REPUBLIC OF CYPRUS

MINISTRY OF HEALTH

STATE GENERAL LABORATORY

Laboratory of Pesticide Residues

The Official Monitoring of Pesticide Residues & PCBs in Cyprus: From Compliance Control to Effective Consumer Protection

1987-2003

Nicosia – Cyprus

November 2003

Control & Alarm Function

State General Laboratory, Kimonos 44, Nicosia 1451,
Cyprus

Contact Persons : Dr Stella Canna Michaelidou, Senior Chemist, Head of the Section and Dr Popi Ziegler Head of the Laboratory of Pesticide Residues

Email: stellacm@spidernet.com.cy or sgl.sectionc@cytanet.com.cy

Tel. : 357 22 301440 & 357 22 301443

Fax : 357 22 316 434

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1. INTRODUCTION

1.1. General Information on Cyprus

Cyprus, is an island in the Eastern Mediterranean Sea with an area of 10,000 square kilometers and an estimated population of app. 760,000 citizens. The population consists of approximately 82% Greek Cypriots and 18% Turkish Cypriots. The Northern part of the island (about 37% of the total territory) is under occupation by Turkey since 1974.

The Cyprus economy displays most of the characteristics of a developed European economy while, at the same time preserving conditions of growth, stability and progressive welfare improvement. The economy depends greatly on the rapidly growing tourist industry and on the export of agricultural and industrial products to the European Union (E.U.). As Cyprus is approaching towards full membership in the European Union on May 2004, the policy of the Government is focused towards harmonization of the Cyprus Legislation, control systems and infrastructure with those of the E.U. The Ministry of Health, and the State General Laboratory (SGL) in particular, aligned with this policy has a close follow up of the developments in their field of responsibilities with particular focus on aspects related to Food Safety and the Quality of the Environment.

The misuse of pesticides can seriously affect the food safety and the sustainability of the Ecosystem. The use of pesticides on a global scale has grown rapidly over the years and results in a substantial increase in yields, improvement of certain quality aspects of foodstuffs, and consequently in large economic benefits to society. Despite these benefits, pesticides can become extremely dangerous especially when they are not applied properly. Pesticides and most of their metabolites are toxic and hazardous, affecting directly or indirectly human health, polluting natural resources and disturbing the Ecosystem's sensitive balance. Man, through the food chain and the environment, might be exposed continuously to very small quantities of pesticide residues. This can result in various adverse toxic effects, either target organ specific i.e. effects, on a specific organ or biological function, or direct effects on the genetic material of the cells, which could lead to hereditary mutations, oncogenesis or even promote the development of cancer.

For the above reasons, on national and international level, authorities and organizations are promoting continuously, stricter legislative and other measures to protect Public Health and the environment. At the same time international research is targeting towards less toxic and less persistent compounds and the application of the Integrated Pest Management Methods, targeting towards the elimination of the use and hazards of Pesticides. But as long as pesticides are still in use, farmers and consumers must be aware of the relevant hazards and adhere to all safety and preventive measures.

The establishment of maximum residue limits (MRLs) is essential for the protection of health and the environment. When these levels are not exceeded, it is considered that consumers are not exposed to a considerable risk. The relevant Cyprus MRLs are under a continuous harmonization process, in line with the respective legislation of the European Union.

1.2 Integrated Control of Pesticides in Cyprus

For the safe and effective use of pesticides an integrated approach is followed in Cyprus, focusing towards prevention of the relevant problems. The intergraded system comprises

- **Registration, quality control of pesticides and education of farmers for safe application according to good agricultural practice,**
- **National Monitoring System for pesticide residues in food,**
- **Monitoring pesticides in the environment, mainly in the water supply system and the water resources of the island.**

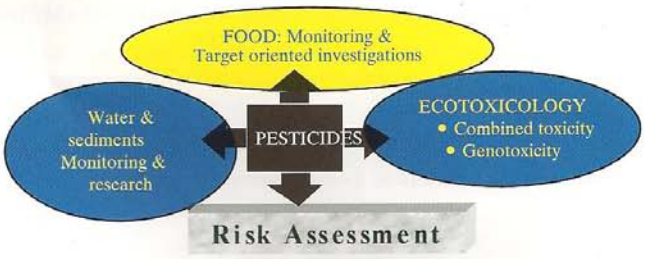
The aim of this approach is:

- **To protect Public Health, the Environment and the long-term sustainability of Water Resources,**
- **To support the export trade, the competitiveness of local production and the National Economy in general, and**
- **To sustain the Agriculture Sector**

The Ministry of Health (competent Authority for all pesticide residues related matters) and the State General Laboratory (SGL) , one of its five Departments , are actively involved in all stages of Pesticides Management and Control in Cyprus. The Director of SGL or its representative is member of the Pest Control Product Board and members of the staff are participating in the Technical Committee of the Board and the sub-committee for the Pesticide Residues. Three of the Labs at the SGL, namely the Pesticide Residues, the Environmental Chemistry (I) and the Ecotoxicology Lab, are dealing with food safety, environmental, ecotoxicological and Risk Assessment aspects of Pesticides respectively.

The ultimate goal is to provide information for decision making and enhance pro-active management of pesticides

Pesticides: Research & Monitoring At the State General Laboratory



2. PESTICIDE RESIDUES CONTROL: THE LEGAL FRAMEWORK AND COMPETENCY

An EU harmonized Legislation covers all Pesticide related aspects with well defined responsibilities

- **Ministry of Health is the competent authority for the development, harmonization and enforcement of the Pesticide Residues Legislation and the national monitoring and control programs for pesticide residues in food and waters.**
- **Ministry of Agriculture, Natural Resources and Environment (MANRE) is the competent authority for the development and enforcement of the Legislation related to the quality and use of Pesticides (Registration, quality control, Good Agricultural Practice (GAP)- safe application of pesticide etc).**

The legal framework for the control of Pesticide Residues in food comprises the harmonised Food (Control and Sale) Laws 54(I)/96-N. 161 (I)/2003 & Regulations, the Pesticide Residues Regulations 2001 (RAA261/2001, RAA 775/2003) harmonized with the all relevant EU Directives up to the year 2000 and the baby food Regulations. Sampling is done according to the Harmonized Sampling Regulation RAA 116/2002. Legislation is in a continuous process of full harmonization. The Acquis on Pesticide Residues will be fully implemented by the end of April 2004.

The responsibility for the enforcement of the Food Law and Pesticide Residues Regulations and sampling is allocated to the Department of Medical and Public Health Services (MPHS).

The SGL of the Ministry of Health is designated as the Cyprus Official Laboratory for the control of Food Quality and Safety and its Pesticide Residue Lab (PR-SGL) is the

Official Lab for the Monitoring & Surveillance of Pesticide Residues in Food of Plant and Animal Origin.

The PR-SGL Lab has the leading role in the design and implementation of multisectoral collaboration programs applied in cooperation with the Dept of MPHS and the Department of Commerce. This program covers the local market, including imports and exports.

Within the framework of the Pesticides Authorization/Registration Law, the Lab of the Department of Agriculture monitors pesticides residues at the field level. This activity aims at controlling the application of Good Agricultural Practices and potential illegal use of non-authorized pesticides.

There is a close collaboration and coordination among the Ministries of Health, MANRE and the Ministry of Commerce, Industry and Tourism in all interrelated activities. This is promoted through the functioning of the Food Safety Council (established in 2003) and the ad-hoc co-ordinating Committee of Pesticide Residues. In addition to these two bodies, collaboration is achieved within the Coordinating Committee of Public Health, the Food Council and the Pesticides Registration Board .

3 THE OFFICIAL NATIONAL MONITORING AND SURVEILLANCE SYSTEM

3.1 The Official Pesticide Residues Lab of the State General Laboratory

The PR-SGL is one of the 20 specialized labs of the SGL. The current infrastructure of the SGL encompasses chemical and microbiological labs, virology, ecotoxicology, GMOs Lab, a Quality Assurance Team and an Information Technology Unit.

The SGL has a highly qualified personnel and state-of-the art equipment. 76 scientists are permanently employed at the SGL and 28 additional scientists are working on a one –year contract.

The overall mandate of the SGL is to supply scientific information for the policy makers and support the control functions of the Government in the fields of public health and consumer protection, the environment and justice.

The Pesticides Residue Lab was established in 1980. Since then, it is continuously

developing and strengthening its expertise and infrastructure for effective monitoring and surveillance, in response to the dynamic nature and the increasing importance of the residues related issues.

The Mission of the Pesticide Residue Laboratory (PR-SGL)

The PR-SGL, aims to support food safety and pro-active management of pesticides through early identification of existing and emerging problems

THE OBJECTIVES of the PR-SGL

- **To provide analytical services of the highest quality**
- **To Improve the safety of agricultural products and Protect Public Health**
- **To Support the National Economy, the export trade and the competitiveness of the local production**

THE SCOPE

- **Official Monitoring and Surveillance to cover the needs for:**

- **Pesticides Regulations-Harmonization**
- **Problem oriented Research**
- **Risk assessment**

❖ **Multisectoral/ multioriented, coordinating programs are designed and implemented for effective control and early identification of threats "control and alarm function".** The programs include samples of plant and animal origin from the local market, imports and exports. Complementary pilot Surveillance studies are carried out on specific target food or problematic pesticide-food combinations.

.:. The problem oriented research and method development / validation carried out at the Pesticide Residues Laboratory, aims at:

- o defining future monitoring priorities and
- o identifying emerging problems and insure food safety. Special investigation studies are carried out on target foods especially those consumed by children. Emphasis is given on those pesticides, defined as potential oncogens or which are suspect genotoxics

Research is implemented within both national and international projects. Substantial financial and technical support has been provided from UNHCR, WHO, IAEA and European Institutes. The development and validation of sensitive and wide spectrum - multiresidue methods is at the focus. (MRMs) With MRMs are analysed organochlorine, organophosphorous, organonitrogen, pyrethroids, dithiocarbamates, N-Methylcarbamates, triazoles and other pesticides.

The PR-SGL is also responsible for

.:. the monitoring of PCBs in food,

.:. the harmonization of the Pesticide Residues related Legislation and for following up new developments in European Union.

Personnel and Infrastructure

The PR-SGL lab has highly qualified and experienced personnel (with experience of more than 33 years), all except one assistant are university graduates (two of them are PHD holders), trained in Europe and the USA (annex 11). Instruments of the latest technology are available. On Table 1 (Annex 11) the instruments used almost exclusively for the residues analysis are given. Apart from these, the Lab has access to the wider technical infrastructure and integrated expertise of the SGL.

Quality Assurance and Accreditation

The Pesticide Residues Laboratory of the SGL is accredited by the Greek Accreditation body ESYD since 2002 (according to EN 45001) and from June 2003 is accredited by the same body according to ISO / IEC 17025. Since 1990, the PR-SGL has applied an Internal Quality Assurance /management Program in order to ensure the creditability and effectiveness of the control system according to the EU practice. This has been developed based on the Guidelines for Pesticide Residues Monitoring in EU, the EN 45001, the ISO Guides and GLP. The Lab of Pesticide

Residues has participated successfully since 1993 in International ring tests e.g. Gems/Food, GTZ, and Fapas and the European Commission's Proficiency Test 1999 , 2002 and 2003.

The Lab has been internationally recognized for its expertise and quality through its effective participation in European programs and proficiency tests.

International cooperation and activities

The Laboratory has participated in GEMS/Food-EURO/Cyprus: Research and Monitoring Project on the Environmental Contamination of Food (1995-1999), the UNCHR 1993- Project: "Prevention of Food and Water Contamination Related to Environmental Factors". The Lab provides data to UNEP Chemicals, WHO and FAO. The Senior Chemist, the Technical Manager and the staff of the lab are members of international and national committees, EU expert and working groups , the European Science Foundation, the Intas Foundation and the COST .

3.2. Official Monitoring Programs and Surveillance: Conceptual and application aspects

Monitoring activities started on 1980, have undergone different stages of development. At the beginning the predominant target was to fulfil the needs of compliance control.

Nowadays monitoring has been developed to a multi-objective system with control and alarm function aiming at maximizing consumer protection.

Laboratory's programs are in line with the respective European standards and requirements and include . products of plant and animal origin locally produced and imported. The same program provides also for the effective control of exports

Control of Samples of Plant Origin 2002:
Local Production *(including Exports)* Vs Imports

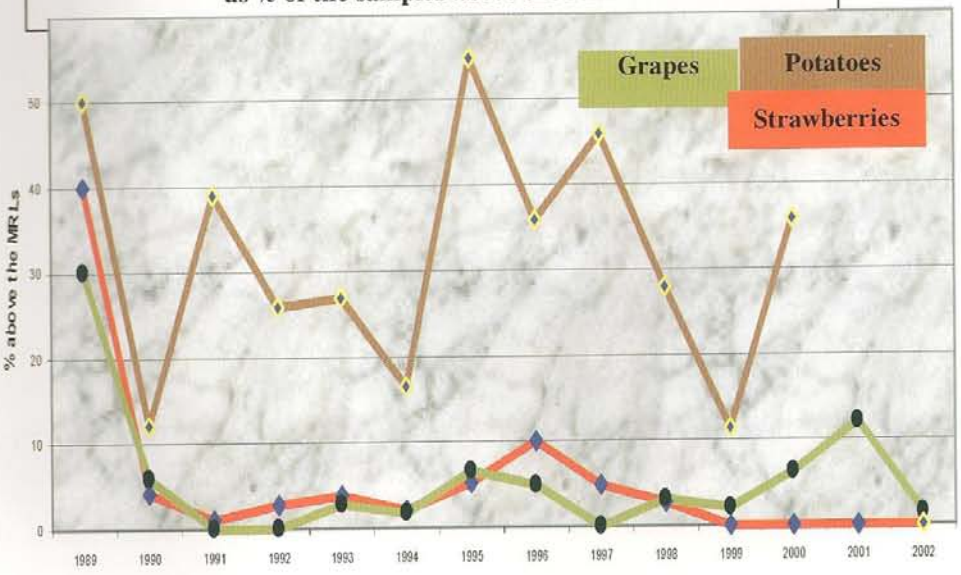
The design of monitoring program is done according to known problems and violations, pattern of pesticide usage (according to the Good and the "Actual applied" Agricultural practice), information from the EU Rapid Alert System and high rate of consumption by the consumers, especially by children. Programs are primarily of a **surveillance type** (according to the definition given by Sanco.

The sampling regime is based on a combination of «at random» sampling and target oriented sampling on specific food and food–pesticide combinations.

The system is focusing towards problematic pesticides/food combinations, with the ultimate goal to identify existing and emerging problems and promote appropriate corrective measures (i.e. improvement or change of the agricultural practice etc). This combination of "at random" control with target oriented sampling, is in a way biased towards problematic products and consequently might end up with higher violation rates than the ones that would be reflected by a truly random sampling. **Nevertheless, this approach leads to identification of patterns and trends in residues and eventually to the elimination of problems, higher degree of consumer protection, and cost-effectiveness of laboratory resources.**

On figure 1, the trends expressed as % of non compliance samples are shown for the 3 target food i.e grapes, potatoes and strawberries. The effectiveness of the system is clearly demonstrated in the case of strawberries where violations from 40% in 1989 has dropped and remained at 0% for the last 3 years.

Fig. 1 Trends of Residues levels in Target Foods 1989-2002 as % of the samples above the MRLs



Main Criteria for sample selection

a. Commodity-pesticide combinations for which there exist harmonized non-zero tolerances.

b. The commodity-pesticide combinations with harmonized zero tolerances that can be analyzed by a multi-residue method (MRM).

c. The commodity-pesticide combinations for which improper use of the pesticide is expected or experienced from previous years monitoring.

d. Consumption rate for the general population and for children.

e. Potential oncogenic properties.

f. Availability of cost-effective analytical methods and existing capabilities.

Methodology

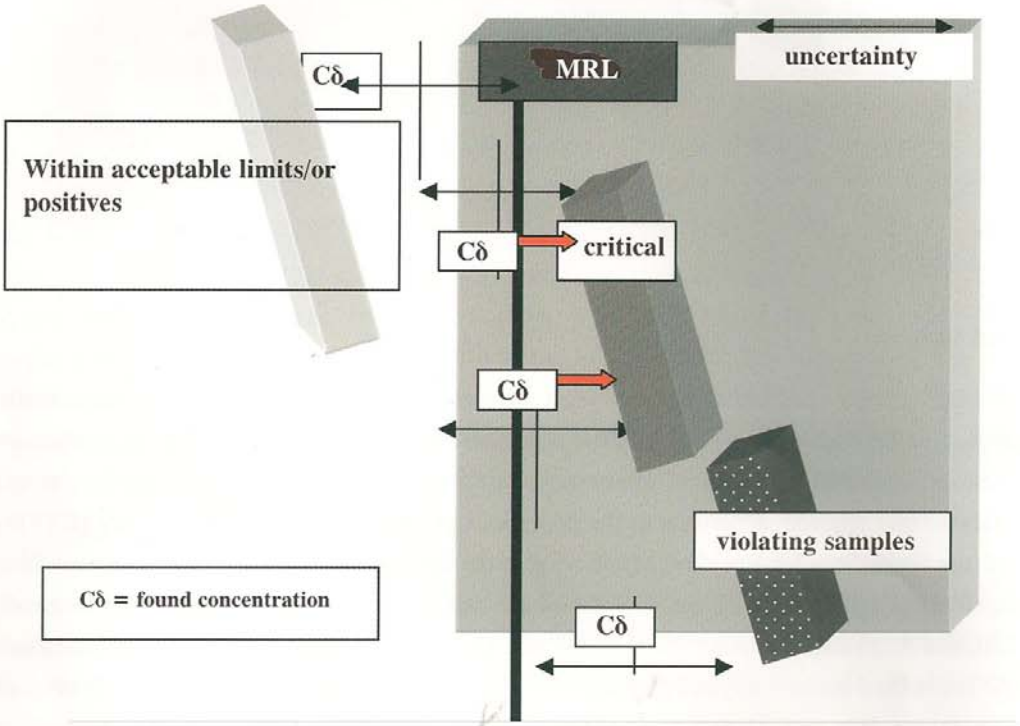
To analyze large numbers of samples whose treatment history with pesticides is not usually known, multiresidue methods (MRMs) that can simultaneously determine a number of pesticides and PCBs are most often developed and validated. Methods are developed, validated and applied according to the provisions of the Greek accreditation body (ESYD) and the Guidelines for Residues Monitoring in the EU. As a further save guard against false negatives the guidelines of the EU-document "Quality Control Procedures for Pesticide Residues Analysis, Document 7826/VI/97" and Guidelines 1999/2000 are also implemented. The accredited method applied currently for fruit, vegetables and milk covers 101 Pesticides (see Annex IV) and 17 PCBs. The number of validated pesticides will increase and is expected to be 200 by the end of 2003 (Annex III). Additional unknown or not validated pesticides can be identified through "full scan" mode of GC/ MS/ITD and the use of Nist library. Detection limits are ranging from 0,0003 to 0,07 mg/kg in fruits , vegetables and cow milk .The MRM method for meat covers 17 Pesticides and 15 PCBs with indicative detection limits (highly depended on fat content) ranging from 0,006 to 0,06 mg/kg on fat. A selective method for dithiocarbamates is also used covering 8 pesticides

Management of the results

To improve management of the results and to increase the cost-effectiveness of the follow up activities, the lab has introduced since 2002 the use of the term "critical" sample for those samples with critical levels of pesticides, which however cannot be considered as real legal violations of the MRLs when uncertainties are included in the calculation. The samples are ranked as samples **"within acceptable levels", "critical" and "violating samples". The term**

"trace" is used to indicate residues detected, but at levels below the limit of quantification.
The ranking of samples is schematically presented on the following diagram

Classification of samples according to Pesticide Residues levels determined



The **follow up actions**

In the case of " violating"* or "critical" samples, legal or administrative follow up actions are taken according to the case.

1. Written notification to the Dept. of Agriculture, Dept. of Commerce and to the Service for the Protection of Consumers is provided for all critical, violating samples and any other problematic samples. The problem and its causes can then be investigated and guidance can be provided to the farmers to prevent further violations.
2. All ***"violating" samples*** are legally prosecuted by the Dept. of Medical and Public Health Services.
3. Every effort is made to withdraw violating products from the market. Violating products are not allowed to be exported.
4. Consignments of imported samples non complying with the EU harmonized MRLs, are not permitted to enter Cyprus .
5. When necessary notification to the EU-rapid alert-system can be submitted through Greece.

* **violating samples** *: those which without any reasonable doubt are above the legal limit Ref. from Sanco/1020/2002-rev-3*

4. MAIN RESULTS AND EVALUATION FROM 1987 TO 2002

The main results and identified trends for the above period are presented in this section. Results when relevant, are compared with related data from the report "Monitoring of Pesticides Residues in EU, Norway, Iceland and Liechtenstein 2001" (EU&N&Ic&, Sanco/20/03. However, this comparison is only indicative. As clearly stated in the above report, the results can vary significantly between the different countries mainly because of different design and capabilities of the monitoring programs, definition of exceeded levels (e.g. including or excluding analytical uncertainties), and many other factors.

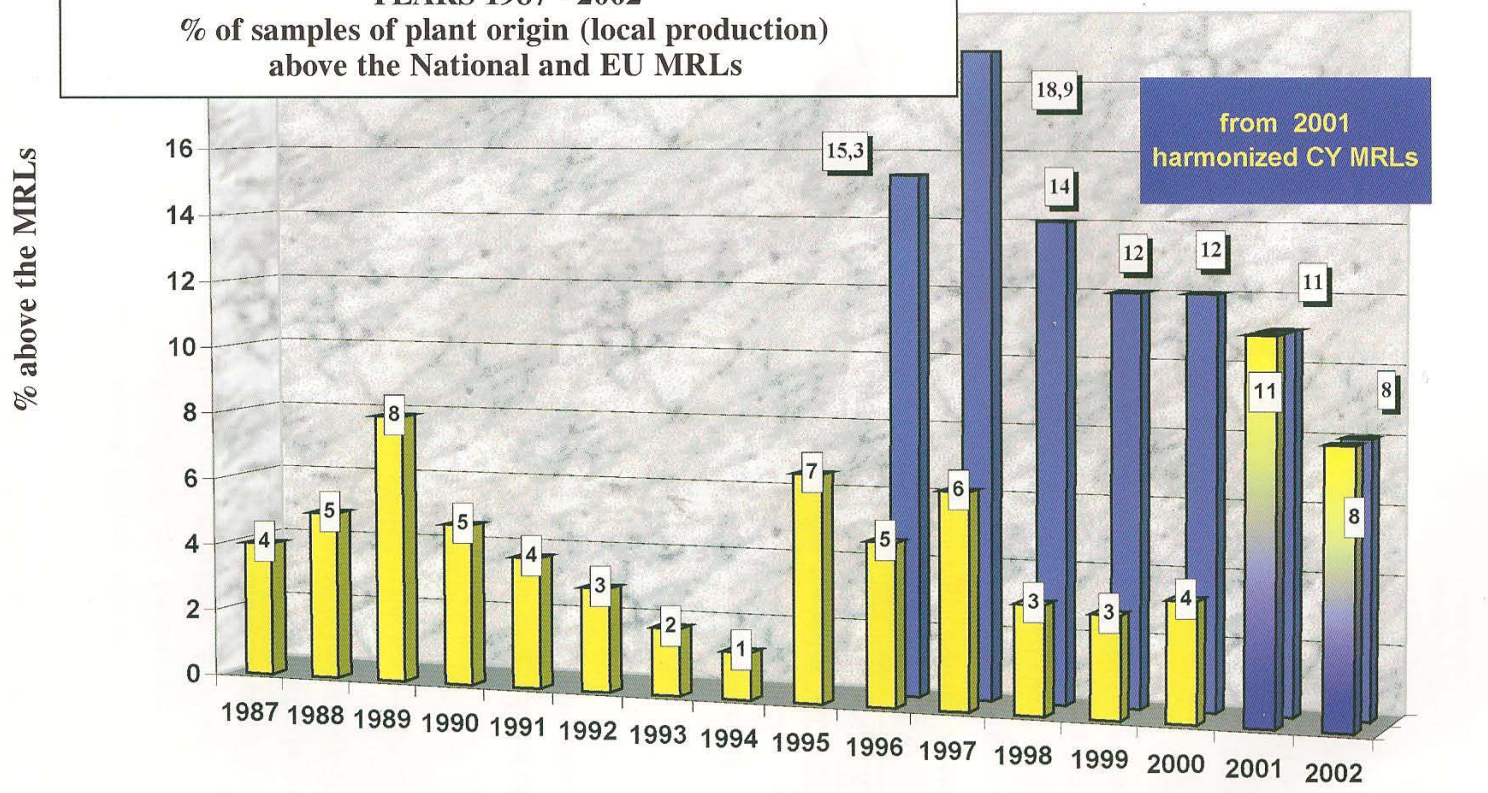
4.1 General trends over the years 1987 –2002

Fig 2 depicts an overview of the trends of exceedances in samples of plant origin (mainly fruits and vegetables) from 1987 till 2002. Since 2001, the measurement uncertainties were included in the evaluation of the results.

Despite the fact that from 1996 to 2002 the analytical capabilities of the Lab have been strengthened, a steady downwards trend in the % of the exceedances from both the National and EU MRLs is observed. However, the figure for 2002 (8%) is still relatively high, lying at the upper part of the range observed for the EU&N&L&I in 2001 (1,3-9,1). Further reduction of the % of exceedances can be expected as a result of the full harmonization of legislation for Pesticide Residues and Pesticide Authorization and the improvement of agricultural practices. In addition to the 8% of real exceedances, 9% of the samples fall in the category of "critical" ones. In 45% of the samples pesticides were determined at the MRL level or below and in 38% of the samples pesticides were non detectable. The respective figures for the EU&N&L&I in 2001 range from 24- 49% (mean 37%) and 41- 73 %, (mean 59%).

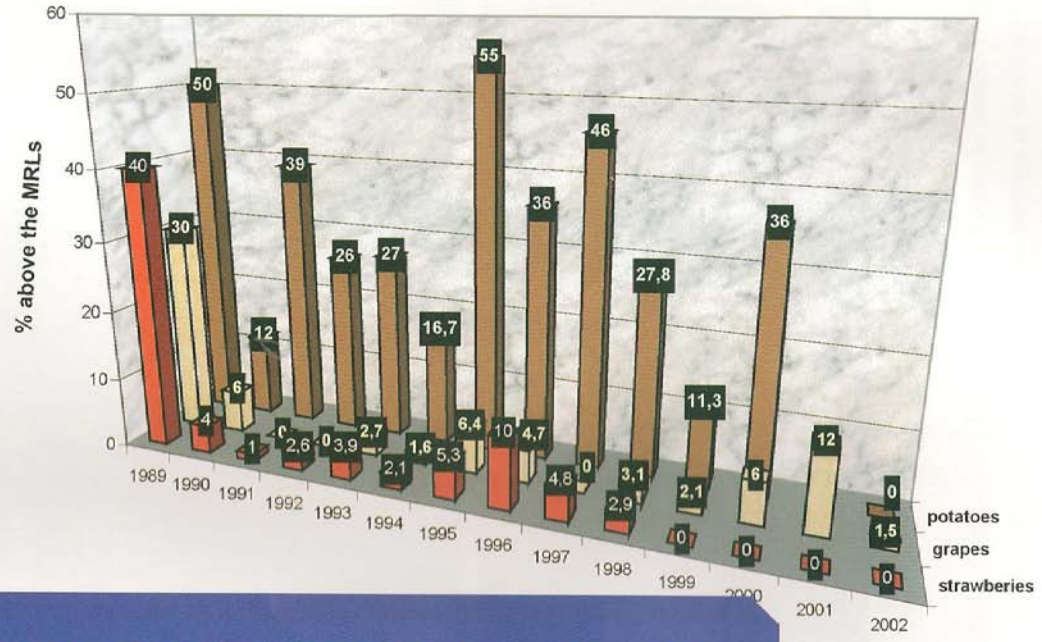
On Fig. 3 the trends for 3 target products i.e. strawberries, grapes and potatoes for the years 1989-2002 are presented.

Fig. 2: TRENDS IN RESIDUES LEVELS OVER THE YEARS 1987 - 2002
% of samples of plant origin (local production) above the National and EU MRLs



- From 1997 a steady downwards trend is observed
- The % of exceedances for 2002 lies within the range of 1,3-9,1 % found for the EU&N&L&I in 2001.

Fig. 3: Trends of Residues levels in Target Foods 1989-2002



- In case of strawberries a real downward trend is observed from 1996 and no exceedancies were found for the last 3 years
- No trend can be defined for grapes and potatoes. However the results for 2002 are encouraging

4.2. Monitoring results for 2002

4.2.1 Control of products of plant origin

The main features of the 2002 program are given below. In 38% of samples no residues were detected and in 45% residues were at the level of or below the EU/Cy MRLs. The % of the exceedancies and critical samples, were 8%, and 9% respectively.

Main elements of the 2002 monitoring (surveillance type) program for products of plant origin

- **Pesticides sought cover a wide spectrum of compounds with polarities ranging from Kow= –0,9 to non-polar. No of pesticides =77 raised to 100 by 2003**
- **No of samples: 222**
  - **% of fruits: 45%**
  - **% of vegetables: 33%**
  - **% of potatoes: 15%**
- **No of quality control samples: 416**

- **The 4 most frequent found pesticides in fruits were chloropyriphos, captan, cypermethrin and endosulfan.**
- **In vegetables the most frequently found were chlorothalonil, cypermethrin, methamidophos, folpet/chloropyriphos/ endosulfan**
- **Endosulfan and chloropyriphos were among those most frequently reported by the EU&N&Ic&L (2001) .**

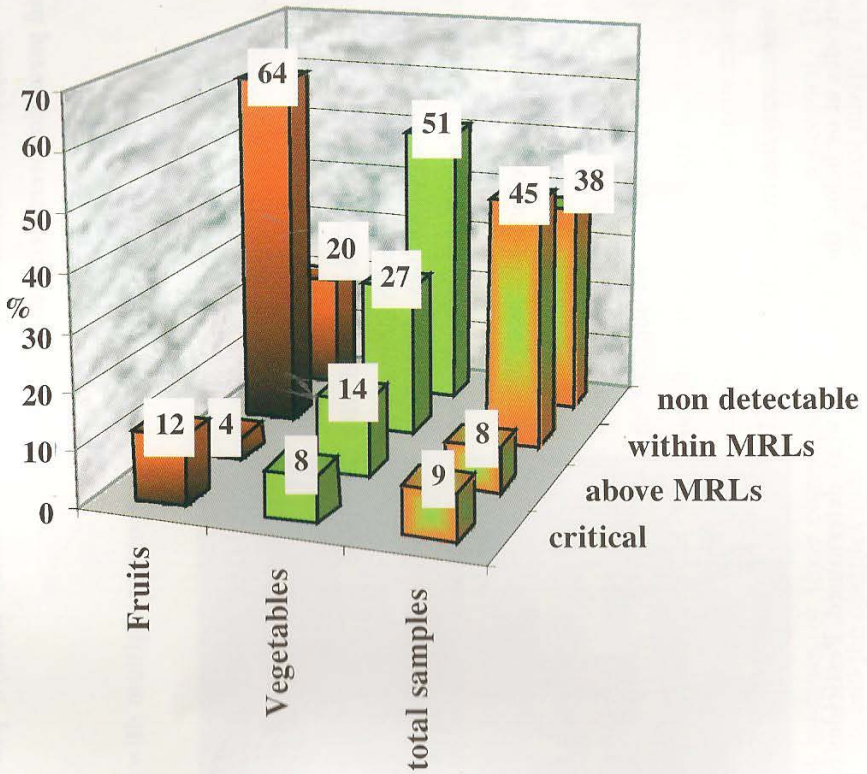
In 2002, higher degree of exceedances were found in vegetables (14%) than in fruits (4%) (Fig.4) and this is also in agreement with the situation observed in previous years. However, less difference between vegetables and fruits is observed if the sum of the exceedances and critical samples is considered (22% for vegetables and 16% for fruits).

Fig. 4: Overall Statistics for Vegetables & Fruits

Year 2002

Distributions of Samples of Plant Origin

- 15% potatoes
- 33% vegetables
- 45% fruits



Target Foods:

An overview of the results for target foods is shown on Figure 5.

Grapes

- **66 samples were analyzed with the MRM. 79% were samples for export.**

- **Only 1% was exceeding from the MRLs, whilst 16% falls into the category of "critical". In 42% of the analyzed samples 2-5 pesticides were determined**
- **In total 10 pesticides were detected. Chloropyriphos was found in 88% of the positive samples, captan, in 22,7%, endosulfan in 16,7% and cypermethrin in 12,1%. In the rest of the samples λ-cyhalothrin, iprodione,parathion methyl, penconazole, carbaryl and parathion were detected..**

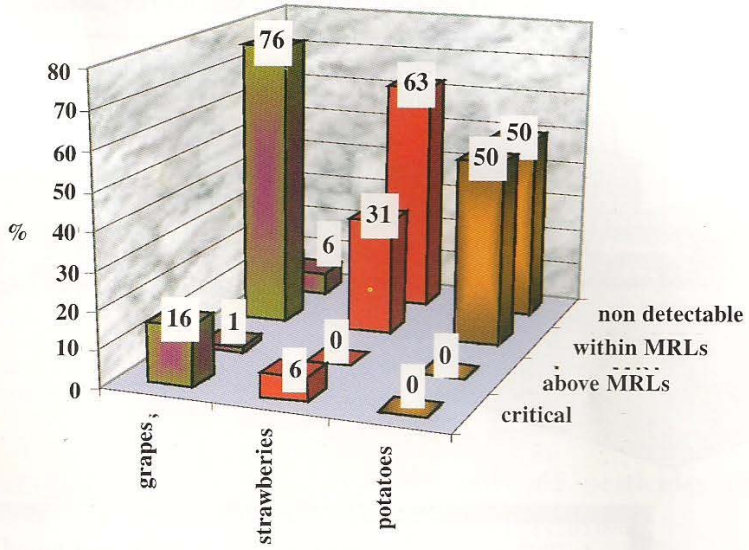
Potatoes

- **34 samples of fresh potatoes were analysed with the MRM**
- **In 50% of the samples, pesticides level was at or below the MRLs. Pesticides determined were DDTs isomers, endosulfan and procymidone**
- **No violating samples were found**

Strawberries

- **16 samples were analyzed by the MRM.**
- **In 38% pesticides at or below the MRLs level were determined. Pesticides identified were dichlorvos, iprodione, folpet, methamidophos, pirimicarb and procymidone**
- **No violating samples were found**

Fig. 5: Overall Statistics on Target Foods 2002



Samples with multiple residues

The problem of multiple exposure has to be confronted on the basis of the

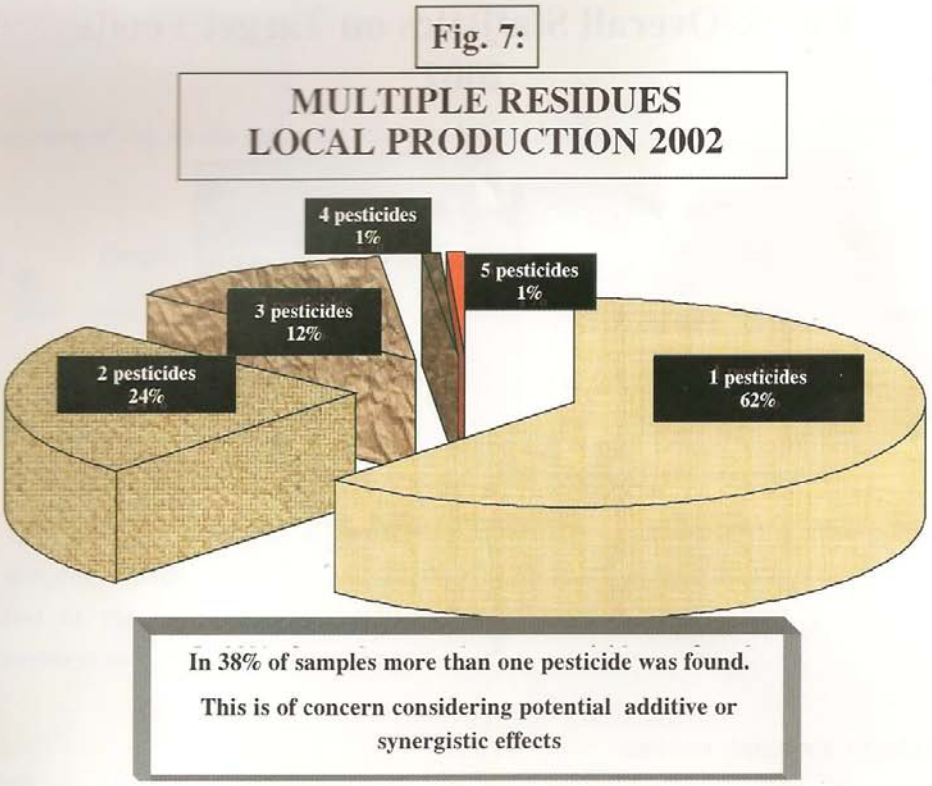
Preventive Approach

"Food contamination should be limited to the lowest possible level by the least possible number of chemicals".

Residues of more than one pesticides were found in about 38% of the analyzed samples. The respective figure for EU&N&Ic&L (2001) is 18%. An overview of multiple residues situation is presented on Figure 6.

The presence of more than one pesticides in the same product, although within acceptable limits, is of concern because the definition of the limits is based on the individual toxic effect of each pesticide whilst possible interactions or additive effects are not considered. Despite the tremendous development of Toxicology there are still gaps as far as simultaneous effects of mixtures of toxic compounds on health are concerned. Due to the gaps, uncertainties and the complexity of the problem, the issue of mixture toxicity, can not be covered by legislation. It has therefore to be confronted on the basis of a preventive approach. This principle is now being promoted in Cyprus.

Fig. 7:



4.2.2 Control of products of animal origin

The sampling of meat, milk, honey, fish etc is done within the framework of the national monitoring and surveillance program which is implemented in cooperation with the Department of Veterinary Service . This program is harmonized with the provisions of Directives 96/22/EC, 96/23/EC and Decisions 97/747/EC and 98/179/EC and annually approved by the European Commission.. The 2002 program included meat, milk and honey. In addition, a pilot program on baby foods has been started and completed in 2003 .

Meat:

- **30 samples were analyzed for 14 organochlorine pesticides, 7 PCBs, chloropyriphos, chloropyriphos –methyl and deltamethrin.**
- **Detection limits varied according to the fat content and were as follows**
  - expressed on fat : from 0,4 to 62,5% of the respective MRLs
  - expressed on meat: from 0,3 to 35% of the MRL.
- **Pesticides and PCBs were not detectable**

Milk

- **9 samples of cow milk were analyzed for 14 organochlorine pesticides, 7 PCBs and 38 other pesticides including organophosphorous, organonitrogen and carbamates.**
- **Detection limits were as follows:**
  - **PCBs: 0,0008-0,002 mg/kg**
  - **Pesticides: 0,0004-0,4 mg/kg**
- **Pesticides and PCBs were not detectable.**

Honey (2002-2003)

- **18 samples were analyzed for 15 PCBs and 65 pesticides including organochlorine, organophosphorous, organonitrogen and pyrethroids**
- **Detection limits were as follows:**
  - **PCBs: 0,001 mg/kg**
  - **Pesticides: 0,001-0,01 mg/kg**
- **PCBs, organochlorines, organophosphorous or organonitrogen pesticides were not detectable**
- **In 8 samples the pyrethroid fluvalinate was determined at levels from less than 0,01 to 0,03 mg/kg.**

Baby foods (2002-2003)

The control of baby foods intended for infants and young children is covered by the specific EU Legislation (99/50/EEC) in which the acceptable level for pesticides is 0,01mg/kg.

- **46 samples of imported powder milk (for infants) and one sample of concentrate were analyzed for 14 organochlorine pesticides and 15 PCBs congeners .**
- **Detection limits for pesticides were 0,001-0,002 mg/kg and for PCBs 0,002-0,04 mg/kg**
- **No Pesticides or PCBs were detected**

5. LOOKING FORWARD

The Official Pesticide Residues Lab established on 1980, with its long experience, the highly qualified personnel and the state of the art equipment is continuously developing its capacities and expertise aiming to the highest European standards. Through the last decades, the national monitoring and surveillance have been integrated into a multi-objective system

aiming at maximizing consumer protection by enhancing its alarm function and support proactive management and prevention.

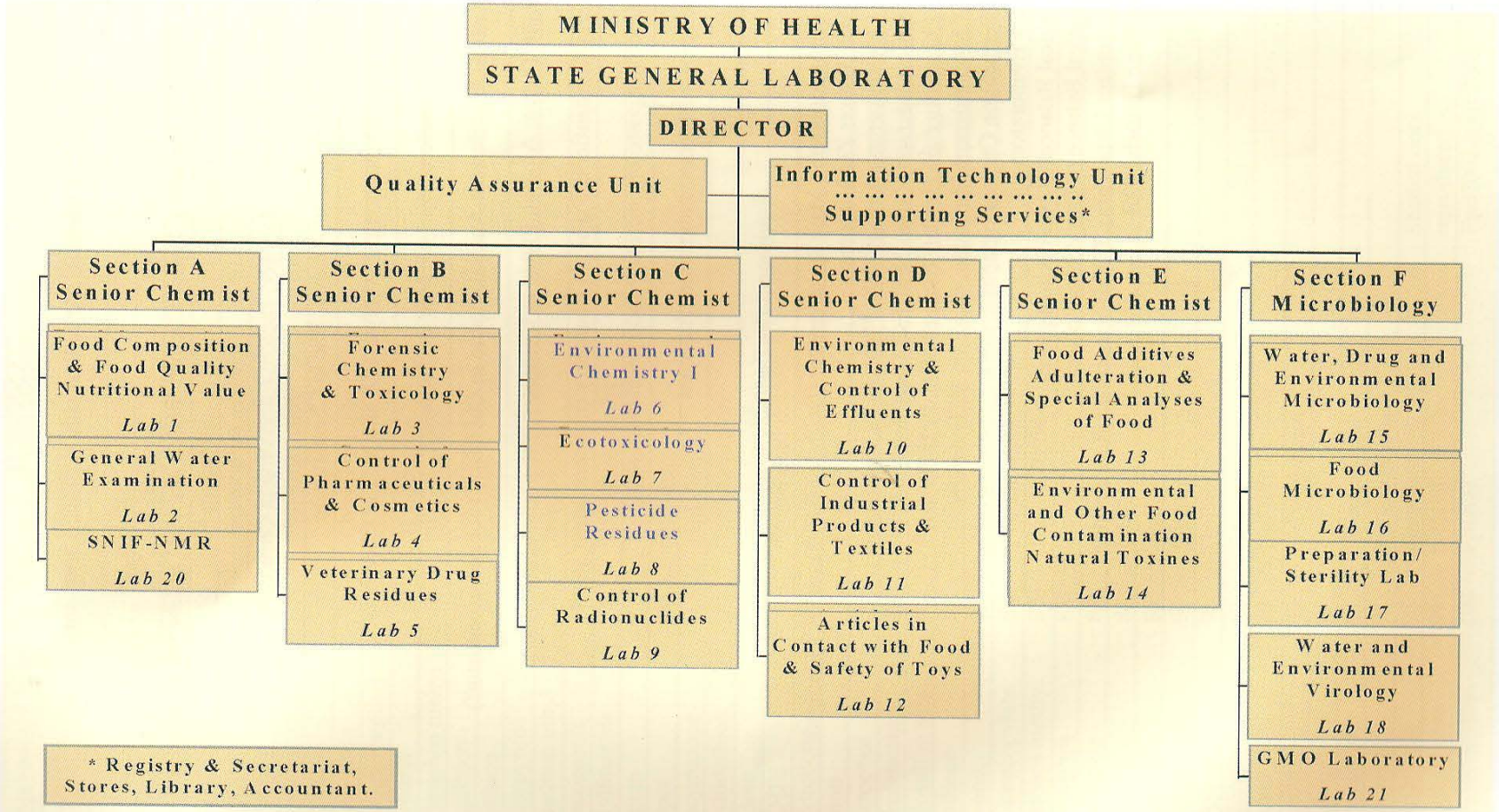
Despite this progress, there are new challenges and goals to be achieved. Cyprus as EU member state and also as the east-south frontier of the European Union will have more responsibilities in the field of food safety. The accredited lab must be further developed (mainly in terms of manpower) to its full potential, in order to cope cost-effectively with its growing responsibilities and to adapt its programs to new pesticides, stricter regulations and new information on effects on humans and the Environment. The following are set as immediate priorities for further development

- **The expansion of the control to more food commodities like cereals and oils and to more pesticides with emphasis on polar pesticides analysed by LC-MS,**
- **The expansion of the existing control of imports and exports,**
- **The control of the dioxins-like PCBs,**
- **Further development of Risk Assessment with particular consideration of children's potential enhanced exposure and vulnerability**
- **The conducting of Total Dietary Intake studies in order to assess population exposure to pesticides and the effectiveness of the existing legislation and control system,. These studies should in particular address infants and children diets.**

The goal of food safety goes beyond national boundaries. It calls for international cooperation and understanding. This cooperation reinforced by European Union and the International Organizations (like WHO, IAEA, FAO etc), will promote mutual recognition of national control systems and remove the obstacles in international trade. At the same time it will bring about a more cost-effective use of the resources. The State General Laboratory is involved as an active partner in the international arena, participating in working groups and expert committees and strengthening its links and cooperation with European institutes and International Organizations in the field of pesticide residues and risk assessment.

Dr Stella Canna-Michaelidou
For Director State General Laboratory

ANNEX I


MINISTRY OF HEALTH
STATE GENERAL LABORATORY
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Quality Assurance Unit
Information Technology Unit
Supporting Services*
Section A Senior Chemist
Food Composition & Food Quality Nutritional Value
Lab 1
General Water Examination
Lab 2
SNIF-NMR
Lab 20
Section B Senior Chemist
Forensic Chemistry & Toxicology
Lab 3
Control of Pharmaceuticals & Cosmetics
Lab 4
Veterinary Drug Residues
Lab 5
Section C Senior Chemist
Environmental Chemistry I
Lab 6
Ecotoxicology
Lab 7
Pesticide Residues
Lab 8
Control of Radionuclides
Lab 9
Section D Senior Chemist
Environmental Chemistry & Control of Effluents
Lab 10
Control of Industrial Products & Textiles
Lab 11
Articles in Contact with Food & Safety of Toys
Lab 12
Section E Senior Chemist
Food Additives Adulteration & Special Analyses of Food
Lab 13
Environmental and Other Food Contamination Natural Toxines
Lab 14
Section F Microbiology
Water, Drug and Environmental Microbiology
Lab 15
Food Microbiology
Lab 16
Preparation/ Sterility Lab
Lab 17
Water and Environmental Virology
Lab 18
GMO Laboratory
Lab 21
* Registry & Secretariat, Stores, Library, Accountant.

ANNEX II

Personnel of the Pesticide Residue Laboratory

Dr. Stella Canna-Michaelidou: Senior Chemist, Ptyhio and PhD in Chemistry, Head of the Section and Quality Manager

Dr. Popi Ziegler: Technical Manager, Diploma and PhD in Chemistry

Mrs. Olymbiada Kourouzidou: Analyst, BSc in Chemistry

Mrs. Despo Louka-Christodoulou: Analyst, BSc and MSc in Chemistry

Mrs. Anastasia Caballero: Analyst, MSc in Chemistry

Mrs. Panayiota Hadjiloizou: Analyst, Ptyhio in Chemistry (not permanent stuff)

Miss. Anthe Thoma: Analyst, Ptyhio in Chemistry (not permanent stuff)

Miss. Maria Konstantinou, Ptyhio in Chemistry (not permanent stuff)

Miss. Charoula Apostolou, secretary (non permanent stuff)

Mrs. Theognosia Zinonos: Laboratory Assistant

Equipment the Pesticide Residue Laboratory

- Gas Chromatograph / Mass Spectrometer (GC-MS/ITD), Trace GC/ Finnigan
- LC/MS: Waters ZQ Micromass
- Gas Chromatograph Agilent 6890, FPD and ECD detectors
- Gas Chromatograph Varian 3400, ECD detector
- Gas Chromatograph Hewlett Packard 5890, FPD detector
- Gas Chromatograph Shimadzu, GC-17A, ECD detector
- Gel Permeation Chromatography systems
- Rotary Evaporators
- Analytical Balances of two decimal places
- Analytical Balance of four decimal places
- Homogenizer Ultra-Turax T-25,Homogenizer Robot coupe
- Centrifuge Hettich / 32R

ANNEX III

Pesticides covered by the Multi residue method (MRM)					
1	Methamidophos	51	Formothion	101	ppDDD
2	Dichlorvos	52	Parathion methyl	102	Maneb
3	Mevinphos	53	Tolcofos methyl	103	Mancozeb
4	Chlorpropham	54	Metalaxyl	104	Metiram
5	Monocrotophos	55	Fenchlorphos	105	Probineb
6	Dimethoate	56	Fenitrothion	106	Zineb
7	Lindane	57	Bromophos methyl	107	Nabam
8	Diazinon	58	Pirimiphos ethyl	108	Thiram
9	Chlorothalonil	59	Pendimethanil	109	Ziram
10	Pirimicarb	60	Isofenphos		
11	Vinclozolin	61	Chlorfenvinphos		
12	Chlorpyr.methyl	62	Quinalphos		
13	Carbaryl	63	Triadimenol		
14	Pirimiphos mehyl	64	Paclobutrazol		
15	Malathion	65	Fenamiphos		
16	Fenthion	66	Imazalil		
17	Chlorpyrifos	67	Myclobutanil		
18	Parathion ethyl	68	Buprofezin		
19	Penconazole	69	Bupirimate		
20	Tolylfluanide	70	Kresoxim methyl		
21	Captan	71	Fensulfotion		
22	Folpet	72	Oxadixyl		
23	Procymidone	73	Benalaxyl		
24	Methidathion	74	Trifloxystrobin		
25	Endosulfan	75	Tebuconazole		
26	ppDDE	76	Propargite		
27	Chlorobenzilate	77	Bifethrin		
28	Ethion	78	Tetradifon		
29	Triazophos	79	Phosalone		
30	carbofenothion	80	Azinphos ethyl		
31	Endosulfan sulph.	81	Permethrin		
32	Iprodione	82	Cyfluthrin		
33	Phosmet	83	Fenvalerate		
34	Bromopropylate	84	Fluvalinate		
35	Azinphos methyl	85	Deltamethrin		
36	Pyrazophos	86	Azoxistrobin		
37	Omethoate	87	a-HCH		
38	Mecarbam	88	HBZ		
39	Profenofos	89	Aldrin		
40	Cypermethrin	90	Dieldrin		
41	Acephate	91	OpDDD		
42	Trifluralin	92	Endrin		
43	Phorate	93	OpDDT		
44	Thiometon	94	L-Cyhalothrin		
45	Dichloran	95	TBZ		
46	Propyzamide	96	Heptenophos		
47	Quintozene	97	Paraoxon ethyl		
48	Pyrimethanil	98	Fenarimol		Shaded ones
49	Phosphamidon	99	b-HCH		introduced
50	Paraoxon methyl	100	PpDDT		End2002-start 2003

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