of liquid plants protection agents (Table 28-A).

11 warehouses on the territory of the district are in poor condition. The quantities established in them were as follows: 23 800 kg of solid and 8 800 l of liquid.

13 of the warehouses are on private property.

11 sites are not guarded (Table 28-B).

In 2003 the number of warehouses was 18, with the quantity stored in them as follows: 59 490 kg of solid and 25 150 l of liquid.

Not protected are 11 of all stores.

On private territory were 10 stores.

In ***2005*** there were 11 functioning warehouses storing 20 490 kg of solid and 10 350 l of liquid agents for the district.

Table 28-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	22	55 415	18 620
2003	18	59 490	25 150
2005	11	20 490	10 350

Table 28-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
22	11	11	-	13 835	1 100
			Total for the district in all stores:	55 415	18 620
Year 2003					
18	11	6	1	84 730	3 050
			Total for the district in all stores:	59 490	25 150

B. Kustendil District

Kustendil District includes 9 municipalities (see stores by district - №25).

In 2002 there were only 2 warehouses in two different municipalities with 181 017 kg of solid and 5 185 l of liquid pesticides (Table 29-A).

In 2003 another warehouse was opened in a third municipality. The quantities stored in them are as follows: 252 379 kg of solid and 42 470 l of liquid agents.

In 2005 there were 40 879 kg of solid and 42 470 l of liquid agents in the three warehouses.

Table 29-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	2	181 017	5 185
2003	3	252 379	42 470
2005	3	40 879	42 470

There are no unguarded warehouses on the territory of the district (table 29-B).

Table 29-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
2	0	2	-	0	0
			Total for the district in all stores:	181 017	5 185
Year 2003					
3	0	3	-	0	0
			Total for the district in all stores:	252 379	42 470

C. Pernik District

Pernik District includes 6 municipalities (see stores by district - №26). During the period 2002 - 2005 the quantity of POPs pesticides in the district has decreased by 39 673 kg of solid and by 6 281 l of liquid (Table 30-A).

In 2002 there were 15 warehouses for storage of POPs pesticides with 64 023 kg of solid and 25 281 l of liquid.

In 2003 the number of warehouses was 12 and the quantity was as follows: 43 550 kg of solid and 32 280 l of liquid.

In 2005 the warehouses were 16 with the following quantities: 24 350 kg of solid and 19 000 l of liquid.

Table 30-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	15	64 023	25 281
2003	12	43 550	32 280
2005	16	24 350	19 000

In 2003 the unguarded storerooms were 100% (Table 30-B)

Table 30-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
15	12	2	1	46 323	24 811
			Total for the district in all stores:	64 023	25 281
Year 2003					
12	12	0	-	43550	32 280
			Total for the district in all stores:	43 550	32 280

D. Sofia District

Sofia District includes 22 municipalities (see stores by district - №27). In 2003 the quantity of solid POPs pesticides has decreased by almost half, i.e., by 89 203 kg, but the liquid ones have increased by 17 881 l (Table 31-A).

In 2002 there were 51 warehouses for storage of obsolete POPs pesticides in the following quantities: 147 693 kg of solid and 8 886 l of liquid.

In 2003 the number of warehouses was 38 and the quantity was as follows: 73 442 kg of solid and 37 792 l of liquid.

In 2005 the warehouses were 36 with the following quantities: 58 490 kg of solid and 26 767 l of liquid.

Table 31-A: Stores for obsolete plant protection products – general data

Year	Number of stores	Solid, kg	Liquid, l
2002	51	147 693	8 886
2003	38	73 442	37 792
2005	36	58 490	26 767

In 2003 the number of unguarded warehouses increased compared to the previous year (Table 31-B).

Table 31-B: Pesticides in unguarded stores, for 2002-2003

Total number of stores	Unguarded	With guard	No information about protection	Solid, kg	Liquid, l
Year 2002					
51	10	37	4	9 319	0
			Total for the district in all stores:	147 693	8 886
Year 2003					
38	26	12	-	54 262	29 402
			Total for the district in all stores:	73 442	37 792

In the South-western region the largest quantities of obsolete plants protection agents are stored on the territory of Kustendil District (figure 9).

Figure 9-A: Solid pesticides by district – South-western region

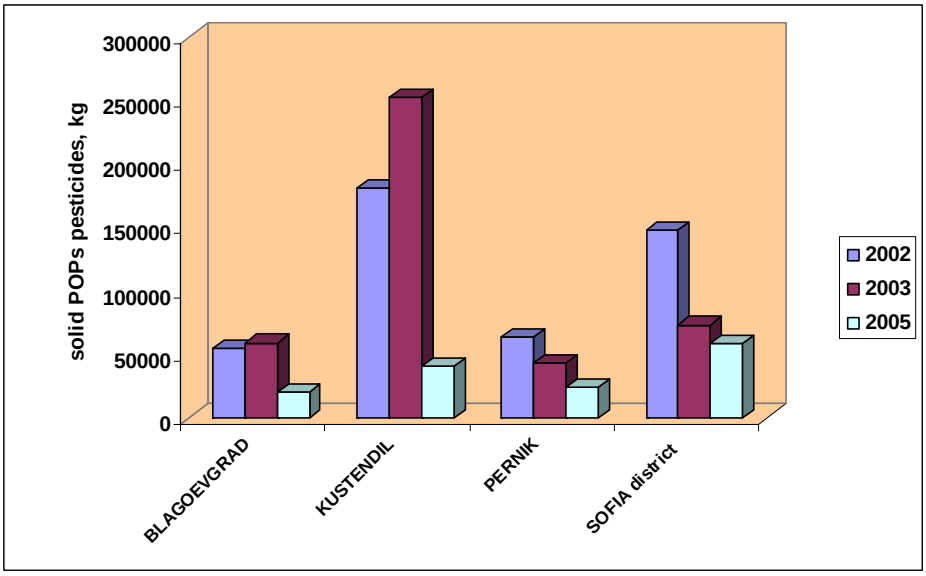
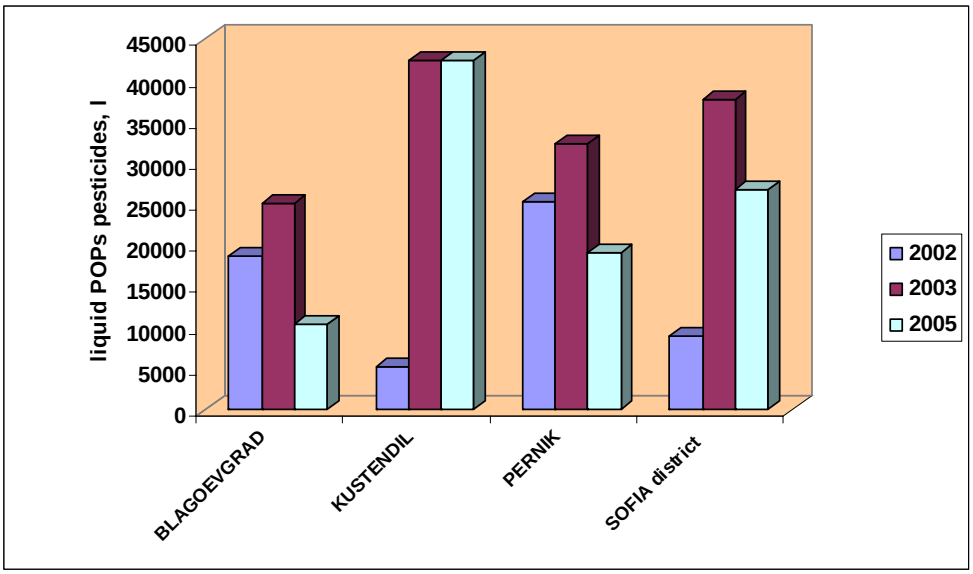


Figure 9-B: Liquid pesticides by districts - South-western region



Total amounts of POPs pesticides in Bulgaria by years – Summary

The first official data and their territorial distribution about obsolete plant-protection agents and fertilizers are for 1999*. Because of their contradiction they were not included in this report, only for general information some data are given in the map below (Figure 10)

Next in the years 2000 to 2005 some inventories were carried out under the responsibilities of MoEW or MoAF. The differences and discrepancies in the different years are mainly due to the fact that the inventories have been made by documents purely formally and discovering new and new quantities or warehouses by each following year. All data should be regarded as inconclusive.

In 2002

According to an inventory by documents, in 2002 the following quantities were available on the territory of the Republic of Bulgaria: 4 626 951 kg and 976 136 liters. 717 was the number of storage buildings.

* http://nfp-bg.eionet.eu.int/eea/bg/publicat/yearbook/landsoil/2000/landsoil/map4.htm

Figure 10: Obsolete plant protection agents (t), 1999

In 2003

As per data of the National Plant Protection Agency (NPPA) in 2003 an increase of the old-stock plant protection agents was noted. The total quantity of agents was 5 025 853 kg and 1 113 136 liters which is by 398 902 kg and 137 000 liters more than in the previous year. The number of warehouses has decreased by 69, with a total of 648 warehouses found in 2003.

MoEW published the data from official inventory (National Profile for the Management of Chemical Substances and Preparations in the Republic of Bulgaria) conducting in cooperation with NPPA for 2003.

However a comparison of the data from both authorities shows differences of 369 992 kg solid and 3 066 113 liters liquid pesticides respectively.

No explanation was given from NPPA about this lack of correspondence.

Here we would like to say again that no information regarding obsolete pesticides was provided from MoEW – they refused any data and comments regarding this discrepancy.

In the following Figures 11 and 12 the data from NPPA were used.

In 2004

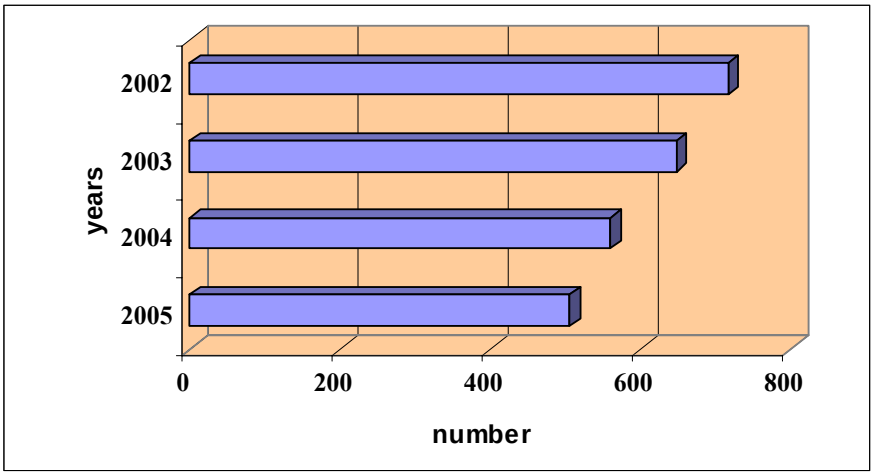
The data for 2004 has been provided by the Executive Agency for Environment. The amount of obsolete pesticides is 7 011 180 kg, including the liquid and solid products all together. They are stored in 561 buildings. In comparison with the previous year the number of stores decreased by 87.

In 2005

The data of the last inventory carried out in 2005, provided by the National Plant Protection Agency shows that compared to the previous four years the quantity of obsolete plant protection agents, which are considered as dangerous waste decreased by 6 691 kg for solid products and by 68 734 litres for the liquid ones. In 2005 there are 4 633 642 kg solid and 1 044 870 liters liquid pesticides.

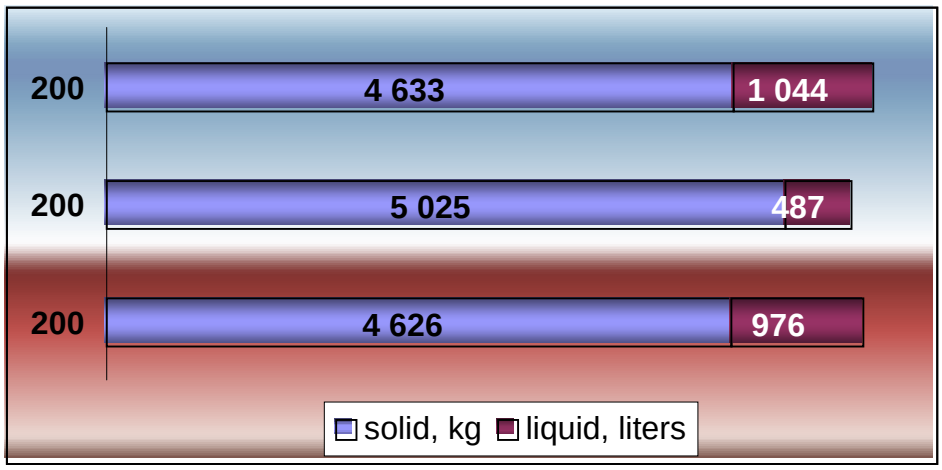
The total number of warehouses by 2005 was 506, which is 55 less than the previous year, or in total 211 less compared to 2002 (Figure 11).

Figure 11: Number of stores for obsolete pesticides by years



Summary data on the quantities of plant protection agents stored in the warehouses from 2002 to 2005 is shown on Figure 12.

Figure 12: POPs pesticides by years in stores



1.3. LIMITATION OF THE HARMFUL EFFECTS OF POPs PESTICIDES IN THE REPUBLIC OF BULGARIA

The first measures which the Ministry of Environment & Waters (MoEW) has taken to solve the problem of obsolete pesticides are their transportation abroad. In pursuance of the 'Risk pesticides destruction by Bulgaria and the Netherlands' project about 30 t of pesticides have been collected, transported and destroyed in Rotterdam, the Netherlands.

The Ministry of Environment & Waters has chosen two main approaches to control the pesticides remaining in the country:

- Repair and securing of the existing warehouses to meet all requirements on hazardous substances storage. The centralized warehouses set up collect agents from several warehouses.
- Storage of the obsolete pesticides in reinforced concrete containers (figure 13).

Figure 13: „BB-cube"

According to MoEW data, the BB-Cube container is a high-quality up-to-date ecological packing with the following features:

- Guaranteed safe storage period – more than 50 years;
- Useful volume – 5 m^3 and percentage of the useful volume against the whole container volume – 67,4%;
- Minimum occupied area – the container may be arranged in 4 rows in height with the full BB –Cube weight of 20 t;
- Impermeable – the lid structure allows welding it to the main body and sealing of the joints;
- Reliable protection from encroachment by ill-intentioned persons;
- A possibility for eventual use of the substances deposited in it.

However, setting up of centralized municipal warehouses and BB-Cubes meeting the regulatory requirements on safe depositing is in fact delaying in time the problem of obsolete pesticides. This type of storage also carries huge risks and difficulties relating to safe transportation, packing and handling of pesticides.

The MoEW intends to construct a National Hazardous Waste Treatment Centre near the city, Stara Zagora.

MoEW claims that a significant part of the stores have been liquidated, but a lot of problems with them still remain. No information is available about what happens in the

areas vacated by obsolete pesticides; If the pesticide residues in the soil had been measured or if there is any effective ban on farming crops growing in these areas

The greatest danger for human health and the environment at this stage comes from the unrepaired warehouses in poor condition whose percentage according to the various sources varies from 40 to 60% (Fig 14).

'Warehouses in poor condition' translated into a normal language means buildings without doors and windows, with broken roof structures, with no guards or control. A great part of them have already been plundered (including the construction elements of these buildings) while others are being ransacked by the poor village population.

An inquiry conducted by the team to this report within the frames of NM Ecoglasnost indicates that over 62% of the people living near the obsolete pesticides warehouses have used the agents stored there, including on their own farms [3].

Another serious problem is the lack of signage on these warehouses warning that hazardous waste is stored in them – warning signs, inscriptions, etc., which would restrict to some extent the usage of these agents.

Figure 14: Warehouses for obsolete plant protection agents in bad condition

1.4. MAXIMUM PERMITED LIMITS (MPL) OF PESTICIDES IN FODDER ACCORDING BULGARIAN LEGISLATION

MPL for some POPs pesticides in fodder, mg/kg

Aldrin: in all fodders with the exception of fats– 0,01
Dieldrin: in all fodders – 0,2
Chlordane: (the sum of isomers – as chlordane) in all fodders with exception of fat - 0,02 ‘ Fats - 0,05

DDT: the sum of metabolites – as DDT in all fodders with exception of fat- 0,05; Fats– 0,5
Endrin: the sum of endrin and delta-ketoendrin as endrin in all fodders with exception of fat – 0,01; Fats – 0,05
Heptachlor: sum of heptachlor and heptachlor epoxide in all fodders with exception of fat– 0,01; Fats – 0,2
Hexachlorobenzene: in all fodders with exception of fat – 0,01; Fats – 0,2

1.5. POPs PESTICIDE RESIDUE IN WATER

- ***LITERATURE REVIEW OF THE EXISTING CONCENTRATIONS OF PESTICIDES IN WATER***

A. Surface and Ground Water

1. In 1972-1975 a comprehensive study on persistent pesticide residues in waters from almost all ponds (total of 19), major rivers (Iskar, Maritza, Struma, etc.) as well as ground water from 9 regions have been analyzed for residues of HCH (ά and γ), DDT and metabolites, aldrin, dieldrin, heptachlor (including heptachlor epoxide) (Gizova, 1976). Residues of aldrin, dieldrin, heptachlor and heptachlor epoxide were not found in any sample. All studied samples showed a presence of ά and γ HCH and DDT and/or metabolites. In the River Iskar, the biggest Bulgarian Danube tributary, the highest concentration of HCH (ά and γ) was 0.162 μg/l in water and 0.250 μg/kg in sediment. DDT (total) in water and sediment was 0.228 μg/l and 0.915 μg/kg, respectively [4,5,6,7,8,9,10,11].

2. Twenty years later (1990-1996) DDT and HCH (ά and γ) were not found in the River Iskar. Only Lindane has been identified in 3 points ranging from 0.006-0.008 μg/l.*

- **<u>Inventory of the existing laboratory data for Danube river and Tributaries</u>** [12]

As it was a joint project of 10 countries, methods of analysis which have been used differ as follows: gas chromatography /GC/ with electron capture detector /ECD/ for determination of organochlorine pesticides, gas chromatography-mass spectroscopy /GC-MS/, high performance liquid chromatography /HPLC/, and thin layer chromatography /TLC/ only in Moldova. TLC is semiquantitative method and has limited sensitivity. Not all methods used in different countries were validated through quality control and assurance. The detection limits of the analytical methods used ranged widely. For DDT from 0.0005-0.2 μg./l, for **lindane -0.0001 to 0.08 μg./l.** and for atrazine 0.001-1.0 μg./l.

The period of analyses given here covers 1990-1995 years. The results obtained are as follows:

A. List of pesticides analyzed, but not detected in Danube River and tributaries (Figure 15)

Acetochlor, Isodrin, Bentazone, MCPA, Bromophos, MCPP, Butylate Methabenzthiazuron, Carbofuran, Methidathion, Chlorbromuron, Metha+ Dieldrin, Pendimethalin, Dimethoate, Phorate, Endosulfan, Phosmet, Endrin, Propachor, Fenitrothion, Quinalphos, Fenoprop, 2,4,5 T Fenthion, Telodrin, Heptachlor, Terbumeton, Heptachlor epoxide, Tetrachlorvinphos.

Figure 15: Danube River

B. Pesticides found

Atrazine:
Butonate
Dichlorvos
Dichlorophenol
Lindane
DDT

<u>The contaminated sites in Bulgaria were as follows:</u>

Atrazine was detected in Bulgaria near by Rousse and Silistra. The concentrations were up to 0.08 ug/l.

In Bulgarian part of the Danube river positive results were found for 1 of all 6 samples for pesticide **Butonate** (1.8 µg/l) and 1 of all 113 samples for pesticide **DDVP /dichlorvos/ -** 6.2 µg/l.

In the tributary Vit in 48 of all 53 samples **2,4-DCP /dichlorphenol/** was found.

In Ogosra river (the Danube tributary) **2,6-DCP /dichlorphenol/** was detected in 9 of all 10 samples **.**

Lindane was found in higher concentrations near by Nikopol / 0.1 μg/l and St. Ismail - 0.225 μg/l.

Regarding ***DDT***, if the measured concentrations are compared with the levels in the seventies - 0.098 μ g/l with nineties - 0.002 μ g/l there is a considerable drop of the DDT levels in Bulgarian section.

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- ***DATA FROM MoEW, OBTAINED AFTER OFFICIAL REQUEST***

A. Ground Water

YEAR 2005 - till Jan 2006 only 9 samples (tested for 15 individual chemical compounds) had been worked out. They were included in this report as
2005_pesticides_residue_Ground_water_Bulgaria_final
Atrazine was found above the MDL in three samples.

YEAR 2004 - 53 samples from 53 sites – 35 individual chemical compounds were analyzed.
Results are given in *2004_pesticides_resdue_Ground_Bulgaria_final*

Samples above MDLs are beta HCH – 1, gamma HCH – 4, Simazine – 5, Atrazine-19, Propazine-4, Terbuthilazine-1, Desisoprophylatrazine-1, Prometryn-3

All data about pesticides residue in ground water for the period 2000 – 2004 are given in the file 200-2004_all_G_W.

B. Surface water

Monitoring of POPs pesticides in surface water is not maintained on a regular basis in Bulgaria. The available data found by the team of the project are as follows:

- MoEW regular monitoring of pesticide residue in water is carried out only for Danube River. Data are listed in file *2004_Danube_river*. Samples are analyzed for 33 individual chemical compounds. Samples with pesticides above MDLs for 2004 were found as follows: Atrazine - 34 samples, α-HCH - 3, Prometryn – 14, Terbutryn – 3. In previous years also - simazine, propazine, prometryn, and Lindane. The official opinion about the source of contamination is that at Nova Selo – site, the measured pesticides are due to Trans boundary transport.

- In the samples from inner rivers for the period 2001 – 2006 data are given in file Rivers_2001_2006. Above MDL are samples which contain aldrin – 1, Atrazine-1,

β-HCH – 1, SUM Drins – 1, methoxychlor – 1, p;p-DDT – 3, m;p – DDT – 1, DDD – 1, DDE – 3. Atrazine in concentration 0.032 μg/l was found in the Iskar River (MRL = <2.5 μg/l.)

The rest of the 29 pesticides are below the detectable limits of analytical methods.

1.6. POPs PESTICIDE RESIDUE IN SOIL

The influence of POPs pesticides on the environment is a result of both the production of agricultural products, their accumulation in the soil and the storage of pesticides.

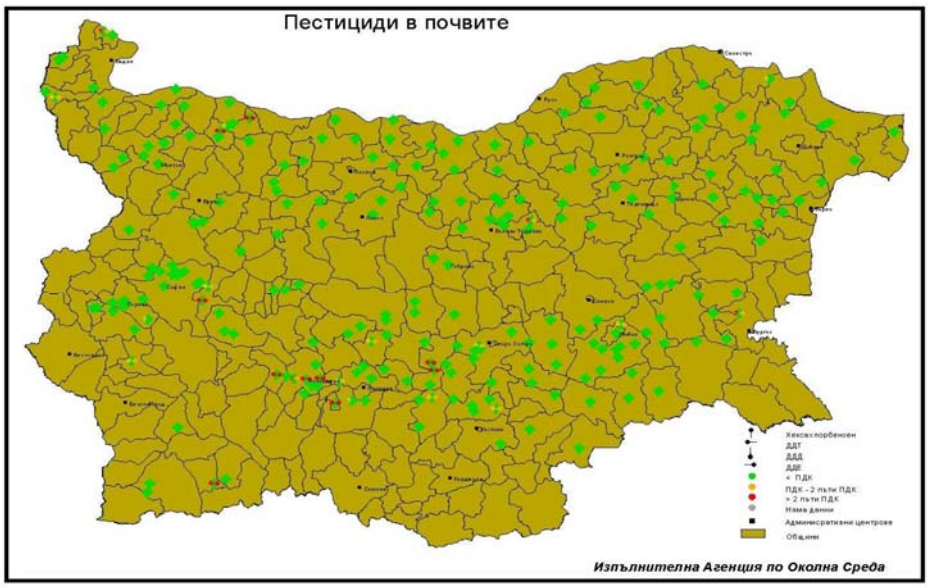
In the period of 1972 – 1975 studies were carried out on residual quantities of POPs pesticides in the soil by analyzing samples from 650 points in 14 regions. HCH-α and HCH-γ were found in over 90% of the samples, in quantities from 0,004 to 0,028 mg/kg. DDT and its main metabolite DDE have been identified in almost 100% of the samples at the levels of between 0,012 and 0,54 mg/kg, depending on the pesticides use in the respective region.

Residual DDT quantities are still being registered in the soil during single local measurements.

The data on residual DDT (and their metabolites) and hexachlorobenzene is presented in figure 16.

The data on POPs residue in the soil by districts are presented in *file 1997-2000_pesticide_residue_soil_final*.

Figure 16: The data on DDT and its metabolites residue and Hexachlorobenzene – 2003



We were not able to find any recent data about POPs pesticide residues in food, human tissues, breast milk, fatty tissues, blood, etc..

2. Polychlorinated Biphenyls

2.1. PRODUCTION

No polychlorinated biphenyls or PCB-containing equipment (transformers and condensers) are produced or ever have been produced in Bulgaria.

2.2. IMPORT

The assessment of import data lead to the conclusion that the 24,120 tons of transformer oil imported in Bulgaria in the period 1955-1972 do not contain polychlorinated biphenyls (PCB).

According to official data *(National Profile for Management of Chemical Substances and Preparation in the Republic of Bulgaria*) the transformers imported in Bulgaria in the period 1970-1990 are 1954 numbers predominantly from former community countries – the former USSR, Eastern Germany, Czechoslovakia, Romania, and Korea. Transformers most likely to contain PCBs are those imported from PCB transformer oil manufacturing countries – the USSR, Eastern Germany, Western Germany, and Czechoslovakia: 606 transformers, or 31% of all imports. 24,120 tons of transformer oils were imported in Bulgaria during the period 1955 – 1972 from the USSR, Czechoslovakia and Hungary, 83% of which were imported from the former USSR. The transformer oil imported from Czechoslovakia is 1,946 tons, or 8% of the total oil imports.
There are no official data showing import of condensers.

2.3. INVENTORY

Data from MoEW inventory are listed below in the following order:

Transformers oil containing 100 % PCB;
Transformers oil containing above 50 ppm PCB;
Transformers oil with assumed PCB content;
PCB-Containing Condensers and Capacitor Oils ;
Condensers and Capacitor Oils with assumed PCB content.

A. PCB Sources - Transformers

Transformers and transformer oils containing 100% PCBs

Table 32 presents data about 100% PCB transformer oils and number of transformers by district in Bulgaria in 2003.

Table 32: Data about 100% PCB transformer oils and number of transformers by district in Bulgaria in 2003

No	District	Number of transformers	Total amount transformer oils (kg)
1	Burgas	4	4,1
2	Varna	2	82,4
3	Veliko Tarnovo	3	0,615
4	Vratsa	45	4,26
5	Pernik	13	27,18
6	Pleven	9	9,01
7	Stara Zagora	4	1,54
8	Haskovo	8	71,12
9	Sofia-city	64	113,77
10	Sofia-district	6	13,23
Total		***158***	***327,225***

There are 158 PCB-containing transformers still in use amounting to 0, 36% of the total number of transformers inventoried in Bulgaria.

In total, the 100% PCB transformer oils in Bulgaria amount to 327,225 tons. The quantity of 100% PCB transformer oils in transformers in Bulgaria is 310,545 tons. Fresh 100% PCB transformer oil in storage is 6, 8 tons, and used transformer oils are 9, 88 tons.

The highest percentage of 100% PCB transformers and quality of 100% PCB transformer oils is used in the metallurgy sector, with respective numbers of 58% and 49%.

In the "Energy" sector, there are 6 companies within the National Electricity Company who own 53 transformers and representing 34% of all 158 transformers. In the same sector the total 100% PCB transformer oils in Bulgaria are 130, 27 tons, or 40%.

Three companies of the "Chemical" sector possess 13 transformers or 8% of all 100% PCB transformers. The overall quantity of transformer oil is 36,235 tons (11%).

Transformers and transformer oils with assumed PCB content higher than 50 ppm

Table 33 presents data about the quantities of transformer oil with assumed PCB content higher than 50 ppm in Bulgaria, by the number of enterprises and districts for 2003 in the energy sector imported from Eastern Germany.

Table 33: Data about number of transformers and quantity of transformer oils with assumed PCB content higher than 50 ppm in Bulgaria, by number of enterprises and districts in 2003 in sector Energy import from Eastern Germany .

№	District	Number of enterprises	Number of transformers	Transformer oils, tons
1.	Blagoevgrad		2	66
	Burgas	5	2	168
			1	18
			1	18
			1	18
			1	21,1
	Varna	4	1	21,1
			1	18
			1	69
			2	39
	Veliko Tarnovo	3	1	31,8
			2	42
			2	138
	Pleven	1	1	33
	Plovdiv	1	2	138
	Sofia-city	2	1	22,5
			1	18
	Sofia-district	4	1	18
			5	159
			2	138
			2	138
	Stara Zagora	2	2	56,6
			2	45
2.	Vraca	1	4	208
Total		**24**	**41**	**1642,1**

In total, 41 transformers with an assumed PCB content higher than 50 ppm with 1,642.1 tons of transformer oil have been identified in 10 administrative areas in Bulgaria.

The owners of these transformers are two companies from the energy sector.

Only the total quantity of transformer oils assumed to have PCB content higher than 50 ppm has been identified, but not the weight of the equipment.

Transformers and Transformer Oils with Assumed PCB Content

Table 34 presents data about the transformers and transformer oils with assumed PCB content, by districts.

Table 34: Transformers and transformer oils with assumed PCB content by districts in 2003

№	Distinct	Number of enterprises	Number of transformers	Oils ,t	Used, in storage, t	Fresh, in storage t	Total
1.	Burgas	3	44	10,81			10,81
2.	Varna	2	3	84			84
3.	Veliko Tarnovo	4	884	508,8	4,72	1,2	514,72
4.	Vraca	3	59	272,96	2,62	20,44	296,02
5.	Gabrovo	2	1100	567,1			567,1
6.	Kardjali	1	8	76,86			76,86
7.	Kustendil	2	13	219,05			219,05
8.	Lovech	2	10	7,53			7,53
9.	Pleven	1	9	0,18			0,18
10.	Plovdiv	2	22	164,81			164,81
11.	Razgrad	2	21	6,5			6,5
12.	Ruse	1	1	28,1			28,1
13.	Silistra	2	804	232,1			232,1
14.	Sliven	1	1				0
15.	Sofia-district	1	5	0,74			0,74
16.	Stara Zagora	4	94	295,04	2,9	15,2	313,14
17.	Targovishte	1	3	9			9
18.	Iambol	1	1				0
Total		**35**	**3082**	**2483,58**	**10,24**	**36,84**	**2530,66**

The highest number of transformers with assumed PCB content are in the districts Gabrovo, Veliko Tarnovo, and Silistra. The transformers and transformer oils with assumed PCB content are owned by 36 companies, mainly from the energy sector. All transformers have been manufactured before 1988.

B. PCB Sources – Capacitors

PCB Containing Condensers and Capacitor Oils

Table 35 presents data about PCB containing capacitors and capacitor oils by districts in 2003.

35: Data about PCB containing capacitors and capacitor oils
by districts in 2003

№	District	Number of capacitors	Oils, kg	Spare in storage, number	Used in storage, number	Total, number
1.	Burgas	15	721,5			15
2.	Veliko Tarnovo	100			50	150
3.	Lovech	319			21	340
4.	Pazardjik		348		87	87
5.	Plovdiv	576	1694	18		594
6.	Ruse	8				8
7.	Sofia-city	485	4560		456	941
8.	Stara Zagora	180				180
9.	Haskovo	86	575	14		100
Total		**1769**	**7898,5**	**32**	**614**	**2415**

In total, 2,415 PCB containing capacitors, or 13% of all capacitors in Bulgaria have been identified in nine administrative areas. There are 1,769 PCB containing capacitors still in use, or 73% of all PCB-containing capacitors, 59% of which are located in Sofia (485) and Plovdiv (576). There are 614 used PCB-containing capacitors, and 32 spare PCB capacitors in storage. The PCB-containing capacitor oils currently in the equipment reach 7,899 tons.

The 100% PCB condensers are owned mainly from the chemical, machine building and metallurgical sectors.

The PCB capacitors still in use are imported from the former Eastern Germany and from the former USSR.

The expert assessment based on multiplication of the total quantity of declared PCB capacitors (2,415) and on the average content of PCB in Russian capacitors (16,5 kg) shows that the actual quantity of PCB capacitor oils is perhaps 5 times larger (39,848 tons) than the declared oil quantities (7,899 tons).

The PCB containing capacitors represent 14% of Bulgaria's inventoried capacitors, and they contain 30% of the total quantity of oil. The machine building sector holds the highest share by number of PCB capacitors (53%), and by oil quantity (58%).

Assumed PCB containing capacitors and capacitor oils

Table 36: Data about assumed PCB containing capacitors and capacitor oils by district in 2003

№	District	Number of capacitors	Oils, kg	Spare in storage, number	Used in storage, number	Total, number
1.	Veliko Tarnovo	54				54
2.	Vidin	24				24
3.	Vraca	61	1650			61
4.	Lovech				9	9
5.	Pazardjik	36				36
6.	Pleven	14				14
7.	Plovdiv	587	1100	151		738
8.	Razgrad	60	400			60
9.	Ruse	5				5
10.	Smolyan	114	26,22			114
11.	Sofia-city	50	88	17	46	113
12.	Sofia-district	83		53	48	184
13.	Stara Zagora	1053		24	30	1107
14.	Haskovo	18			97	115
Total		**2159**	**3264,22**	**245**	**230**	**2634**

The total PCB content in capacitor and transformer oil amounts to 335,123 tons. The total amount of PCB-polluted equipment is 2,573 – 158 transformers and 2,415 capacitors.

The total number of transformers with assumed PCB content higher than 50 ppm is 41 containing 1,642 tons of oil. The total quantity of PCB assumed transformer and capacitor oils currently in the equipment is 2,534 tons. The total number of assumed PCB-polluted equipment is 5,716 – 3,082 transformers and 2,634 capacitors.

- *RESIDUAL PCB CONTENT IN THE SOILS AND WATERS – no data were available*

3. Dioxins and furans

3.1. DIOXINS AND FURANS EMISSIONS IN THE AIR

It should be noted that the data on dioxins emissions in Bulgaria in the present report is entirely based on literary sources. As far as we know, no system for dioxins monitoring exists in the country, with the evaluation being made based on emission evaluation factors depending on the type of production (source) – (CORINAR method). The data thus obtained is largely uncertain and it is difficult to make any conclusions based on it.

It is well known that Bulgaria has been one of the countries included in two successive projects for evaluation of the dioxins emissions in the candidate-countries. This has probably contributed to increasing the authenticity and summarizing of the existing data for Bulgaria. Unfortunately, in reply to our official request MoEW refused to provide any information on the dioxin emissions in the country.

With this reservation, the information collected by us should be interpreted and assessed quite cautiously.

As already mentioned, the main sources of dioxins in Europe (about 62% of the total emissions) are:

Household garbage incinerators
Steel producing plants and factories
Clinical waste incinerators
Non-ferrous metallurgy plants

The remaining 38% are from industrial/non-industrial sources such as:

Local heating installations
Fires
Transport /diesel powered mainly/

However, the emissions structure in Bulgaria as well as in the other Eastern-European countries is quite different. The share of incinerators, with the exception of hospital waste ones, is not very important.

One of the major sources of dioxins in our country is the emissions from metallurgy production, although they are considerably smaller, too, than those in the EU countries.

The sources of combustion processes in the households are small in terms of power, but numerous, due to the wide use of solid fuel for household needs.

For example, in terms of quantity of heat power produced, an average of 43.3 GJ is generated from coal per capita in Bulgaria, 4.2 GJ generated from wood sources, with almost 82% of the people living in places without central heating and are potential consumers of solid fuel. For the purpose of comparison, this percentage is 23 for Europe, 3 for the Czech Republic and 8 for Slovakia.

Electric power engineering, being one of the major consumers of solid fuel has a significant share, too, in dioxin emissions.

According to the data provided by Bulgaria in 2001, under CLRTAP, the dioxin emissions in Bulgaria have decreased by two-fold during the period from 1990 to 1999 most probably as a result of the economic drop and closing of a number of industries.

However, the dioxin emissions have regained the level of 1990 due to the economic growth in the recent years, with the greatest pollution in the area of the capital and in the industrial regions of the country.

The data of 1997 shows a distribution of the industrial sources of dioxin pollution in Bulgaria as follows: - hazardous waste incinerators – 1; hospital waste incinerators – 7.

The metallurgy processes such as steel and aluminium production, electric arc furnaces, small processes of secondary processing of metals, etc., have been identified as other sources of emissions.

As far as the structure of the industrial and agricultural sectors in Bulgaria, their quota and locality have very important role in estimation of POPs emission in the country , the data about distribution of the main sectors - agriculture and industry are given in Table 37 A. In 37 B is the structure of agriculture by regions and in 37 C the manufacture respectively. [1]

Table 37 A. - Structure of the industrial and agricultural sectors

Sector	Micro-farms/ enterprises1	Small farms/ enterprises2	Medium-to small farms/ enterprises3	Medium-size farms/ enterprises4	Large farms/ enterprises5
Industry	19 534	4 073	942	760	460
Agriculture	4 556	1 469	246	97	12
Total in Bulgaria	205 902	13 773	2 258	1 485	739

Table 37 **B- Agricultural produce by regions**

By main manufacturing sectors	**Total for Bulgaria**	North-western Region	Northern Central Region	North-eastern Region	South-eastern Region	Southern Central Region	South-western Region
• Manufacturing:							
number of enterprises	**176**	9	27	21	20	41	58
produce – thousand levs	**1 017 043**	7 570	**	**	34 733	509 175	358 095
• Manufacture of food products, beverages and tobacco:							
number of enterprises	**6 356**	473	1248	968	708	1693	1266
produce – thousand levs	**3 567 121**	76 552	577 720	580 198	273 030	882 900	1 176 721
• Manufacture of textiles and textile products:							
number of enterprises	**4231**	156	783	418	238	1484	1152
produce – thousand levs	**1 340 140**	93 333	246 441	133 681	148 755	341 119	376 811
• Manufacture of leather and leather products:							
number of enterprises	**454**	11	67	33	23	150	170
produce – thousand levs	**197 678**	4 579	61 852	6 138	2 564	39 057	83 488
• Manufacture of wood and wood products:							
number of enterprises	**1781**	72	304	203	167	588	447
produce – thousand levs	**296 391**	4 061	74 929	38 955	52 328	66 997	59 121
• Manufacture of pulp, paper and paper products; publishing and printing:							
number of enterprises	**1631**	34	232	159	80	280	846
produce – thousand levs	**678 726**	4 507	67 662	28 635	7 766	200 970	369 186
• Manufacture of coke, refined petroleum products and nuclear fuel							
number of enterprises	**14**	0	6	1	1	2	4
produce – thousand levs	**	**	**	**	**	**	**
• Manufacture of chemicals, chemical products and man-made fibres							
number of enterprises	**543**	16	88	88	24	141	186
produce – thousand levs	**1 643 037**	**	226 537	546 130	**	345 807	440 302
• Manufacture of rubber and plastic products							
number of enterprises	**1071**	43	265	144	105	300	214
produce – thousand levs	**391 188**	9 303	72 668	42 068	29 496	147 740	89 913
• Manufacture of other non-metallic mineral products							
number of enterprises	**778**	52	164	156	89	147	170
produce – thousand levs	**768 162**	72 324	186 721	206 930	32 301	16 635	153 251
• Metallurgy and manufacture of metal parts, n.e.c.							
number of enterprises	**2721**	99	531	414	314	768	595
produce – thousand levs	**2 350 457**	66 349	168 293	114 705	51 280	442 095	1 507 735

Table 37C Manufacturing sectors by regions

By main manufacturing sectors	**Total for Bulgaria**	North-western Region	Northern Central Region	North-eastern Region	South-eastern Region	Southern Central Region	South-western Region
• Manufacture of machinery and equipment n.e.c.							
number of enterprises	**1786**	61	401	319	157	473	375
produce – thousand levs	**1 224 768**	40 632	385 671	77 552	54 875	432 193	233 845
• Manufacture of electrical and optical equipment							
number of enterprises	**1714**	45	339	277	117	299	637
produce – thousand levs	**872 060**	27 949	93 400	61 985	77 769	114 388	496 569
• Manufacture of transport equipment							
number of enterprises	**470**	5	34	215	86	38	56
produce – thousand levs	**297 200**	8 384	75 578	133 229	31 721	18 352	29 936
• Manufacturing n.e.c.							
number of enterprises	**1937**	**	**	**	**	**	**
produce – thousand levs	**	**	65 872	32 343	26 808	**	**
• Supply of electricity, gas and water							
number of enterprises	**106**	7	22	22	3	23	29
produce – thousand levs	**823 841**	27 717	125 979	148 338	73 923	97 213	350 671

The National Profile for Management of Chemical Substances and Preparation in the Republic of Bulgaria [1] published by MoEW in 2004 shows the following distribution of the pollution sources.

Combustion processes are the main source of dioxin and furan emissions. The combustion processes in energy generation and transformation (thermal power plants) have shown a gradual irregular decrease until 2001, at an annual average of 3 – 5%, and 36% for the entire period. The reduction in dioxin/furan emissions for the period 1990-2002 is approximately 60% and is caused mainly by the groups of combustion processes in the household sector (37% reduction), and industrial combustion processes (90% reduction). One likely explanation of this is the decrease in industrial production.

The thermal power plants emit approximately 49% of the total quantity of PCDD/F, followed by household combustion – 27% – and industrial combustion processes and production – 14%. In the category "combustion processes in energy generation and transformation", 84% of the emissions are generated by thermal power plants with capacity higher than 100 MW, and in the category "combustion processes in commerce, administration and household sector, agriculture, forestry, and water supply and sewerage", 97% of the emissions are from residential heaters. The largest share in the category "industrial combustion processes" is held by industrial heat generation plants with capacity below 50 MW. Metallurgy is the main source of emissions of dioxins and furans in the "industrial processes" category.

According to the official data from the EEA, by 2002 40% of the atmospheric dioxin emissions are due to the three thermo-electric power stations in Stara Zagora District.
The latest data from EEA on the atmospheric pollution by POPs, including dioxins for 2004, is presented in Table 38.

Table 38: Emissions of some POPs in air 2004

№	Source of emission	Dioxins and Furans g/year	PCBs kg	Hexachlorobenzene kg/year
1.	Thermal power plants	118.5	45	0
2.	Household combustion	65.5	172.6	0
3.	Industrial combustion processes including energy production	9.1	1.73	0
4.	Non combustion industrial processes	22.6	0	0.021
5.	Land transport	12.7	42.1	0
6.	Other transport	8.9	8.85	0
7.	Waste treatment	1.936	0.032	0

According to the information provided to us by EEA dioxin emission measurements at the Republic thermo-electric power station of Toploficacia Pernik EAD, Pernik, had been performed in 2004 under the international project of 'Dioxin emissions in the candidate countries'. A value of 0,007 ng/m^3 had been measured.

According to the information provided to us by RIoEW-Sofia, Kumerio med AD, Pirdop, Sofia District /Umicor med AD/ have performed their own dioxin emissions measurements according to Condition 9.6.1.5 of the General Permit №57/2005 The measurements have been performed by an accredited German laboratory but the results thereof have not been received yet.

3.2. DIOXINS AND FURANS RESIDUES IN FOOD

The information on the measurements of dioxin residues in butter, the results of which, according to the above-mentioned report, were expected to be published in 2003, was never made available to the public even after our official access request.

According to a study of free-range chicken eggs[13], conducted with the support of IPEN in the Stara Zagora District, alarming levels of dioxin and polychlorinated biphenyls have been established. Hens' eggs have been chosen for testing because they are a typical food product and their fat content makes them suitable for conducting of monitoring of chemicals such as POPs, which concentrate in fats. The study has focused on hens breed in the open because they have easier access to soil pollutants.

4. Unintentionally produced POPs by category of sources [1]

The main sources of unintentional production of persistent organic pollutants for 2003 of the atmospheric air are the thermal processes distributed as shown in Table 38 and by Category of emissions for the period 2000-2002 are given in Table 39.

Table 39: Data about number of plants by sources unintentionally emitting POPs by 2003

№	Sources category	number
1.	Incinerators - household waste - hazardous waste - hospital waste	 - 25 52
2.	Cement kilns	3
3.	Metallurgy - thermal metallurgical processes - secondary production of cooper - sintering in the iron and steel industries	 16 - 5
4.	Industrial combustion processes	427
5.	Power production and transforming	34
6.	Combustion processes in the commercial, administrative, and residential sectors	644
7.	Wood firing boilers	1
8.	Waste oil processing industries	2

***Table 40: Emissions of unintentionally generated POPs* for the period 2000 - 2002**

PCDD/PCDF in g/year			**PCB kg/year**			**HCB kg/year**		
2000	2001	2002	2000	2001	2002	2000	2001	2002
1. Combustion processes in energy generation and transformation								
109,1974	102.049	105.4	40,6394	37,799	39	0		
2. combustion processes in trading, administrative and household sectors, in agriculture, and in water supply and sewerage; in forestry								
58,3389	44.920	59.4	141,373	124,6	156,8	0		
3. industrial combustion processes;								
16,3823	8.325	7,5	5,151	1,9849	2	0		
4. industrial processes;								
21,5054	20.464	19,1				19	15	16
5. production and distribution of fossil fuels;								
0						0		
6. use of solvents;								
0						0		
7. road transport;								
7,226	6.241	9,2	41,236	35,8	41,3	0		
8. other motor vehicles and machines;								
9,685	11.494	10,9	0,076	11,5	10,9	0		
9. waste treatment and disposal;								
10,193	7.362	6.978	0	0,059	0,056	35	27	22,28
10. agriculture and forestry, and changes in land-use								
0						0		
11. Nature								

0						0		
Total annual emissions								
232,528	**200.855**	**218.478**	**228,475**	**211,743**	**250,056**	**54**	**42**	**38,28**

The POPs generated unintentionally in the period 2000-2002 in Bulgaria are the following:
− PCDD/PCDF: 218÷232 g/year.
− PCB: 211 ÷ 250 kg/year.
− HCB: 38 ÷ 54 kg/year.

The sources of PCDD/PCDF and PCB emissions are distributed throughout the country. Allocated per capita and unit of area, the POP emission values in 2002 are the following:

Dioxins and furans
- 218,50 g/ 110 993 km2 = 0,00197 g/km2
- 218.50 g/ 8 283 200 residents = 0.000026 g/per capita

Polychlorinated biphenyls
- 250 kg/ 110 993 km2 = 0,00225 kg/km2
- 250 kg/ 8 283 200 residents = 0.00003 kg/per capita

5. Calculated Emissions and Residues in Main Environmental Compartments

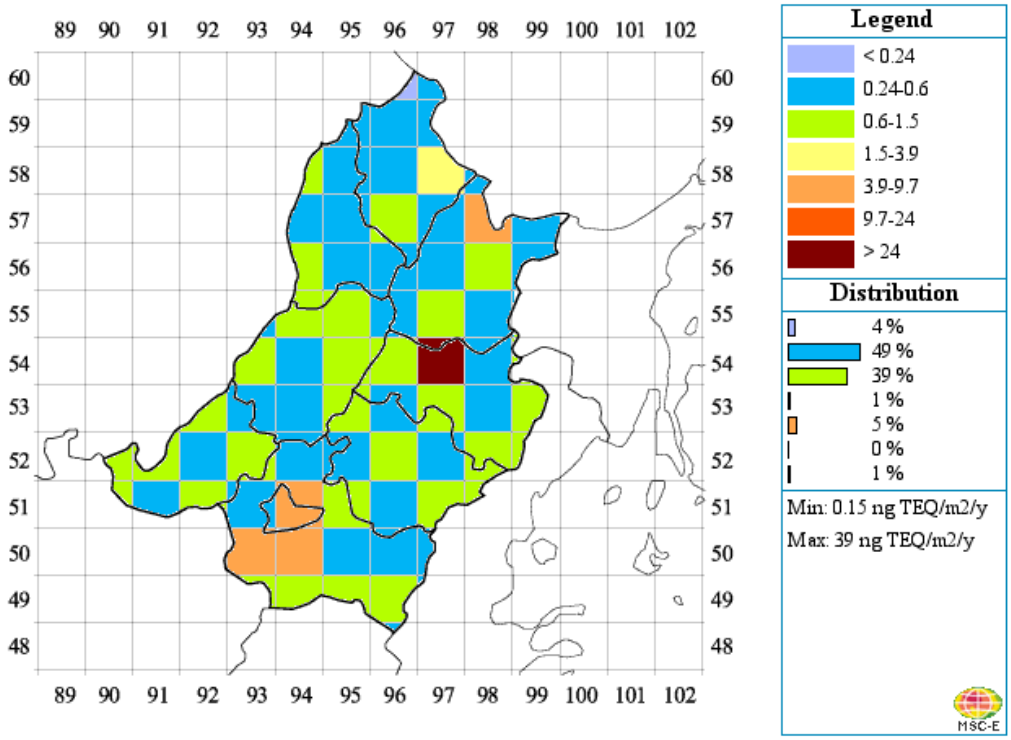
- Some official emission data* submitted to the UN ECE Secretariat for the country for 1998 (HCB, PCBs) and 2001 (PCDD/Fs, B[a]P, B[b]F, B[k]F) are presented below

POPs	Total emissions, t/y (for PCDD/Fs - g TEQ/y)
PCDD/Fs	181.5 - see the map below
HCB	0.3 - see the map below
PCBs	0.5 - see the map below
B[b]F	6.7 - see the map below
B[k]F	6.7 - see the map below
B[a]P	6.7 - see the map below

The maps of spatial distributions of total emissions are as follows:

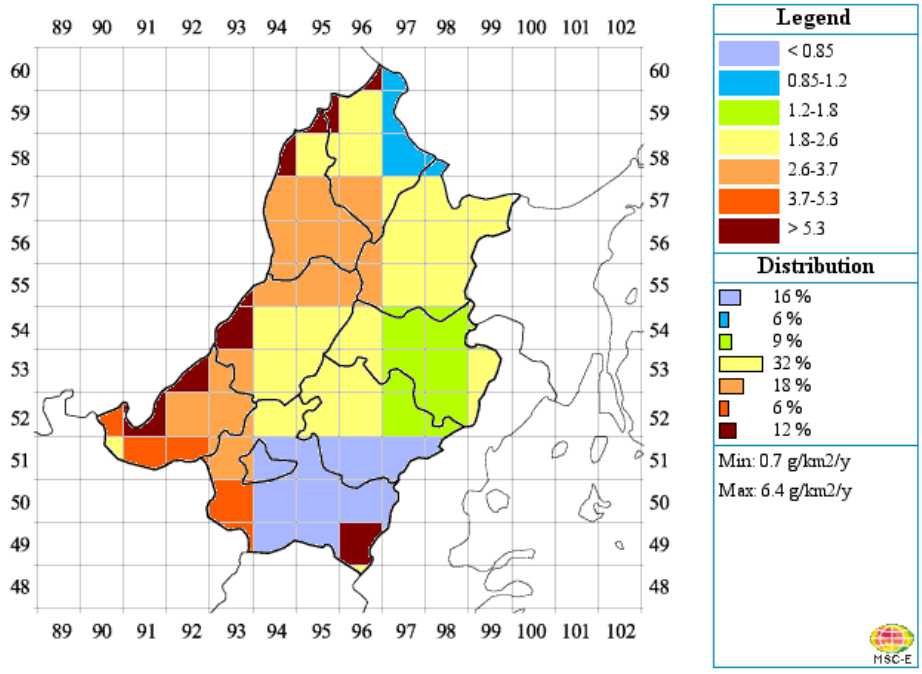
* source http://www.msceast.org/countries/Bulgaria/index.html

- Total emissions of PCDD/Fs



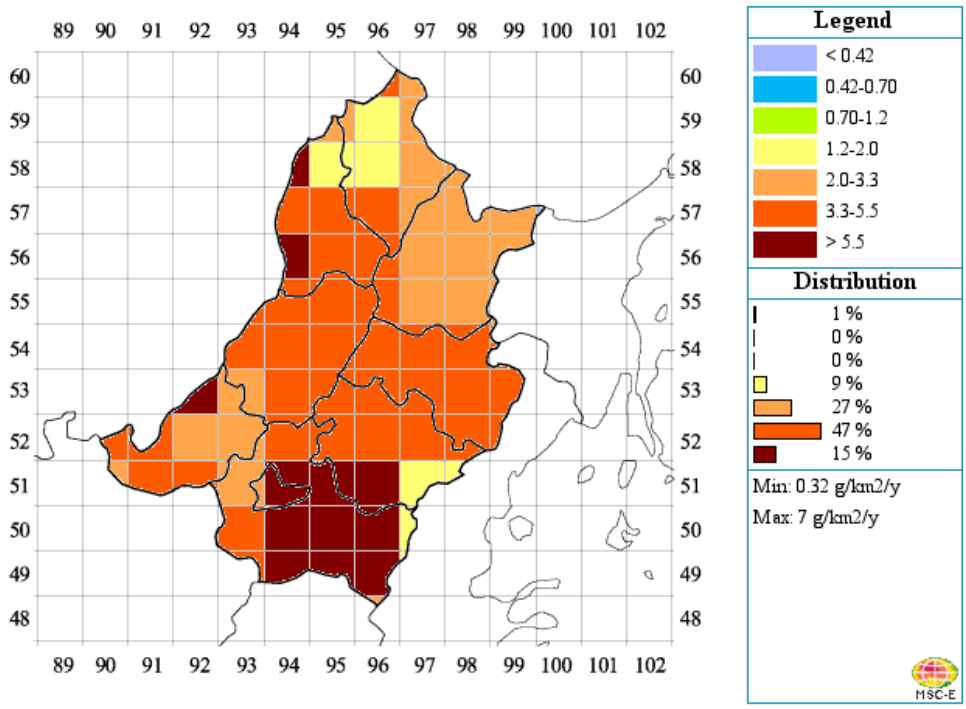
Spatial distribution of PCDD/Fs emissions in 2001 from Bulgaria, ng TEQ/m2/y

- Total emissions of HCB



Spatial distribution of HCB emissions in 1998 from Bulgaria, g/km2/y

- Total emissions of PCBs



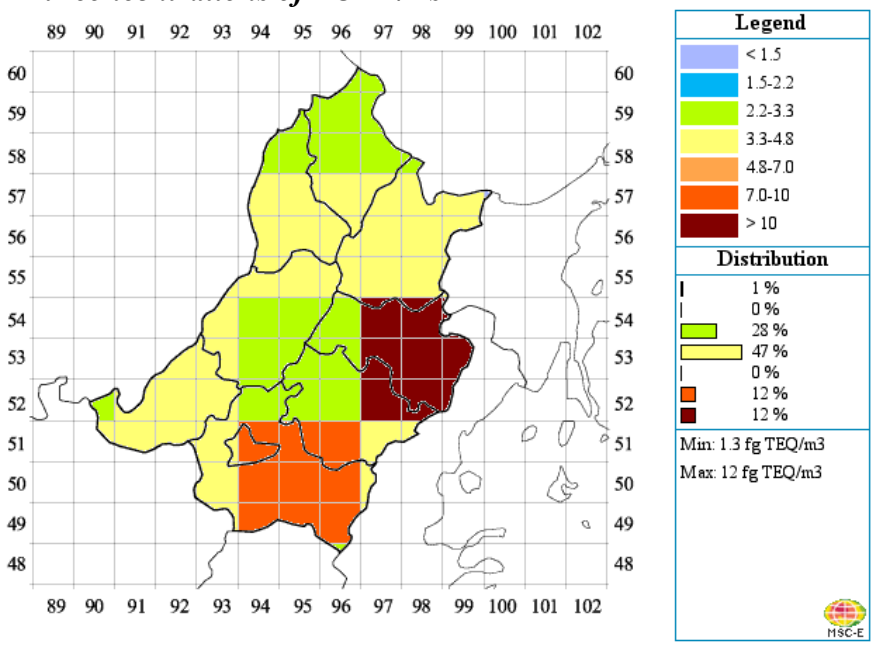
Spatial distribution of PCBs emissions in 1998 from Bulgaria, g/km2/y

- *In the main environmental compartments, calculated concentrations in various media including the atmosphere (means over the country, minimum and maximum values in the country) are presented in the table below*[*]*. Some of the corresponding maps of their distribution follow the table:*

POPs	Mean	Min	Max	No of the Maps (*see below)*
Air concentrations, ng/m^3 (for PCDD/Fs - fg TEQ/m^3)				
PCDD/Fs	5.30	1.25	12.40	**1**
HCB	$7.33 \cdot 10^{-2}$	$5.79 \cdot 10^{-2}$	$9.23 \cdot 10^{-2}$	**2**
PCBs	0.11	$5.76 \cdot 10^{-2}$	0.15	**3**
B[b]F	0.46	0.15	0.89	
B[k]F	0.44	0.13	0.95	
B[a]P	112.47	13.68	122.72	
Soil concentrations, ng/g (for PCDD/Fs - pg TEQ/g)				
PCDD/Fs	0.38	0.12	0.67	**4**
HCB	0.24	0.14	0.69	**5**
PCBs	4.33	2.14	8.64	**6**
B[b]F	3.90	1.62	6.81	
B[k]F	3.48	1.39	7.00	
Vegetation concentrations, ng/g (for PCDD/Fs - pg TEQ/g)				
PCDD/Fs	0.90	$9.61 \cdot 10^{-2}$	2.71	
HCB	0.29	$5.16 \cdot 10^{-2}$	0.44	
PCBs	14.08	1.61	28.57	
B[b]F	34.63	1.13	97.14	
B[k]F	25.20	0.90	66.47	

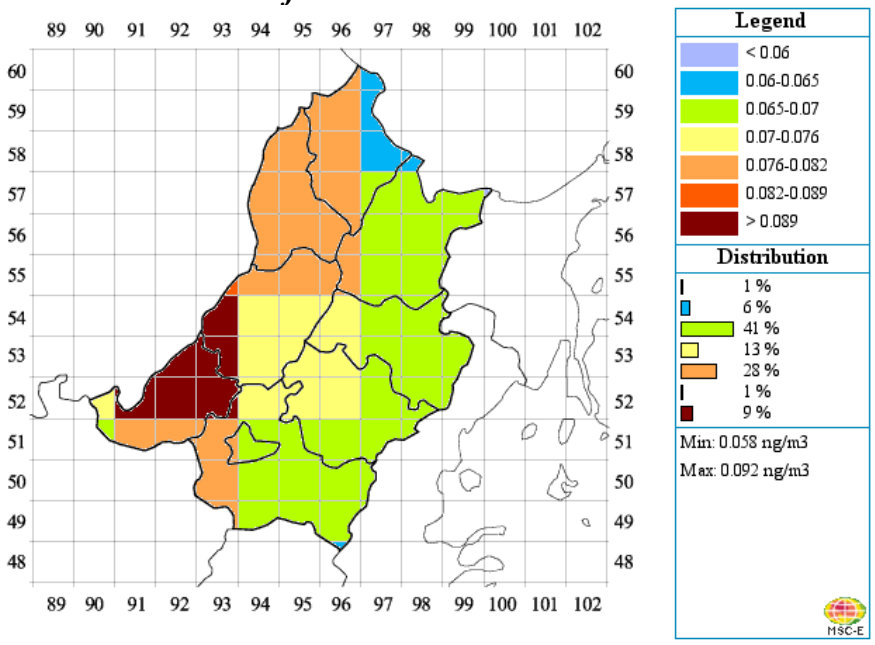
[*] source http://www.msceast.org/countries/Bulgaria/index.html

Map No 1 - Air concentrations of PCDD/Fs



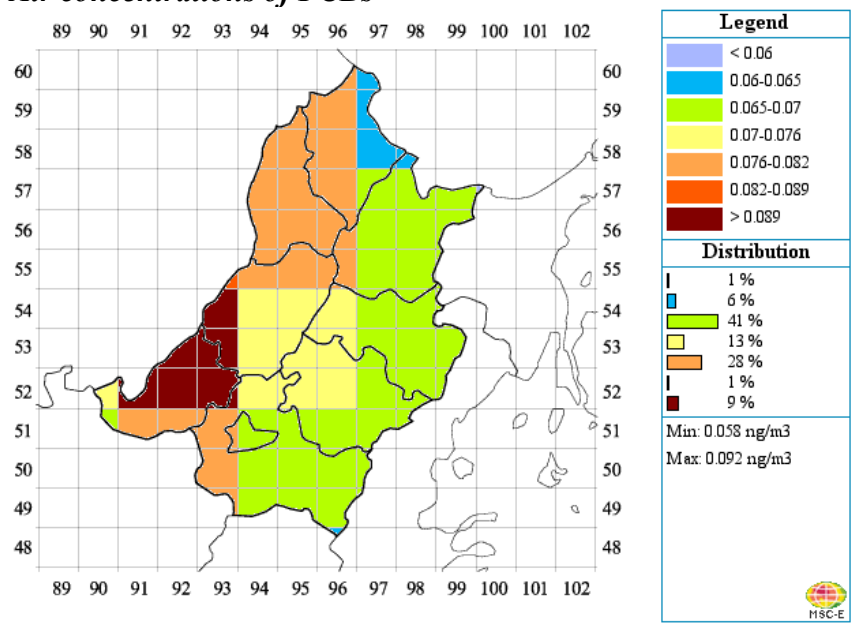
Spatial distribution of PCDD/Fs mean annual concentrations in air for 2001, fg TEQ/m3

Map No 2 - Air concentrations of HCB



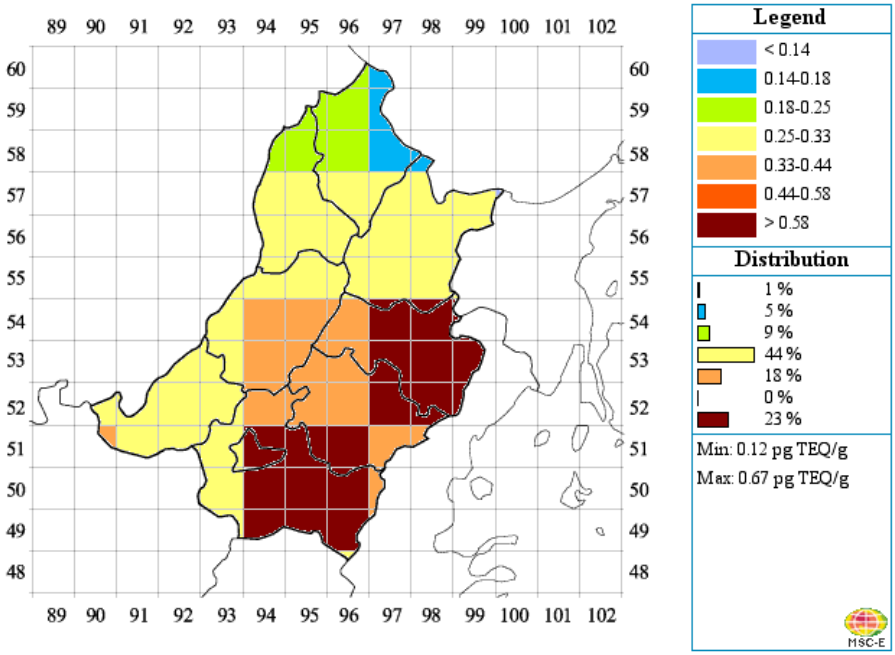
Spatial distribution of HCB mean annual concentrations in air for 1998, ng/m3

Map No 3 - Air concentrations of PCBs



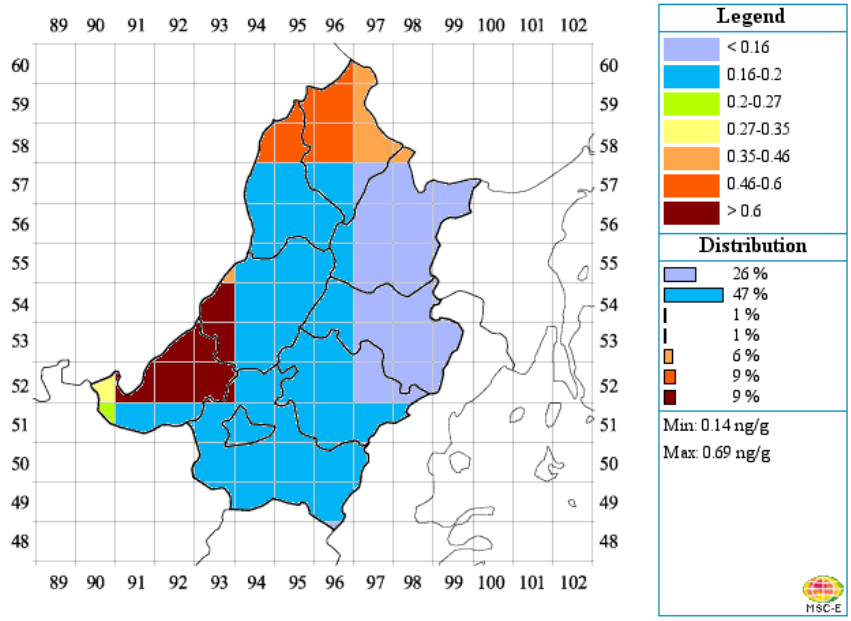
Spatial distribution of HCB mean annual concentrations in air for 1998, ng/m3

Map No 4 - PCDD/Fs in soil



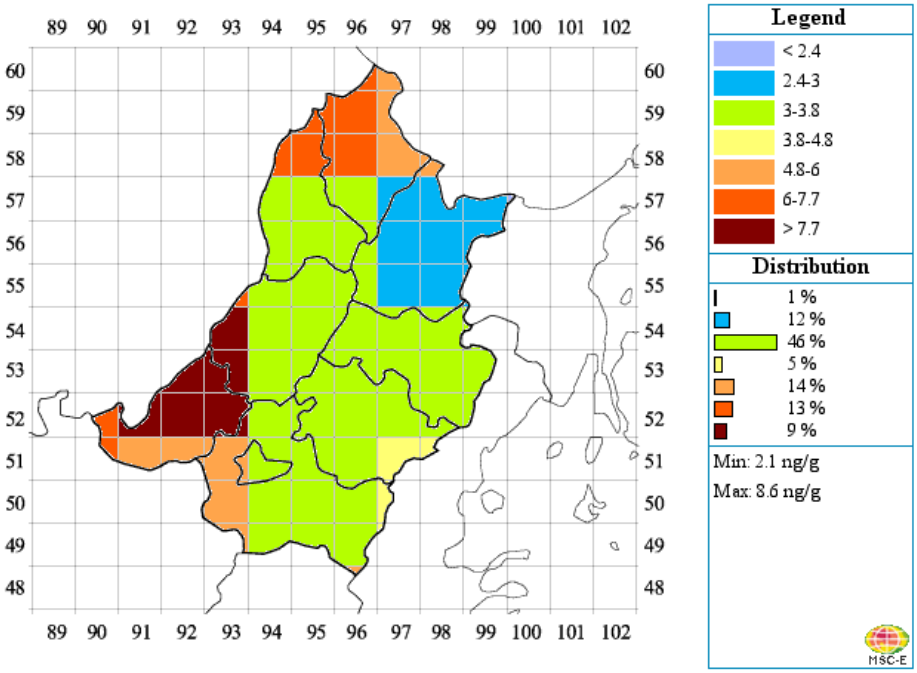
Spatial distribution of PCDD/Fs mean annual concentrations in soil for 2001, pg TEQ/g

Map No 5 - HCB in soil



Spatial distribution of HCB mean annual concentrations in soil for 1998, ng/g

Map No 6 – PCBs in soil



Spatial distribution of PCBs mean annual concentrations in soil for 1998, ng/g

IV. Legislation on management of POPs

Key Legal Instruments Relating Chemicals

The Key Legal Instruments, relevant to the Management of Chemicals could be summarized as follows:

1. Laws ratifying conventions, bilateral and multilateral agreements, contracts and other international treaties
2. Laws
3. Decrees
4. Regulations
5. Other legal instruments – rules, instructions, methodologies, tariffs, etc.

All laws, including those ratifying conventions, bilateral and multilateral agreements, contracts and other international treaties, are adopted by the National Assembly and the regulations are issued with decrees by the Council of Ministers or by ministers or heads of agencies. Other legal instruments, rules, instructions, methodologies, tariffs, etc., are approved by relevant ministries and agencies.

All legal instruments in the Republic of Bulgaria are announced publicly by means of their promulgation in the State Gazette in the Bulgarian language, and promulgation is the legal prerequisite for enactment. International agreements and treaties prevail over the national legislation. Most key laws have been translated into the English language and published on-line, on the pages of the respective ministries and agencies.

MAIN LAWS

1. THE ENVIRONMENTAL PROTECTION ACT (EPA), adopted SG .91/2002, amended in the SG 98/2002. Effective as of 1.01.2005.

This Act regulates the social relations with regard to protection of the environment and of human health; biodiversity conservation; conservation and use of environmental media; control and management of environmental damage and pollution sources; pollution prevention and control; establishment and operation of the National System for Environmental Monitoring; environmental protection strategies, programmes and plans; the economic organization of environmental protection activities; collection of, and access to, environmental information; the rights and obligations of the state, the municipalities, the legal and natural persons to protect the environment.

Environmental assessment and environmental impact assessment are carried out for plans, programmes and investment proposals for construction, activities and technologies, or their amendment, which, if carried out, can cause significant environmental impacts.

2. PROTECTION AGAINST THE HARMFUL IMPACT OF CHEMICAL SUBSTANCES, PREPARATIONS AND PRODUCTS ACT

Law on Protection against Harmful Impact of Chemical Substances and Preparations (LPHICSP) SG, 10/2000, effective 5.02.2002.

This Act sets out the terms and procedures for marketing, trading, import, export, storage and use of chemicals, the state control over them, and the rights and obligations of legal and natural persons who market, trade, store, use, import or export these substances for the purpose of protection of human health and life and environmental protection. This act extends also to chemicals in free trading areas in the Republic of Bulgaria.

It defines the procedures and manner of categorizing, packaging and labeling of existing and new chemicals for each person releasing chemical substances or preparation on the market; regulates the procedure for notification of new chemical substances, intermediate products and polymers, and for assessment of their risks for human-health and the environment; defines the terms and procedures for marketing of biocides; stipulates the procedures for permitting of import and registration of exports of hazardous chemicals.

Subject to control are chemicals, for classification, packaging and labeling; notified chemical substances; intermediate products for which limited research programmes are allowed; hazardous chemicals that are prohibited for trading or use; the production of goods which may contain hazardous chemicals, and whose use is restricted or prohibited; hazardous chemicals that are subject to import and export restrictions; the storage conditions specified by the manufacturer in the material safety data sheet.

The Minister of Environment and Water exercises control for environmental protection, and the Minister of Health exercises control for protection of the public health. Pursuant to the Plant Protection Act, state control authorities control plant protection preparations on the market. The act creates the legal grounds for issuance of the following secondary legislation for its implementation:

• **Regulation on the Procedures and the Manner of Classification, Packaging and Labeling of Chemical Substances and Preparations**, CM Decree 316/20.12.2002, SG 5/ 2003, effective 01.01.2004, amended and supplemented CM Decree 174/19.07.2004, SG 66/2004, effective This regulation defines the 01.01.2005.

• **Regulation on notification of new chemical substances**, CM Decree 137/03.07.2002, SG 67/2002, effective 01.01.2004, last amendment SG 110/17.12.2004.

• **Regulation on the Final Risk for Men and Environment of New Chemical Substances**, CM Decree 131/01.07.2002, SG 67/2000, effective 01.01.2004., last amendment SG 110/17.12.2004.

• **Regulation relating to bans and restrictions on the marketing and use of Dangerous Chemical Substances and Preparations**, CM Decree 130/01.07.2002, SG, 69/2002, effective 01.01.2003, amended and supplemented CM Decree 156/07.07.2004, SG 62/2004.

• **Regulation on Import and Export of Dangerous Chemical Substances and Preparations on the territory of the Republic of Bulgaria**, CM Decree 129/01.07.2002,, SG, 66/2002, effective 01.01.2004 new CM Decree 161/12.07.2004, SG 63/2004, effective 01.01.2005.

Marketing of biocide preparations and plant protection chemicals

• **Regulation 8** on the procedures and conditions for carrying out of disinfestations and pest control, SG 49/02.06.1992.
• **Regulation 27** on the import of goods of significance for Public Health, SG 75/1995, amended SG 78/02.09.2003, SG 4/16.01.2004, effective 16.01.2004, SG 15/24.02.2004.
• **Regulation 17** on the Activities of Disinfection Stations, SG 87/1992.
• **Regulation** on the Specific Requirements on the Marketing of Detergents,SG 62/16.07.2004.
• **Regulation** on the Permitting of Plant Protection Chemicals, CM Decree 213/16.09.2002, SG 93/2002, amended SG 114/2003, effective 01.01.2006.
• **Regulation** on the Special Requirements for the Composition, Packaging, Labeling, and on the Methods for Sampling and Analysis of Fertilizers, adopted with Decree of the Council of Ministers 5/16.01.2003, promulgated in the SG 10/2003.
• **Regulation 44** on the terms and procedures for marketing of biocide preparations, SG 113/28.12.2004.

3. CLEAN AIR ACT
Clean Ambient Air Act (CAA), SG, 45/28.05.1996, effective 29.06.1996.

The objective of this act is to protect the health of humans and that of their progeny, of animals and plants, of their communities and habitats, protect the natural and cultural values from harmful impacts, and prevent the occurrence of public hazards and damages from changes of atmospheric air quality as a result of various activities.

It defines the setting of atmospheric air quality parameters and standards; limitation of emissions; the rights and obligations of state and municipal authorities, and the legal and natural persons, concerning the control, management, and maintenance of atmospheric air quality; the liquid fuel quality requirements, and the enforcement of liquid-fuel quality compliance during marketing.

Regulations regarding Bulgaria's commitments under the international conventions on transboundary air pollution, climate changes and protection of the ozone layer Ozone depleting substances

• **MC 254/30.12.1999 on Control and Management of Ozone Depleting Substances; Regulation on Accomplishment of Control and Management of Ozone Depleting Substances**, SG, 3/11.01.2000, effective since 1.01.2000, amended and supplemented SG 96/11.10.2002, effective 1.01.2003.
The Republic of Bulgaria has signed the Kyoto Protocol for limitation of the total national emissions of greenhouse gases under the Framework Convention on Climate

Change. The commitments are to reduce the national emissions by 8% (for the period 2008-2012). The uniform mechanism for monitoring of carbon dioxide emissions is provided for by means of the Law on Ratification of the UN Framework Convention on Climate Changes (effective since 12.05.1995) where 1988 is assumed as the basic year for Bulgaria regarding the anthropogenic emissions of greenhouse gases which are not subject to the Montreal Protocol. The national objective is that the level of greenhouse gas emissions in 2000 should not exceed that of the base year.

4. WATER ACT

Water Act, SG, 67/1999, effective 28.01.2000, amended and supplemented SG 91/25.09.2002, effective 1.01.2003, amended and supplemented SG 84/23.09.2003, amended SG 107/09.12.2003, SG 6/16.04.2004, amended SG 70/2004, effective 1.01.2005.

This act defines the ownership and management of water in the Republic of Bulgaria as a national indivisible natural resource, and the ownership of water economy systems and facilities.

This act aims to ensure uniform and balanced management of water in the public interest, protection of the public health, and sustainable development of Bulgaria by means of: integrated, multiple and efficient use of the water resources; development and conservation of the water resources to satisfy the needs for water of the present and future generations; restoration of water quality and protection of water against pollution, exhaustion, or other impacts on the regime of water; prevention or elimination of the consequences from the harmful impact on water.

Water and water bodies are protected against pollution and damage by means of: prohibition for releasing of hazardous substances in quantities that endanger life and human health, and the biological diversity in the water bodies; restrictions for releases of harmful substances; definition of sanitary protection belts around drinking water sources and facilities, and around mineral water sources; construction of waste water treatment plants; establishment of the regime of irrigation and protection of flood plains; regulating of the prohibitions for disposal of waste and hazardous substances in locations where pollution of water may occur.

The act creates legal grounds for creation of regulations on particular elements of the overall water management system, by means of:

- obtaining of permits for quantities of water used from certain sources;
- obtaining of waste water discharging permits;
- admissible limit values for various pollutants and other water quality parameters;
- requirements for the treatment plants and facilities;
- monitoring system requirements;
- administrative and penal liabilities

The following regulations transpose the provisions of the Water Act into the legislation of Bulgaria:

1. Bathing water quality
2. Quality of water meant for human consumption and of the surface water meant for drinking water supply
3. Quality of water inhabited by fish and shellfish
4. Waste water
5. Protection of water from pollution with hazardous substances

5. LAW of WASTE MANAGEMENT
Law of Waste Management, SG 86/24.03.2003 amended SG 70/2004, effective 1.01.2005.

Waste management aims to prevent, reduce or restrict the harmful impact of waste on human health and on the environment.

This act creates the legal grounds for creation of regulations on the various aspects of waste management – transport, treatment, disposal, and the requirements for the landfills for various types of waste, the import and export of waste, and the respective permit regimes; categorization of hazardous waste. The act regulates the creation of regulations on the terms and procedures for reduction of pollution from automotive waste; treatment and transporting of used oil and waste petroleum products; treatment and transporting of waste batteries and accumulators; treatment and transporting of obsolete luminescent and other lamps containing mercury.

The following regulations introduce its requirements of this act into the national legislation:
• **Regulation 3/1.04.2004** on Waste classification, SG 44/25.04.2004
• **Regulation** on Packaging and Packaging Waste, SG, SG 19/09.03.2004
• **Regulation No 6** on the procedure for filling out of report and information documents for the waste management activities, SG 78/07.09.2004.
• **Regulation 7** on the Requirements for the Sites for Waste Treatment Facilities, SG 81/17.09.2004
• **Regulation 8** on the Terms and Requirements for Construction and Operation of Waste Recycling and Disposal Landfills and Other Facilities, SG 83/17.09.2004.
• **Regulation 9/28.09.2004** on the Procedures and Forms for Submission of Information about Waste Related Activities, and the Procedures for the Public Register of Issued Permits, Registration Documents and Closed Facilities and Activities, SG 95/2004.
• **Regulation** on the treatment and transportation industrial and hazardous waste**,** CM Decree 53/19.03.1999, SG 29/30.03.1999.

Hazardous waste
The hazardous waste requirements are introduced into the national legislation by means of:
• **Regulation 3/1.04.2004** on Waste classification, SG 44/25.04.2004.
Regulation on the treatment and transportation industrial and hazardous waste**,** CM Decree 53/19.03.1999, SG 29/30.03.1999.

• **Regulation 9/28.09.2004** on the Procedures and Forms for Submission of Information about Waste Related Activities, and the Procedures for the Public Register of Issued Permits, Registration Documents and Closed Facilities and Activities, SG 95/2004

Waste monitoring and transporting control

The requirements for transboundary transporting of waste are provided for in the Bulgarian legislation by means of:

• **Regulation** on the Procedures and Manner of Importing, Exporting and Transit of Waste and on the Cases Requiring Bank Guarantees or Insurances, SG 102/26.10.2004.
• **Regulation 3/1.04.2004** on Waste Classification, SG 44/25.04.2004.
• **Regulation** on the Treatment and Transportation Industrial and Hazardous Waste**,** CM Decree 53/19.03.1999, SG 29/30.03.1999.
• **Regulation** on the Requirements for Treatment and Transportation of Waste Lubricants and Waste Petrol-chemical Products, CM Decree № 131/13.07.2000, SG 59/21.07.2000.
• **Law** on the Ratification of the Basel Convention on the Control of Transboundary Movement of Hazardous Waste and their Neutralization, SG 8/26.01.1996, effective 16.05.1996.

Incineration of hazardous waste

The hazardous waste incineration requirements have been transposed into the Bulgarian legislation by means of:

• **Regulation** on the Treatment and Transportation Industrial and Hazardous Waste**,** CM Decree 53/19.03.1999, SG 29/30.03.1999.
• **Regulation 6** on the Procedure for Filling out of Report and Information Documents for the Waste Management Activities, SG 78/07.09.2004.

Existing and new urban waste incinerators

• **Regulation 6** on the Procedure for Filling out of Report and Information Documents for the Waste Management Activities, SG 78/07.09.2004.

Disposal of waste

• **Regulation 7** on the Requirements for the Sites for Waste Treatment Facilities, SG 81/17.09.2004.
• **Regulation 8** on the Terms and Requirements for Construction and Operation of Waste Recycling and Disposal Landfills and Other Facilities, SG 83/17.09.2004.

Disposal of used oil

• **Regulation** on the Requirements for Treatment and Transportation of Waste Lubricants and Waste Petrol-chemical Products, CM Decree № 131/13.07.2000, SG 59/21.07.2000.

Protection of soils in the cases of agricultural use of sludge

• **Regulation** on the Procedures and Manner of Using of Waste-Water Treatment Sludge in Agriculture, SG 112/23.12.2004.

Batteries and accumulators containing certain hazardous substances

• **Regulation** on the requirements for the production and placing on the market of batteries and accumulators and for treatment and transportation of spent batteries and accumulators, CM Decree 134/17.07.2000, SG 61/25.07.2000.

Obsolescent luminescent and other lamps containing mercury

• **Regulation** on the requirements for placing on the market of luminescent and other lamps, containing mercury, and on the treatment of and transportation of out-of-use luminescent and other lamps containing mercury, CM Decree 260/05.12.2000, SG 101/12.12.2000, effective 01.01.2001.2001.

Automotive waste

• **Regulation** on the terms and conditions for reduction of contamination caused by waste from end-of-life vehicles, CM Decree 257/09.11.2001, SG 98/16.11.2001, amended SG 110/21.12.2001, SG 104/26.11.2004.

Persistent organic pollutants (POPs)

A National Action Plan for Management of Persistent Organic Pollutants in the Republic of Bulgaria is in under development as part of a pilot project financed by the Global Environmental Facility (GEF) and by a German donor, and managed by UNEP Chemicals (UN environmental programme). The implementation of the sub-project GF/2732-02-4454 was entrusted to the Ministry of Environment and Water.

The aim of the project is to increase the national capacity for management of persistent organic pollutants (POPs) and to support the government to fulfill its commitments under the Stockholm Convention on Persistent Organic Pollutants. The project includes the elaboration of a National Implementation Plan (NIP) for Management of Persistent Organic Pollutants.

Bulgaria's national-level objectives are:

1) implementation of the convention by means of development of a National Action Plan for Management of POPs; and

2) development of detailed action plans for POP that will identify effective national responsibilities, processes and measures to reduce POP emissions.

The NIP is expected to meet Bulgaria's initial reporting commitments under the Convention. Bulgaria's possibilities for management of a larger group of persistent toxic substances (PTS) will be improved with the experience.

The five stages of development of the NIP for Management of Persistent Organic Pollutants include:

• Identification of a coordination mechanism and process organization;
• Inventorying of POPs and assessment of the national infrastructure and capacity;
• Setting of priorities and identification of objectives;
• Development of NIP with priorities and values, and of Specific Action Plans for POPs;
• Endorsement of the NIP.

Neutralization of polychlorinated biphenyls (PCB) and polychlorinated triphenyls (PCT) Provisions are made for introduction into the national legislation of a Regulation on the Requirements for Neutralization of Polychlorinated Biphenyls and Polychlorinated Triphenyls.

6. LAW on the PRESERVATION of AGRICULTURAL LANDS
Law on the Preservation of Agricultural Lands, SG 35/24.04.1996 amended and supplemented SG 28/ 23.03.2001 amended and supplemented SG 112/23.12.2003, effective 01.01.2004.

This act settles the protection from damage, recovery and improvement of agricultural land fertility.

The act establishes the obligation of owners and users of agricultural lands to protect these against erosion, pollution, salinization, acidification, swamping, and other damage. To meet this basic obligation, owners are prohibited from using pesticides, mineral leaf feed fertilizers and micro fertilizers, and biologically active substances which have not received biological and toxicological registration by specialized commissions and councils of the Ministry of Agriculture and Forestry, the Ministry of Health, and the Ministry of Environment and Water. Also, it is prohibited to use organic sludge from production and other water, and of urban waste, on agricultural land without permission by the specialized authorities of the Ministry of Agriculture and Forestry, to irrigate with water containing harmful substances and to use waste above the admissible levels, etc.

Provisions are made for tax and loan preferences for agricultural land owners and users who conform to the compulsory limits for use of agricultural lands and who apply organic farming systems and farming with reduced use of herbicides, pesticides, and artificial fertilizers.

7. **LAW on the PROTECTION of SOIL against POLLUTION**
Law on the Protection of Soil against Pollution, SG 67/27.07.1999, effective 28.01.2000, amended SG 113/28.12.1999.
This act sets forth the activities for protection of soil against pollution.

The requirements **of Law on the Preservation of Agricultural Lands** and **Law on the Protection of Soil against Pollution** are provided for through the following legislation:
• **Regulation 3** on the admissible content of harmful substances in soils, SG 36/08.05.1979, amended and supplemented SG 5/1996, last amended SG 39/16.04.2002.
• **Regulation 26/2.10.1996** on the Reclamation of Damaged Terrains, Improvement of Unproductive Lands, Removal and Utilization of the Humus Layer, SG 89/1996, amended and supplemented SG 30/2002.
• **CM Decree** 50/10.03.1993, Agricultural Lands Polluted from Industrial Production Activities, SG G 24/26.03.1993.

8. LAW of HEALTH
Law of Health, SG 70/2004, effective since 01.01.2005.

The Ministry of Health exercises state sanitary control through its specialized branches – the Directorate of Health Prophylaxis and State Sanitary Control, the National Centre for Radiology and Radioactivity Protection (NCRRP), and the Regional Inspectorate for Public Health Protection and Control (RIPHPC).

State control is exercised over the production, import, transporting, storage, and use of hazardous chemicals, plant protection chemicals, artificial fertilizers, growth regulators, and preparations for veterinary purposes.

The authorities of state sanitary control agree on the new chemical and biological substances, means and methods for production of food, sources of iodizing radiation, plant growth and animal breeding stimulators, chemical and microbial means of plant protection, synthetic and biosynthetic materials, and other chemical and biological products.
The state sanitary control authorities may prohibit the manufacturing, transferring, transporting, and using of food, chemical substances, and other materials and objects, harmful or hazardous for human health, and order their destruction, processing, and using for other purposes.

9. LAW on HEALTH and SAFE WORK CONDITIONS
Law on Health and Safe Work Conditions, SG 124/23.12.1997, amended SG 14/2003, effective 31.01.2004, amended and supplemented SG 70/2004, effective 01.01.2005.

10. LAW on CONTROL of FOREIGN TRADE with WEAPONS and with GOODS and TECHNOLOGIES with POSSIBLE DOUBLE USE
Law on Control of Foreign Trade with Weapons and with Goods and Technologies with Possible Double Use, SG 102/95, amended and supplemented SG 75/2002, amended SG 93/2004.

INTERNATIONAL CONVENTIONS AND AGREEMENTS

Regarding environment protection, the Republic of Bulgaria is party to a number of international conventions:
• **United Nation Convention** to Combat the Illegal Traffic of Narcotics and Psychotropic Substances ratified by the Parliament with a law, SG 60/24.07.1992, effective 23.12.1992; amended SG 58/29.06.2001.
• **Basel Convention** on the control of Transboundary Movement of Hazardous Wastes and their Disposal, ratified by the Parliament with law, SG 8/26.01.1996, effective 16.05.1996.
• **Convention** on psychotropic substances, SG 30/1972, effective 16.08.1976, amended SG 83/01.10.1996.
• **United convention** on narcotics from 1961, amended by a Protocol from 1972, ratified in SG 67/1968; SG 87/1996, effective 17.08.1996.
• **Vienna Convention** for the Protection of the Ozone Layer, ratified in 1989, SG 82/20.10.1989, effective 18.02.1991, SG 71/10.08.1999.; The Montreal Protocol on Ozone Depleting Substances from 1987

• **Convention** on Long-Range Transboundary Air Pollution (Geneva, 1979), ratified in 1981, effective 16.03.1983.Persistent Organic Pollutants **Protocol** under the Geneva Convention on Long-Range Transboundary Air Pollution, promulgated in the SG 102/2003, effective since 23.10.2003.
• **United Nation Framework Convention** on Climate Change from 1992; ratified and effective 1995 – Kyoto Protocol from 1997, signed in 1998, not ratified.
• **Convention** on Access to Information, and Public Participation in Decision - Making and Access to Justice in Environmental Matters (Aarhus, Denmark, 1998), signed.
• **Convention** on the Environmental Impact Assessment in a Transboundary Context (Espoo, Finland, 1991), ratified, SG 28/1995, effective 10.09.1997, amended SG 89/12.10.1999. Strategic Environmental Assessment Protocol signed by the Republic of Bulgaria on May 21 2003 in Kiev, Ukraine
• **Convention** on the Transboundary Effects of Industrial Accidents (Helsinki, Finland, 1992), ratified, SG 28/1995, in force in Bulgaria on 12.05.1995. Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters, signed on May 21 2003 in Kiev, Ukraine.
• **Convention** on the Protection of the Black Sea against Pollution signed by the Republic of Bulgaria on April 21 1992 in Bucharest, Romania, ratified, SG 99/1992, effective 15 January 1994.
• **Convention** on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade signed by the Republic of Bulgaria on 11 September 1998 in Rotterdam, the Netherlands, ratified, SG 55/2000, SG 33/23.04.2004, effective 24.02.2004.
• **The Stockholm Convention** on Persistent Organic Pollutants, signed by the Republic of Bulgaria on May 23, 2001 in Stockholm, ratified by the National Assembly with a Law on 30.09.2004, SG 89/12.10.2004.
• **Convention** on the Cooperation for Protection and Sustainable Use of the Danube, ratified with a Law adopted by the 38th National Assembly on 24.03.1999, SG 30/02.04.1999, SG 49/17.05.2002, amended SG 53/28.05.2002.
• **Convention** for Prohibiting the Development, Production, Proliferation, and Use of Chemical Weapons and its Destruction, signed on 13.01.1993 in Paris, ratified with a Law adopted by the National Assembly, SG 55/08.07.1994, SG 103/29.11.2001, effective 29.04.1997, amended SG 1/04.01.2002.

Legislation by category of use of chemicals concerning their life cycle stages

PESTICIDES (PLANT PROTECTION CHEMICALS И BIOCIDES) (farming, healthcare and livelihood)
• **Plant Protection Act**, SG, 91/1997, amended SG 90/1999, amended and supplemented SG 96/09.11.2001, amended SG 18/05.03.2004, effective 6.04.2004.

Import/Production/Storage/Transport/Distribution:
• **Organization Rules** of The National Plant Protection Service,SG 71/2000, amended and supplemented SG 39/2003;
• **Regulation 27** on the Import of Goods of Significance for Public Health, SG 75/1995, amended SG 78/02.09.2003, SG 4/16.01.2004, effective 16.01.2004, SG 15/24.02.2004.

• **Regulation 32/**09.07.2001 on the Control of Plants and Plant Products, Fertilizers and Nutritional Media for Testing, Registration and Control of Plant Protection Chemicals, SG, 67/31.07.2001, amended and supplemented SG 34/03.04.2002, amended SG 40/19.04.2002, SG 44/29.04.2002, SG 73/2002, amended SG 93/2002, SG 95/2002, amended and supplemented SG 19/2003, amended SG 28/2003, last amendment in SG 87/05.10.2004.
• **Regulation** on the Permitting of Plant Protection Chemicals, CM Decree 213/16.09.2002, SG 93/2002, amended SG 114/2003, effective 01.01.2006.
• **Regulation** on Order and Procedures for Labeling of Plant Protection Products, CM Decree 125/06.06.2003, SG 54/2003, effective 01.01.2004.

Use:
• **Law on the Preservation of Agricultural Lands,** SG 35/24.04.1996 amended and supplemented SG 28/ 23.03.2001 amended and supplemented SG 112/23.12.2003, effective 01.01.2004.
• **Regulation on** the Order of Determination and Impositions for Damage or Pollution of Environment above the Admissible Norms, CM Decree 169/29.07.2003, SG 69/05.08.2003, effective 06.09.2003.
• **Regulation 12/18.06.2002** on the Quality Requirements for Surface Water Intended for Drinking Water and Household Supply, SG 63/28.06.2002.
• **Regulation 3** on the Admissible Content of Harmful Substances in Soils, SG 36/08.05.1979, amended and supplemented SG 5/1996, last amended SG 39/16.04.2002.
• **Regulation 31/29.12.2003** on the Maximum Admissible Quantities of Pesticide Residue in Food, SG 14/2004, effective 20.02.2004.

Disposal: No specific regulatory framework exists, and the waste management legislation applies.

ARTIFICIAL FERTILIZERS
Plant Protection Act, SG, 91/1997, amended SG 90/1999, amended and supplemented SG 96/09.11.2001, amended SG 18/05.03.2004, effective 6.04.2004

Import/Production/Storage/Transport/Distribution:
• **Organization rules** of The National Plant Protection Service, SG 71/2000, amended and supplemented SG 39/2003.
• **Regulation 27** on the Import of Goods of Significance for Public Health, SG 75/1995, amended SG 78/02.09.2003, SG 4/16.01.2004, effective 16.01.2004, SG 15/24.02.2004
• **Regulation 32/**09.07.2001 on the Control of Plants and Plant Products, Fertilizers and Nutritional Media for Testing, Registration and Control of Plant Protection Chemicals, SG, 67/31.07.2001, amended and supplemented SG 34/03.04.2002, amended SG 40/19.04.2002, SG 44/29.04.2002, SG 73/2002, amended SG 93/2002, SG 95/2002, amended and supplemented SG 19/2003, amended SG 28/2003, last amendment in SG 87/05.10.2003
• **Regulation 2/16.10.2000** on the protection of water against pollution caused by nitrates from agriculture source**, SG 87/2000**

• **Regulation** on the Special Requirements for the Composition, Packaging, Labeling, and on the Methods for Sampling and Analysis of Fertilizers, SG 10/04.02.2003, effective since 05.05.2003.
• **Regulation 36** on the terms and procedures for biological testing, registration, use and control of fertilizers, soil improvement preparations, biologically active substances and nutritional substrata, SG 87/05.10.2004

Use:
• **Law on the Preservation of Agricultural Lands,** SG 35/24.04.1996 amended and supplemented SG 28/ 23.03.2001 amended and supplemented SG 112/23.12.2003, effective 01.01.2004.
• **Regulation on** the Order of Determination and Impositions for Damage or Pollution of Environment above the Admissible Norms, CM Decree 169/29.07.2003, SG 69/05.08.2003, effective 06.09.2003.
• **Regulation 3** on the Admissible Content of Harmful Substances in Soils, SG 36/08.05.1979, amended and supplemented SG 5/1996, last amended SG 39/16.04.2002
• **Regulation 12/18.06.2002** on the Quality Requirements for Surface Water Intended for Drinking Water and Household Supply, SG 63/28.06.2002.
• **Regulation 31/29.12.2003** on the Maximum Admissible Quantities of Pesticide Residue in Food, SG 14/2004, effective 20.02.2004.

Disposal: No special legislation exists. The current waste management legislation applies.

INDUSTRIAL CHEMICAL SUBSTANCES /used for production and processing/
• **Law on Protection against Harmful Impact of Chemical Substances and Preparations** (LPHICSP), SG, 10/2000, effective 5.02.2002, amended SG 91/2002, 86/2003, amended and supplemented SG 114/2003, effective 31.01.2004.
• **Law on Control of Foreign Trade with Weapons** a**nd with Goods and Technologies with Possible Double Use,** SG 102/95, amended and supplemented SG 75/2002, amended in SG 93/2004, and **Rules for Implementation of the Law on Control of Foreign Trade with Weapons and with Goods and Technologies with Possible Double Use**, CM Decree 274/29.11.2002, SG 115/2002, amended SG 97/4.11.2003, amended and supplemented SG 11/2004, amended , SG 35/2004.
• **Law of Health**, SG 70/2004, effective since 01.01.2005

Import
• **Regulation** on Import and Export of Dangerous Chemical Substances and Preparations on the Territory of the Republic of Bulgaria, CM Decree 129/01.07.2002,, SG, 66/2002, effective 01.01.2004 new CM Decree 161/12.07.2004, SG 63/2004, effective 01.01.2005.

Distribution/Use:
• **Regulation** Relating to Bans and Restrictions on the Marketing and Use of Dangerous

Chemical Substances and Preparations, CM Decree 130/01.07.2002, SG, 69/2002, effective 01.01.2003, amended and supplemented CM Decree 156/07.07.2004, SG 62/2004

• **Regulation** on the Procedures and the Manner of Classification, Packaging and Labeling of Chemical Substances and Preparations, CM Decree 316/20.12.2002, SG 5/ 2003, effective
01.01.2004, amended and supplemented CM Decree 174/19.07.2004, SG 66/2004, effective 01.01.2005.

• **Regulation** on Notification of New Chemical Substances, CM Decree 137/03.07.2002, SG 67/2002, effective 01.01.2004, last amendment SG 110/17.12.2004.

• **Regulation** on the Final Risk for Men and Environment of New Chemical Substances, CM Decree 131/01.07.2002, SG 67/2000, effective 01.01.2004, last amendment SG 110/17.12.2004.

Transport: The international requirements for transport of hazardous goods by road ADR (International Transport of Hazardous Goods by Road), by rail, by sea and by air.

Storage: The instructions for storage of chemical substances indicated in the material safety data sheet apply.

Disposal: No specific regulatory framework exists, and the waste management legislation applies.

PETROCHEMICAL PRODUCTS

Import:

• **Law on Control of Foreign Trade with Weapons and with Goods and Technologies with Possible Double Use**, SG 102/95, amended and supplemented SG 75/2002, amended in SG 93/2004, and **Rules for Implementation of the Law on Control of Foreign Trade with Weapons and with Goods and Technologies with Possible Double Use**, CM Decree 274/29.11.2002, SG 115/2002, amended SG 97/4.11.2003, amended and supplemented SG 11/2004, amended , SG 35/2004.

• **Regulation** on Import and Export of Dangerous Chemical Substances and Preparations on the Territory of the Republic of Bulgaria, CM Decree 129/01.07.2002,, SG, 66/2002, effective 01.01.2004 new CM Decree 161/12.07.2004, SG 63/2004, effective 01.01.2005.

Distribution/Use:

• **Regulation** Relating to Bans and Restrictions on the Marketing and Use of Dangerous Chemical Substances and Preparations, CM Decree 130/01.07.2002, SG, 69/2002, effective 01.01.2003, amended and supplemented CM Decree 156/07.07.2004, SG 62/2004

• **Regulation** on the Procedures and the Manner of Classification, Packaging and Labeling of Chemical Substances and Preparations, CM Decree 316/20.12.2002, SG 5/ 2003, effective 01.01.2004, amended and supplemented CM Decree 174/19.07.2004, SG 66/2004, effective 01.01.2005.

• **Regulation** on Notification of New Chemical Substances, CM Decree 137/03.07.2002, SG 67/2002, effective 01.01.2004, last amendment SG 110/17.12.2004.
• **Regulation** on the Final Risk for Men and Environment of New Chemical Substances, CM Decree 131/01.07.2002, SG 67/2000, effective 01.01.2004, last amendment SG 110/17.12.2004.

Storage/Transport:
• **Regulation** on the Requirements for the Treatment and Transportation of Waste and Waste Oil Products, CM Decree 131/13.07.2000, SG 59/27.01.2000, effective since 01.01.2001.

Disposal: No special legislation exists. The current waste management legislation applies.

HOUSEHOLD CHEMICALS

Import:
• **Regulation 27** on the Import of Goods of Significance for Public Health, SG 75/1995, amended SG 78/02.09.2003, SG 4/16.01.2004, effective 16.01.2004, SG 15/24.02.2004.

Production/Storage/Use:
• **Regulation** on the Specific Requirements on the Marketing of Detergents, SG 62/16.07.2004.
• **Regulation 26/23.05.2001** on the Hygienic Requirements for Cosmetics, issued by the MH, SG 60/2001, effective 7.07.2003, amended SG 63/2001, supplemented SG 91/2002, amended and supplemented SG 78/2003.
• **Regulation 44** on the Terms and Procedures for Marketing of Biocide Preparations, SG 113/28.12.2004
• **Regulation 35** on hygienic requirements of domestic chemical preparations, SG **83/1995**

*Transport/Distribution/Disposal**:*** No special legislation exists.

WASTE
Law of Waste Management, SG 86/24.03.2003 amended SG 70/2004, effective 1.01.2005.

Import:
• **Regulation** on the Procedures and Manner of Importing, Exporting and Transit of Waste and on the Cases Requiring Bank Guarantees or Insurances, SG 102/26.10.2004.
• **Regulation 3/1.04.2004** on Waste Classification, SG 44/25.04.2004.

Treatment/Transport:
• **Regulation** on the Treatment and Transportation Industrial and Hazardous Waste**,** CM Decree 53/19.03.1999, SG 29/30.03.1999

• **Regulation on the Requirements for Placing on the Market of Luminescent and Other Lamps, Containing Mercury, and on the Treatment of and Transportation of Out-of-use Luminescent and Other Lamps Containing Mercury**, **,** CM Decree 260/05.12.2000, SG 101/12.12.2000, effective 01.01.2001
• **Regulation on the Requirements for the Treatment and Transportation of Waste and Waste Oil Products**, CM Decree 131/13.07.2000, SG 59/27.01.2000, effective since 01.01.2001.
• **Regulation 3/1.04.2004** on Waste Classification, SG 44/25.04.2004.

Disposal/Storage:
• **Regulation 6** on the Procedure for Filling out of Report and Information Documents for the Waste Management Activities, SG 78/07.09.2004.
• **Regulation 7** on the Requirements for the Sites for Waste Treatment Facilities, SG 81/17.09.2004
• **Regulation 8** on the Terms and Requirements for Construction and Operation of Waste Recycling and Disposal Landfills and Other Facilities, SG 83/17.09.2004**.**
• **Regulation 9/28.09.2004** on the Procedures and Forms for Submission of Information about Waste Related Activities, and the Procedures for the Public Register of Issued Permits, Registration Documents and Closed Facilities and Activities, SG 95/2004
• **Regulation 3/1.04.2004** on Waste Classification, SG 44/25.04.2004.

Use:
• **Regulation** on the Procedures and Manner of Using of Waste-Water Treatment Sludge in Agriculture, SG 112/23.12.2004.
• **Regulation** on the Terms and Conditions for Reduction of Contamination Caused by Waste from End-of-life Vehicles, CM Decree 257/09.11.2001, SG 98/16.11.2001, amended SG 110/21.12.2001, SG 104/26.11.2004
• **Regulation** on the Requirements for the Production and Placing on the Market of Batteries and Accumulators and for Treatment and Transportation of Spent Batteries and Accumulators, CM Decree 134/17.07.2000, SG 61/25.07.2000.
• **Regulation 3/1.04.2004** on Waste Classification, SG 44/25.04.2004.
• **Regulation** on the Trading in Waste and Debris from Ferrous and Non-Ferrous Metals and their Alloys, SG 47/18.05.2001, amended SG 82/25.09.2001, effective 25.09.2001.
• **Regulation** on packing and и packaging waste, SG 104/26.11.2004

Distribution: Distribution is carried out by licensed companies.

POPs in Bulgaria – Conclusions and Environmentally Friendly Recommendations

From our point of view in the Republic of Bulgaria the situation with POPs is very difficult. In this relatively small territory (110994 km^2), even official data shows a huge amount of disposed hazardous waste containing persistent organic pollutants. Having in mind that the official inventory of POPs was made in a formal way (it was made predominantly on documents) – the real existing amount of POPs could be much more.

The obsolete pesticides are the biggest (as amount) problem among all POPs in the country.

The method of BB cubes, chosen from the government for treatment the obsolete pesticides is in fact delaying the problem in time. Even its implementation is not getting on very fast. The new amounts are being found every year.

From the existing stocks, some are over 50 years old and are kept in poor conditions with few or no safety precautions. No signs are placed on the buildings and no informational campaigns are conducted. On the other hand the warehouses in poor condition (which are between 40-60 % of all of them) are situated in small and remove villages where the population sometimes consists of poor untaught minorities.

There is a big gap between the need and provision of consultancy and advice on pesticide use, as well as general agrarian consultancy and advice. As the legal pesticides are too expensive, the farmers in fact buy less than they need. The logical consequence leads to the temptation of using these banned and dangerous chemicals. That is why, despite being banned, these pesticides are still in use in many parts of the country.

As well as the obsolete pesticides themselves, there are big quantities of very contaminated soil, empty containers and other contaminated materials. Some are left in the open with lack of security. Containers inside the stores are often badly corroded or otherwise deteriorated.

The so called by government - “liquidated stores” are actually strongly contaminated sites with lack of information for the owners about the danger of using them for farming crops.

As concerns unintentionally generated persistent organic pollutants, a worrying signal is that the government still has incineration as one of the solutions for waste management. (Ministry of Environment and Waters is conducting the procedure for constructing an incineration factory for Hazardous Waste)

Bulgaria does not have a regular monitoring system for the state of air, ground water, soils or food about contamination with POPs despite the fact that dioxins, furans, polychlorinated biphenyls, hexachlorobenzene and polyaromatic hydrocarbons are emitted by various industrial and other plants. The lack of analyses of soil, water and food in Bulgaria is a serious threat to human health and to the environment.

Indeed the main part of legislation has already been harmonized with the European legislation. However, its real and practical enforcement is poor and often is only on paper.

Regarding the public access to information, there is not a public accessible source of POPs information which could be used by non officials – business and NGOs.

The information on POPs could be obtained only after official request and as our experience shows it is too incomplete and difficult to obtain.

Independently that the solutions on POPs are the responsibility of officials, we think that some recommendations could be addressed in this report and from the other parts of the community

- To develop a true database of existing old and new sites and sources of POPs, by conducting the real, not formal inventory of :

- The warehouses of obsolete pesticides, landfills containing hazardous waste from industry and/or health care sector, etc;

- Chemical industry, metallurgical industry, incineration, pulp mills, etc.

- Residues in ground or drinking water, soil, etc. in the risky zones of the country.

All databases and information to be publicly available on internet.

- The assessment of contaminated sites with removed stores for obsolete pesticides to be conduct;

- To develop a plan for cleaning up of the old ecological burdens (POPs hot-spots). The plan should include the timetable and the priority for cleaning up of the hot-spot should be based on the stage of the risk for humans and environment.

- To create a list of environmentally-friendly technologies for POPs elimination;

- Environmentally-friendly liquidations of POPs contamination (POPs hot-spots, POPs waste, POPs contaminated equipment, etc.), preferring technologies and methods with the ability of complete POPs´ destruction to those which only remove POPs to other waste

- Scientific research on POPs to be promoted and technical and financial support to be provided. On this base to be created an effective monitoring system of POPs releases in the environment as well as monitoring programme of humans (e.g. the breast milk, blood, etc.) and the environment (water, air, soil, animals). These programs should cover not only POPs, but also other dangerous chemicals such as heavy metals (as mercury, lead, etc.), other chemicals and pesticides – e.g. lindane, brominated flame retardants, etc.

- To give priority in all future decisions on prevention of creating new sources of POPs (for instance construction of new waste incinerators);

- Concrete, financially proofed program for substitution of materials, processes and products which cause (or may cause) appearance of POPs, during their life cycle

(for instance chlorine use, PVC production and usage - halogenated compounds in all sectors of life, etc.);

- Using „zero waste“ strategy (prevention of creating waste, systematic separation and recycling) when working out plans of waste management on municipal, regional and state levels;

- Improvement of law enforcement in the field of environmental pollution by POPs. Practical implementation of existing legislation;

- Financial and legislative support for the Best Environmental Practices and application of Best Available Techniques in industry , agriculture, social sector, etc.;

- Monitoring system of POPs in food and drinking water to be established and the lower limits, considered the needs of vulnerable groups such as children and unborn;

- Some chemicals such as lindane, brominated flame retardants (BFRs) polyaromatic hydrocarbons (PAHs), polybrominated diphenylethers, chlorinated paraffins, chlordecone, hexabromobiphenyl, PFOS, pentachlorobenzene, and endosulphan to be treated as new POPs despite they have not been included yet in the on the list of the Stockholm Convention;
- Entire application of the principle „polluters pays“ and guarantee that communities will not be the economic victims of the changes;

- Informing and educating of public regarding POPs;

- Real and free access to information about POPs and government’s activities in the frame of NIP;

- Long-term training programmes, not only for administration, but as well for business and NGOs;

- Provision of additional financing to build capacity of environmental NGOs in the country and providing their active participation in the processes and activity of NIP by open and fair call for proposals ;

Resources on POPs

- **Main Responsible Institution**

The Ministry of Health – control substances and preparations that are harmful to human health or that are contained in pharmaceutical, cosmetic or chemical preparations for industrial or large-scale use; http://www.mh.government.bg/index-en.php
The Ministry of Agriculture and Forestry – agrochemicals /mainly fertilizers and pesticides/; http://www.mzgar.government.bg/mz_eng/default.asp
The Ministry of Economy - substances, products and waste susceptible to reuse; http://www.mi.government.bg/eng/index.html
The Ministry of Environment and Water – import or export of certain hazardous chemicals, notification and evaluation of risks from new chemical substances; http://www.moew.government.bg/index_e.html

- **Useful Links**

Websites:
A) Governments / IGOs / Institutions
Stockholm Convention website - http://www.pops.int/
The United Nations in Albania - http://www.un.org.al/
UNEP Chemicals website – http://www.unep.org/
http://www.unep.org/themes/chemicals/
UNDP – POPs - http://www.undp.org/gef/05/portfolio/chemicals.html#pops
UNIDO – POPs - http://www.unido.org/doc/46478
UNDP / GEF – http://www.undp.org/gef/05/
GEF - Small Grants Programme - http://sgp.undp.org/
World Health Organisation - http://www.who.int/en/
Basel Convention website - http://www.basel.int/
EU (European Union) website – POPs -
http://www.europa.eu.int/comm/environment/dioxin/index.htm
European Environment and Health Committee - http://www.euro.who.int/eehc
World Bank POPs website -
http://lnweb18.worldbank.org/ESSD/envext.nsf/50ParentDoc/PersistentOrganicPollutants?Opendocument
Meteorological Synthesizing Centre-East - http://www.msceast.org/about.html
U.S. Environmental Protection Agency - http://www.epa.gov/
Danish Environmental Protection Agency - http://www.mst.dk/homepage/
Food and Agriculture Organization of the United Nations - http://www.fao.org/
Protocol on Pollutant Release and Transfer Registers -
http://www.unece.org/env/pp/prtr.htm
EUNECE (United Nations Economic Commission for Europe - http://www.unece.org/
European Environmental Agency - http://www.eea.eu.int/
OECD (Organisation for Economic Co-operation and Development) -
http://www.oecd.org/

NGOs / NGOs Networks

IPEN (International POPs Elimination Network) website - http://ipen.ecn.cz/

IPEP (International POPs Elimination Project) website - http://www.oztoxics.org/ipepweb/
Greenpeace website - http://www.greenpeace.org/international_en/
WWF website - http://www.panda.org/
http://www.panda.org/about_wwf/what_we_do/toxics/index.cfm
GAIA (Global Anti- Incinerator Alliance, Global Alliance for Incinerator Alternatives) - http://www.no-burn.org/
PAN (Pesticide Action Network International) website - http://www.pan-international.org/

Information resources

Databases / Magazines:

- Toxicological databases – international

ATSDR (Agency for Toxic Substances and Disease Registry) - http://www.atsdr.cdc.gov/
INCHEM (Chemical Safety Information from Intergovernmental Organizations) - http://www.inchem.org/
Haz-Map Occupational Exposure to Hazardous Agents - http://hazmap.nlm.nih.gov/index.html

- Magazines, reports

Environmental Health Perspectives - http://ehp.niehs.nih.gov/
http://europa.eu.int/

Contacts for Bulgarian NGOs:

IFCS National Focal Point – Bulgaria
Ministry of Environment and Water – Mrs. Silvia Raykova - Senior Expert
67 W. Gladstone St, Sofia, Bulgaria
Tel: +359 2 94 06 275/94 06 289
Fax: +359 2 98 13 384
email: sraykova@moew.govrn.bg

http://www.who.int/ifcs/focalpoints/bulgaria/en/

UNDP
The United Nations Development Programme in Bulgaria
Address: 25 Khan Krum Str., P.O.Box 700, 1040 Sofia, Bulgaria

Tel: (359 2) 96 96 100
Fax: (359 2) 981 31 84
E-mail: info@undp.bg

English language: http://www.undp.bg/en/index.php
Bulgarian language: http://www.undp.bg/bg/index.php

UNDP Small Grants Programme (SGP) Bulgaria
Address: 7A, Graf Ignatiev Str., Apt 6, Sofia, 1000
Tel.: +359 2 9804141
Fax: +359 2 9804433
Email: VeleslavaA@unops.org

Ms. Veleslava Petrova Abadzhieva - National Coordinator
Ms. Milena Ignatova - Programme Associate

UNIDO - *UNIDO does not currently maintain an Office in Bulgaria.*

UNEP – Focal point for Stockholm Convention
Ministry of Environment and Water - Mrs. Katya Stanke Vasileva, Expert, Coordination of the Regional Environment and Waters Directorate
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References

1. National Profile for the Management of Chemical Substances and Preparations in the Republic of Bulgaria, 2004
2. http://nfpbg.eionet.eu.int/eea/bg/publicat/yearbook/landsoil/2000/landsoil/map4.htm
3. NM Ecoglasnost, Tackle Pesticide Problems in Bulgaria – Reduce the Use of Hazardous Pesticides in Agriculture and Households, 2004.
4. Georgiev G. (1974) Methods of determination of pesticide residues in foods. Doctoral thesis, Sofia.
5. Georgiev et al. (1972) Concentrations of organochlorine pesticides in drinking waters. Abstracts Vth International Congress of Rural Medicine (Varna, Bulgaria), May 1972.
6. Gitzova S. (1976) Water pollution by organochlorine pesticides residues and methods for their determination. Dissertation, Sofia.
7. Kujumdgieva T. (1976) Determination of organochlorine pesticides in soil and their levels in some regions in Bulgaria. Dissertation, Sofia.
8. Tasheva M. (1995) Pesticide regulation during social transition in Eastern Europe: The Bulgarian approach. Pesticide Outlook,6 (1), 32-36.
9. Tasheva M; Kaloyanova F. (1991) Criteria for registration of pesticides. Ministry of Health, Sofia, Bulgaria, 4 pp.
10. Tasheva M. (Team leader) (1995) Danube Regional Pesticide Study, Report on phase I, Bulgaria, Environmental Programme for the Danube River Basin.
11. Vasilev K. (Team leader) (1997) Control of non-point pollution from agricultural sources; Phase report; National Integrated Programme on Environment and Health Bulgaria (1994-1997).

12. Danube Regional Pesticide Study, Service Contract 95.0100, PHARE ZZ 9111/0106. 1997 /Tasheva 1997/)
13. DiGangi J., Petrlik J., The egg report, IPEN 2004
14. MoEW, National Profile for the Management of Chemical Substances, 1997.
15. National Environmental Strategy and Action Plan, 2000-2006, Republic of Bulgaria, Council of Ministers, MOEW, Sofia 2001.
16. Chemical Substance Management Regulations in Bulgaria
17. Waste Management Regulations in Bulgaria.
18. MoEW, State of the Obsolete and Banned Pesticides in Bulgaria, Sofia, 1997
19. MoEW, Information about the Database of Obsolete and Banned Plant Chemicals, Sofia, 1999
20. Council of Ministers, Environmental Report, 1998 – The Green Book, Bulgaria, 2000
21. Council of Ministers, Annual Book on the State of the Environment, 2001, Bulgaria,2003
22. EC, Joint Research Center, Dioxin Emissions in the Candidate Countries:Sources, Emission Inventories, Reduction Policies & Measures
23. TNO Report Dioxin Emissions in the Candidate Countries, 2005.
24. UNEP Chemicals, Guidelines for Identification of PCBs and Materials Containing PCBs, 1999.
25. UNEP Chemicals, Standardized Toolkit for Identification and Quantification of Dioxin and Furan Releases, 2005.
26. NM Ecoglasnost, Assessment of the Actual Condition with the Problem with Obsolete Pesticides in Bulgaria, project report, 2003.

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