

ANNUAL REPORT 2015

Abridged Version

STATE GENERAL LABORATORY



MINISTRY OF HEALTH

State General Laboratory

**Abridged Version
of the Annual Report
2015**

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*«Excellence for Better
Contribution to the
Quality of Life»*

PREFACE

Dear all,

It is with great pleasure that I present to you the annual report of the State General Laboratory (SGL) which depicts the wide scope of activities that the management and the staff, with a deep sense of responsibility, completed during 2015.

The SGL, both as a Public Service Department and a scientific institution, strives to provide services with professionalism and an exemplary manner. To fulfill this target, it continuously tries to develop innovative and state-of-the-art methodologies and approaches. In this way, it succeeds to constantly upgrade its services, while at the same time upgrades its scientific knowledge and expertise in the areas under its remit.

Within the Government efforts for Administrative Reform in the Public Sector, the SGL modified its strategic plan, connected it with the activities for implementation and has revised its already existing key performance indicators as a basic tool to monitor and evaluate its output and impact.

The year 2015, has been one with many challenges and activities, and the SGL responded effectively to the requests of the Competent Authorities in various Ministries and fulfilled the targets of the Ministry of Health, who's Permanent Secretary and Minister of Health would like to thank for their support.

The highlights of this year, for the SGL, have been (a) the recognition of the SGL by the Cyprus Academy of Public Administration and the company PWC for its continuous but well proven methodologies for improvement towards excellence and (b) its award by the Cyprus Research Foundation and Cyprus Employers and Industrialists Federation (OEB) for innovation handed to the NMR Laboratory of Food Authenticity under the SGL.

With vision, objectives and actions that have been cultivated with dedication, diligence, professionalism and accountability by the staff of SGL, at all levels, to whom I express my deep gratitude, I am optimistic that 2016 will be another year of success and with a positive impact towards the society while maintaining the confidence that has been built between the SGL and the public at large.



*Dr. Popi Nicolaidou-Kanari
Director of SGL*

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State General Laboratory

1. INTRODUCTION

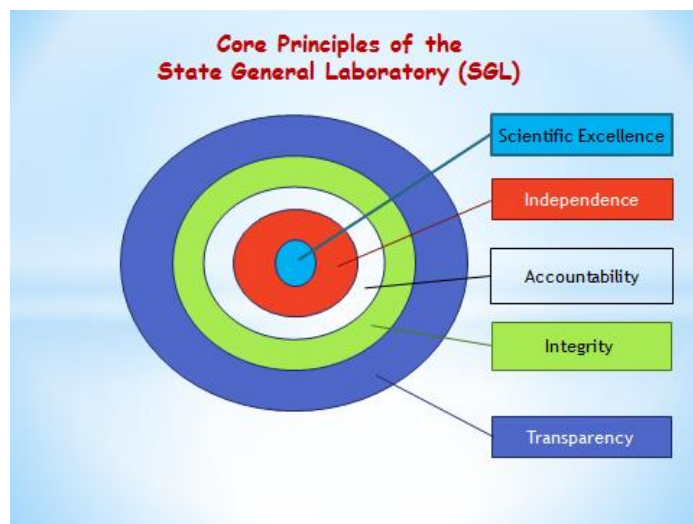
1.1 General Scope and Responsibilities

The State General Laboratory of Cyprus (SGL) is one of the five independent Departments of the Ministry of Health. It is the main official laboratory for the Chemical/ Biological/ Microbiological/ Toxicological and Radiological control and the Official National Control Centre for Foodstuffs, Water, Environment, Pharmaceuticals, Cosmetics, various Consumer Goods, controlled Drugs and other police exhibits. This wide scope of responsibilities is covered under 21 specialized laboratories and 5 Units.

All laboratories, under the SGL, are accredited according to the European Standard EN ISO/IEC 17025:2005 in the areas of its competence.

It is also the National Reference Laboratory of several Food Safety sectors.

The activities of SGL, an organization with no conflict of interest, governed by the principles of scientific excellence, independence, integrity, accountability and transparency, ensure the fulfillment of the Public Service Law, as well as meeting the citizens' expectations.



Under the support and configuration of National Policy, within the framework of its responsibilities, the SGL's staff serves on many National Council Boards (Food, Pharmaceuticals, Cosmetics, Plant Protection Products and Biocides, Veterinary

Medicines, Chemicals, and Food Safety) and also in National Committees (e.g. Environment and Children's Health, School canteens, Natural Mineral Water, Environmental Impact, Reduction of Drugs Supply, Drugs Legislation, National Centre of Information on Narcotics, Veterinary Drugs Register).

It is also the National representative in the Advisory Forum of the European Food Safety Authority (EFSA), and the National Contact Point of EFSA and the World Health Organization (WHO) on Environment and Health.

Through this active involvement, the SGL contributes to the revision, modernization and harmonization of laws, and the formulation of policies/ strategies related to its competences, not only at a national but also at European level. Its constant contribution to the revision of the Food legislation and of the legislation on Drugs and Psychotropic Substances, for integration of new synthetic drugs, has been significant.

1.1.1 Vision and Mission

The vision of the SGL is to substantially contribute to the improvement of quality of life by providing reliable and high quality services while driving towards continuous development and excellence.

Having as moto: "*Excellence for Better Contribution to the Quality of Life*" the SGL's strategic objectives, focused on its vision and mission, are:

- Safeguarding Public Health and Environment, Citizen's Safety and Consumers Rights targeted towards Prevention
- Facilitating fair trade and competitiveness
- Responding promptly and reliably to new obligations, emerging problems and crisis incidents
- Promoting applied research to prevent or solve emerging/ existing problems
- Contributing to the legislative process and policy making
- Strengthening networking and enhancing expertise
- Scientifically supporting the judicial and police authorities

To fulfill its mission, the SGL operates at many levels:

- ensuring quality, reliability and accountability through its accreditation by EN ISO/ IEC 17025:2005 and maintaining the consciousness of quality at all levels, while implementing the model of Common Assessment Framework Program (CAF) with benchmarking towards excellence,

- promoting new approaches at management and technical level, and elaboration of its services, while keeping abreast with European and International developments and requirements,
- collaborating with all public sectors and respective EU organizations and Committees,
- continuous development and implementation of:
 - new preventive and targeted national control programs
 - holistic and interdisciplinary approach, which reflects to the design of monitoring, surveillance, control and research programs with added-value and synergistic efficacy
 - risk assessment for food and water safety (chemical, microbiological, biological)
- enhancing productivity by implementing modern technologies and multivariate control methods by fully utilizing the manpower, equipment and the available financial resources,
- attracting young scientists with high academic qualifications through implementation of applied research projects to solve existing problems and prevent emerging risks,
- strengthening International networking and collaboration with universities, European research centers and relevant bodies to promote exchange of scientists, joint research projects, technology transfer and other common actions towards development,
- contributing to academic activities by investing in capacity building of post-graduate students who undertake research projects at the SGL in collaboration with European and Cyprus universities,
- investing on staff training and expertise,
- dissemination of information and knowledge through educational programs to the relevant stakeholders and to the public at large,
- providing expertise and advice and working as a technical consultant/advisor for Public authorities or as Third member.

1.1.2 Development Policy and Strategy

In the context of the Administrative Reform of the Public Sector, the SGL modified its strategic plan and connected it with its activities for implementation. At the same time it revised its performance indicators which have now been linked to the more effective monitoring of budget implementation, in connection with its strategic planning.

The development policy and strategy of the SGL is based on its vision and mission while setting priorities aiming towards:

- its development as a Centre of Excellence and Regional Reference Centre in the areas of its competence (food quality and safety, pharmaceuticals, consumer products, environmental protection and crime investigation),
- its significant contribution, as a counsellor of the State, in responding promptly and in a reliable manner to crises and problems, that cover areas under its remit, having an active, scientifically robust and meaningful role in the implementation of the National Strategy,
- its contribution through its scientific work, to the economic and social development of the country,
- its sustainability, as a high quality and state-of-the-art centre of integrated services, expertise and applied research whose scientific contribution can be highlighted as among the best in Europe.

1.2 Organisation

1.2.1 Organisational Structure

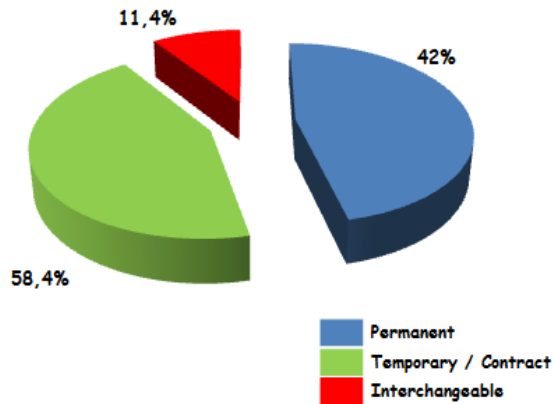
The SGL's wide range of analytical work is covered by 21 Laboratories under eight sections as well as 5 Units namely the Cooperation with EFSA/Risk assessment Unit, the Quality Assurance Unit, the Research and International Cooperation Unit, the IT Unit, and the Communication & European/ International Issues Unit. All its work is supported by a registry, stores, library, secretariat, accounts and electromechanical services.



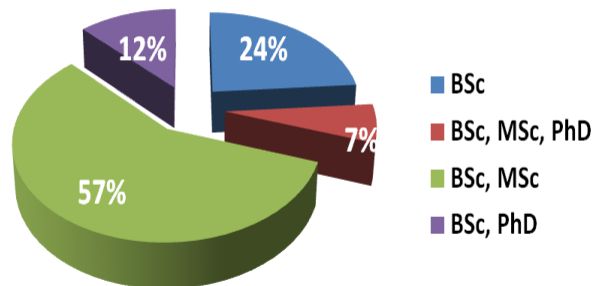
During 2015, the staff comprised 183 persons (67 chemists and microbiologists, (excluding the post of the Director), in permanent positions, 6 clerks and 22 support staff. In addition to these, a total of 50 laboratory technicians (Chemists and Microbiologists) with high academic qualifications were also employed on contract as well 7 clerks. For the completion of the

research projects an additional 26 Chemists/Microbiologists/Biologists, including one Data Base expert and one Executive assistant for managing research programs, were employed on contract).

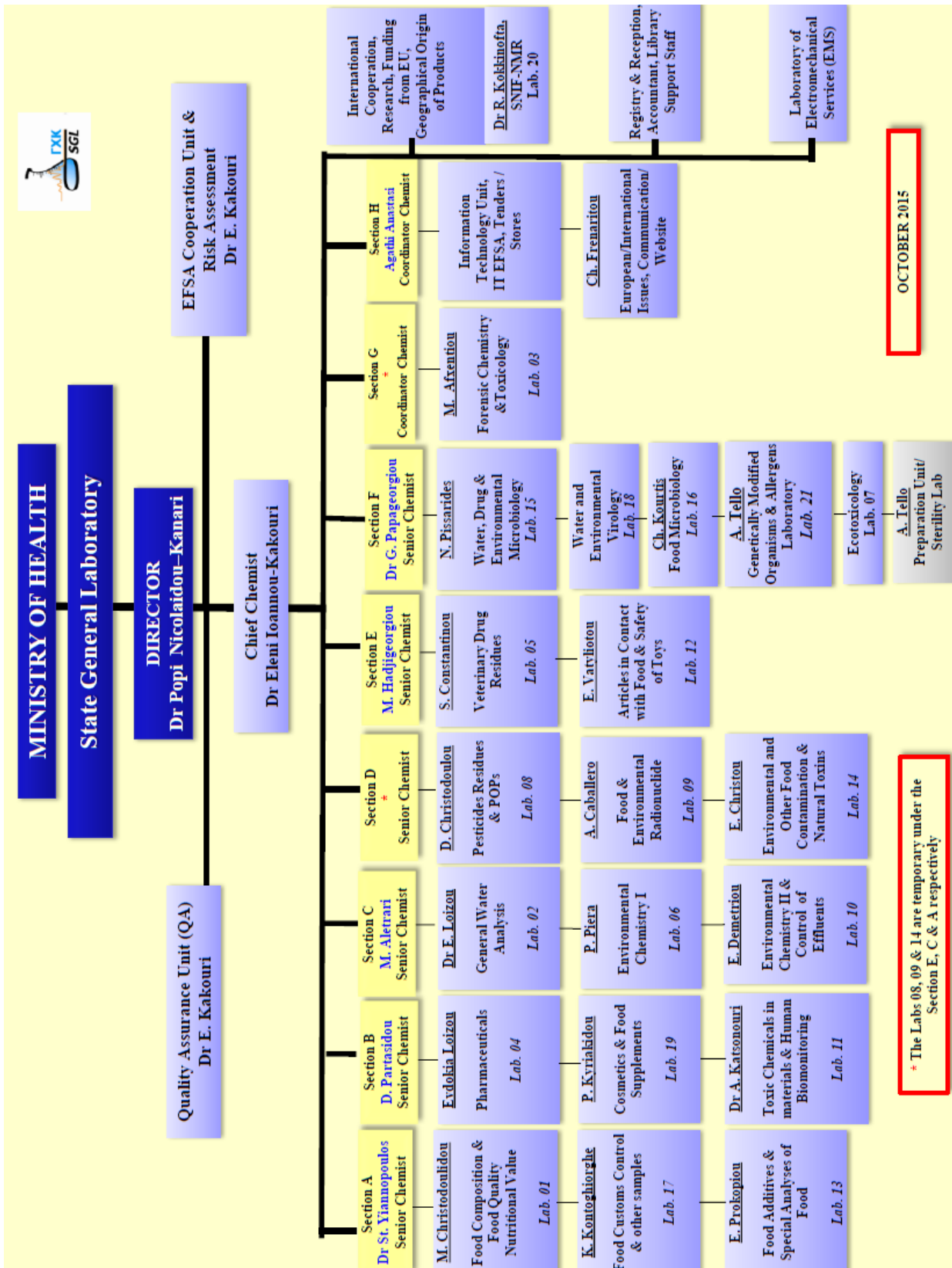
SGL's staff at all levels



Scientific Staff



1.2.2 Organogram



1.3 Financial Resources/ Budget

Expenditures incurred by the SGL in 2015 amounted to €7,575,624 (94% implementation) (96% of the Ordinary Budget and 79% of the Development Budget).

During the period 2013-2015, the SGL's revenue from EU Research programs was €579,325.

1.4 Reliability and Efficiency

The efficiency and reliability of a dynamically evolving Institution are fundamental conditions of its stability and growth. The simultaneous application of two quality management systems in order to guarantee a more integrated approach, is a result of long lasting efforts at the SGL:

a). Since 2002 it has been accredited with the international standard EN ISO/ IEC 17025:2005 by the Greek Accrediting Body (ESYD) and from 2015 it is accredited by the National Accreditation Body ("The Cyprus Organization for the Promotion of Quality (CYS-CYSAB)") - within the context of the Regulation (EC) No. 765/2008, and



b). It is also one of the first services in Cyprus and the rest of Europe that started in 2005 the implementation of the Common Assessment Framework (CAF), a system through which an Organization carries out a self-evaluation and set a benchmark for its performance.

To achieve the efficiency and reliability objectives the SGL has focused on the:

- Quality Assurance-Accreditation System
- Implementation of Quality Management System
- Implementation of the Common Assessment Framework (CAF)
- Development of Eco-Management and Audit Scheme (EMAS) which covers environmental factors.

1.5 Applied Research

Applied research is an important pillar of the continuous scientific and technological development of the SGL. Research carried out contributes towards problem solving/preventing as well as supporting policy decisions and legislation, while boosting socio-economic growth. The main areas of research cover especially food safety and quality, food authenticity and geographical origin, water, environment and health, as well as narcotics. Research is carried out primarily with

EU funds but also with national funds by the Research Promotion Foundation and the Ministry of Health. The results of these research activities have been presented in international conferences and published in international, well established, scientific journals and magazines, as well as in the SGL's website and in the local mass media for keeping updated both the scientific community and the public at large.

In 2015, the SGL started or continued the following studies/projects:

1.5.1 European Union Research Programs (6)

- "Total Diet Study Exposure" for the estimation of the exposure/ intake of the population to Chemicals and Nutrients (FP7) (2012-2016)
- "Support to national dietary surveys in compliance with the EFSA Guidance on General principles for the collection of national food consumption data in the view of a pan-European dietary survey"- third support/ LOT1 (children) (2013 - 2018)
- "Support to national dietary surveys in compliance with the EFSA Guidance on General principles for the collection of national food consumption data in the view of a pan-European dietary survey"- third support/ LOT2 (adults) (2013 - 2018)
- Re-coding of the food descriptors of EFSA Chemical Occurrence Database and Food Consumption Database entries according to the FoodEx2 food classification and description system (2014 - 2015)
- Pilot project on the implementation of the SSD2 Food Classification System, in the frame of the electronic transmission of harmonized data collection of analytical results (additives, contaminants and pesticides residues) to EFSA (2014-2016)
- Pilot project on the implementation of the SSD2 Food Classification System, in the frame of the electronic transmission of harmonized data collection of analytical results (veterinary residues) to EFSA (2015-2017)

1.5.2 Research Programs funded by the Research Promotion Foundation (4)

- "RoCyWines: Scientific factors related to consumers health as new tools for Confirmation of Authenticity of Cypriot/ Romanian Wines" (2014-2016)

- "METAWATER: New metagenomics and molecular based tools for European Scale Identification and control of emergent microbial contaminants in irrigation water" (2014 - 2017)
- "New psychoactive substances (NPS): Building knowledge and evidence based training through research" (11/2014 - 5/2016)
- "*EuroMix*: Horizon 2020 EU project: Assessing the health risks of combined human exposure to multiple food-related toxic substances" (5/2015 - 2019)

1.5.3 Research Programs funded by the Ministry of Health (12)

- Incidence and levels of colours in frequently consumed food and drinks (2014-2015)
- Authenticity control of Cyprus Olive oil by using FT-IR and NIR spectroscopy
- Review of the functional foods in the Cyprus market (ie food with w-fatty acids, antioxidants , dietary fiber etc)
- Pesticide Residues in olives and olive oil
- Uranium (U) isotopes in drinking water
- Pharmaceuticals in wastes with focus on Diclofenac
- Heavy metals (Pb, Cd, Hg, etc.) in juices and beverages by using ICP-MS technique
- Microbiological quality of children's face painting products and consequences on Public Health
- Allergens in food - a major problem or not?
- Mycotoxins ergot alkaloids in cereals and their products by using LC-MS/MS technique
- New Psychotropic Substances in seized materials
- Monitoring of the "Ezousa's" ground water (on going)

1.6 Cooperation

National/European/International Cooperation

In order to achieve its objectives, the SGL cooperates at national level with almost all Ministries and Competent Authorities, Municipalities, Governmental and other Organisations, Universities and Institutions.



The SGL also expands its European & International cooperation so as to improve even further its scientific progress, to enhance capacity building and exploit sources of external funding. Through this cooperation, there is an exchange of knowledge and experience with other Member States. At the same time the SGL takes the opportunity to show the activities and skills of a small Member State and its adaptability to cope with new requirements and challenges.

In 2015, the SGL actively participated in the following meetings/Bodies/networks/programs/studies:

- European Food Safety Authority (EFSA)
 - Advisory Forum (AF)
 - Focal Point
 - AF - Communication WG



- Expert groups: eg. on Food Consumption Data, on Chemical Occurrence Data, on BPA-aspartame, on Non-Plastic Food Contact Materials
 - Networking groups: eg. for Pesticide residues monitoring, for Emerging Risks Exchange Network (EMRISK)
 - Scientific Networks of: Nanotechnologies in Food & Feed, on Food Contact Materials, for Veterinary Drugs, for Microbiological Risk Assessment, for Risk Assessment of GMO's, etc.
- European Reference Laboratories (EURL-NRL)

- Research study to develop an improved method of measuring *Listeria monocytogenes* in cooperation with the European Reference Laboratory (EURL, ANSES France)
- Collaborative study on standardization (ISO) of the detection method of staphylococcal enterotoxins under the coordination of the competent EURL (ANSES, France)
- EU Commitology expert groups and Standing Committees
- Program "Customs 2020" (European Network of Customs Laboratories (CLEN) for harmonization and joint actions) - Working Groups of the Program (Actions 1 to 6)
- Customs Laboratories Working Groups dealing with new psychoactive substances
- European Network of Forensic Science Institutes (ENFSI) for drugs, arson, gunshot residues and explosives
- Network of Official Medicines Control Laboratories of the Council of Europe (EDQM-OMCL) in co-operation with the European Medicines Agency (EMA), and other subcommittees of the Network

Furthermore, in 2015, the SGL:

a) Continued participation in:

- The evaluation of EU research proposals for funding and in the Programming Committee of the "Horizon2020" (Food Security, Sustainable Agriculture, Marine, Maritime and Inland water research and Biomonitoring) for research, etc
- The Scientific Committee of the Ministry of Health for the development of a Strategy for research, and the approval of applications for applied research within the various departments of the Ministry
 - The creation of the "European Wine Bank" (as scientific coordinator), coordinated by the EU's Joint Research Centre (JRC)-in implementation of the Regulation (EC) 2729/2000. Meanwhile, a representative of the SGL participated in the EU's Executive Committee for the transfer of that Bank by the JRC, from Ispra-Italy to Geel-Belgium
- The Working Groups of the Council of EU for the formation/ modification of the European legislation.

b) Co-organized in Cyprus the following workshops/conferences/annual meetings:

- "Food Risk analysis framework Workshop", with EFSA, for exchange knowledge and best practices in food risk assessment and risk analysis work

between the experts from the National Food Authorities in Cyprus, the EU Neighboring countries (ENP) and EFSA (Sept. 2015)



- "Scientific factors related to consumers health as new tools for Confirmation of Authenticity of Cypriot/Romanian Wines-Workshop" (Sept. 2015)

- "4th Regional Conference on the counterfeiting of medical products and similar crimes involving threats to public health Convention (MEDICRIME)", with the Council of Europe and the Cyprus Ministry of Justice (Nov. 2015)



- "22nd Annual Meeting for Firearms and Gunshot Residues-ENFSI", with the Cyprus Police (Nov. 2015)

- "Identification of the varietal origin of wine and must using DNA-based methodology-Workshop" (Nov. 2015)



In terms of International cooperation the SGL continued participation in:

- International conferences and presentations of scientific papers
- The International Association of Forensic Toxicologists (TIAFT) working groups

1.7 Objectives fulfilled in 2015

- Expansion of the control, monitoring and surveillance programs:
Full implementation of the monitoring/surveillance/control programs (in all **72**) covering a total of **30,449** samples with **492,556** parameters in 2015 (compared to 2014 where 31,026 samples were analyzed with 531,839 parameters tested). The fact that the number of analyzed samples in 2015 is lower than in 2014 is due to the financial constraints on the one hand, and the decrease in the number of food, environmental and other crises on the other - which shows that the SGL together with the Competent Authorities try to conduct even more targeted controls and cover new parameters based on prioritization.
- Human resources development through trainings and educational programs
- Infrastructure development and advancement of Laboratory equipment (a total of **€247,897** was spent in purchasing state-of-the art equipment or renewal of old equipment)
- Enhancing Food Risk Assessment capacity through participation in EFSA's project "EU Menu", the Horizon2020 research program "EuroMix", Better Training for Safer Food (BTSF)
- Further development of the capacity of the Information Technology Unit (IT), and its ability to respond to EFSA's programs and requirements e.g. two programs for the implementation of the Food Classification System (SSD2), a program for "Support to National Dietary Surveys", as well as its contribution to update the "OPEN DATA" platform
- Effective contribution and support of the national policy/ strategy in areas of its competence, among others, through its participation in relevant national Councils (9), national Committees (10) and Technical & Working Groups (5)
- Communication/ Dissemination of knowledge & information through Publications/ updated Website/ Interviews in Mass Media (5)/ Lectures and presentations (68).

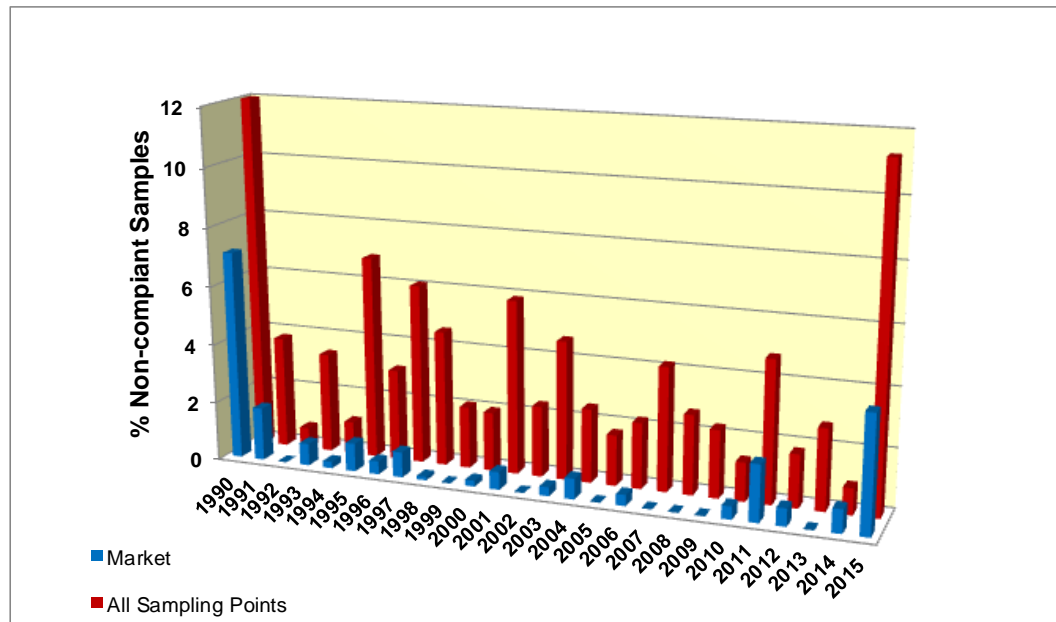


1.8 Achievements - Recognitions & Awards

1.8.1 Achievements-Implementation of activities and programs

During 2015 the SGL achieved the following:

A. Great effectiveness in detecting non-compliant food and other consumer products preventing their entry, from Third Countries and EU Member States, into the Cyprus and EU market (e.g. nuts, vegetables, fish) by using appropriate preventive and effective control programs at critical control points (eg. imports check points)



Monitoring of Aflatoxins at critical control points (1990 - 2015)

B. Expansion of the official controls to cover new parameters, despite the budget constraints, such as in:

Foodstuffs area:

- Sulfur dioxide in fresh fruits and particularly in organic grapes
- Monitoring the concentration of 'Stevia' in 'Stevia' leaf during plant development
- Colours (synthetic and natural), focusing on strongly coloured foods, such as ice cream, soft drinks, sorbets, sweets, etc



- New toxins: Citrinin in red yeast rice etc, Alternaria Toxins in various kinds of grains, seeds and tomatoes

- Tropane Alkaloids (plant toxins) in cereals such as buckwheat, millet sorghum and of their products such as: cereal-based baby food, breakfast cereals and flour products
- New Genetically Modified Organisms (44% increase over 2014)
- Staphylococcal enterotoxins in cheese
- *L. monocytogenes* in ice cream and pasteurized milk
- Microbiological quality control in herbs from supermarkets, in doner kebab in take away establishments, in unwashed plant products from the field and the Cyprus market

Environment and Water area:

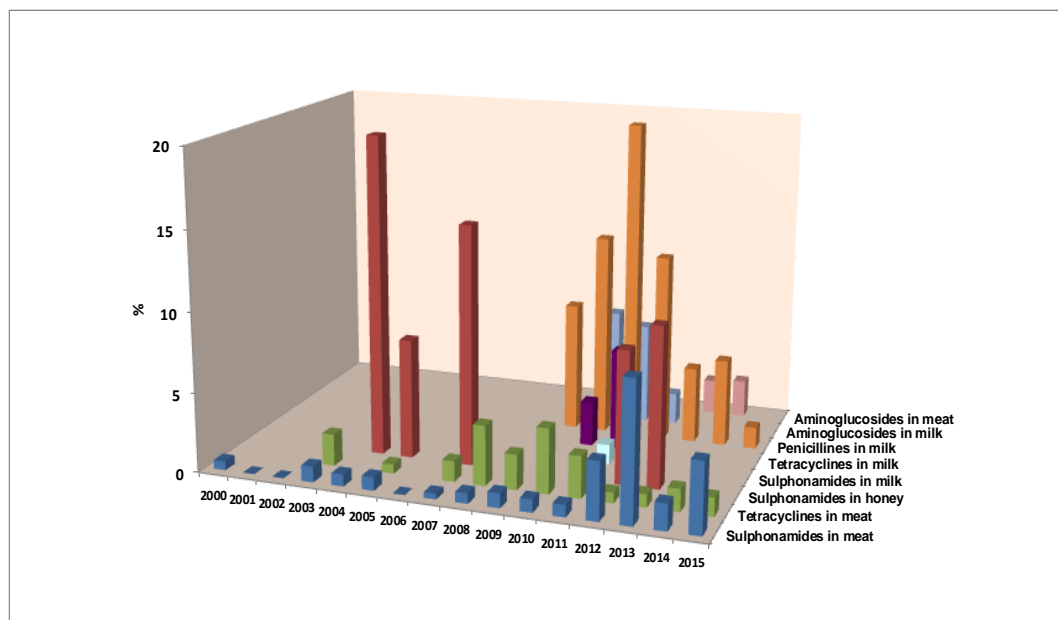
- Polycyclic aromatic hydrocarbons (PAHs) in sediments from dams
- Cyanobacterial biotoxins in irrigation waters and investigation of their possible association with the pathogen *Aeromonas* species

Consumers Products area:

- Flammability Testing in children's Toys and children's night Clothing
 - Benzene, chloroform and p-dichlorobenzene in specific liquid products such as deodorants
 - Benzene, toluene, chloroform, xylenes, p-dichlorobenzene, naphthalene and allergens in air fresheners
- C. Prompt and effective response to food, environmental and other crises/ incidents that occurred in 2015, such as:
- Milk protein detection in vegan food - so people with allergies to milk proteins should not assume that the labelling necessarily indicates the absence of milk proteins
 - Proposal for corrective measures/ actions in certain cases of drinking water:
 - over the acceptable concentration of iron, in Limassol Municipal drinking water (exceeding legal limit of 200mg/L)
 - improvement of the "Good Manufacturing Practices" in a source of water bottling, due to large variations of increased manganese concentrations (exceeding legal limit of 50mg/L) in both the spring water and bottled water
 - for its microbiological quality, in small communities where the water sources are not correctly chlorinated
 - Identification of new synthetic drugs that were released for the first time in the EU

- Scientific support to the Police to seize and manage a case with large cocaine quantities (weight 96.7 kg), as well as collection and transmission of information to the European Monitoring Centre for Drugs (EMCDDA) in cooperation with EUROPOL, on the new psychoactive substance MDMB-CHMICA, which appeared in Cyprus for the first time in 2015
- Effective scientific counseling and management of a serious case on the identification of large amounts of the powerful explosive TATP.

D. Continuous contribution to tackling Antimicrobial Resistance (AMR), with the intensive control of samples of various animals and animal products for antibiotics residues



Control of antibiotic non-compliant samples in animal products over the years 2000-2015

E. Extension of the "Isotopic Mapping of Cyprus Food and Drinks", to create databases, in order to certify their authenticity and their emergence

F. Extension of the scope to cover the "Isotopic Mapping of Cyprus waters", with the aim of enriching the Geochemical Atlas of Cyprus with new data

G. Active contribution through scientific results for supporting Cyprus in having one of the cleanest EU marine waters in recent years, under the framework of the EU program "Blue Flag", with the systematic microbiological monitoring of marine waters performed at the SGL



H. Strengthening and expanding effectively the ammunition control by the National Guard Laboratory set up and scientifically supported by the SGL since 2014, and completing the control of over 430 samples of ammunition

I. Involvement in the project: "*Black Gold: Carob Production and Processing*", which should be a model of modern development of agricultural and other activities in Cyprus, aiming to revitalize agricultural products with added value, through innovative scientific approaches. In this context, in 2015 a thesis entitled: "Comparative Chemical Analysis of carob varieties, found in the Mediterranean region" has been drafted at the SGL

J. Substantial contribution to actions of EFSA and in particular, in the context of Food Risk Assessment, in cooperation with EFSA, SGL has developed the deterministic model «Improrisk» for the food risk assessment at individual level of the population. Specifically the SGL conducted food risk assessment for the Cypriot population (adolescents) exposure to lead, cadmium and mercury and the results were presented at various conferences

K. Continuation of implementing, since December 2014, and in cooperation with the national "Research and Education Institute of Child Health", the first official national pan-cyprian dietary survey according to EFSA requirements. The survey will cover all ages from infants to 74 year old people, including pregnant women: "The National Dietary Survey of the Cyprus population (Lot 1 & Lot 2)". The target of the survey, which is in the framework of the "EU MENU" project of EFSA and will last till 2020, is the harmonized collection of food consumption data in the EU Member States for calculating the exposure of the population to chemical and other hazards through food. Its ultimate goal is the use of data in risk assessment studies for the Cypriot population exposure to various chemicals through food



L. Publications in well-known international journals of the results of research projects regarding: mycotoxins and pesticide residues in food, hallucinogens, human biomonitoring, exposure of children and mothers in dangerous substances from environmental factors, and authenticity & quality of wines (17 in total)

M. Participation in 10 research programs, (five of which funded by the EU and the Research Promotion Foundation, and the other five funded by the EFSA), and elaboration of 12 pilot research programs funded by the Ministry of Health.

1.8.2 Recognitions & Awards

- The SGL was identified/recognized as a Public Institution towards excellence, by the Cyprus Academy of Public Administration (CAPA), the PricewaterhouseCoopers Ltd (PWC) and the Cyprus International Institute of Management (CIIM), and was called to present this road to excellence to other Public Service Departments
- The Laboratory of Nuclear Magnetic Resonance (NMR) of the SGL was awarded the "Cyprus Innovation Award 2015" for the broader Public sector, on the 9th Competition for the Cyprus Innovation Award, for its innovative scientific work on "Isotopic Mapping of the Cyprus Food and Drinks - for the creation of databases in order to certify their authenticity".



1.9 Future Goals

The SGL seeks to substantially respond to the continuous scientific challenges, the new requirements of the EU legislation and the various emerging issues while having as a driving force for the accomplishment of these targets its dedicated staff.

Based on the above, the following future goals have been set by the SGL:

- Responding to increasing monitoring and control requirements in the fields of its competence while continuously improving its services
- Continuously developing its human resources and completing its reorganizational structure which is still pending due to the Governmental freezing of new posts, while consolidating its scientific excellence with permanent scientific staff
- The timely, reliable, science-based information given to the: Competent Authorities, Parliament, media, various stakeholders and the public at large
- The expansion and support of:
 - targeted educational programs for all stakeholders including those in the private sector to maintain at high level public health through prevention, and to improve the socio-economic development of the country

- its networking with European Centers of Excellence and Research Institutes/ Organizations enhancing its scientific role at an EU level
 - its high scientific level as a centre of expertise and excellence at national, regional and European Level
- Further strengthening:
- the coordination and collaboration between the competent authorities for more efficient and effective official controls,
 - the Food Safety Council's (FSC) activities - specifically with the continuous improvement of its deterministic model «Improrisk» for the food risk assessment at individual level of the population, as well as with the required risk assessment studies and better exploitation of the results of official controls,
 - the Anti-Narcotics Council activities,
 - applied research mostly through utilization of EU funds (since 2004, the SGL has already absorbed a total of €6,163,987)
- Finalizing the first official national pan-cyprian dietary survey in the framework of the "EU MENU" project of EFSA, its data to be used in risk assessment studies for the Cypriot population exposure to various chemicals through food
- The construction of a new building for the SGL that can reflect its high scientific level as a center of expertise and excellence at national, regional and European level
- Upgrading and extending of the existing Laboratory Information Management System (LIMS)
- The continuous improvement of its credibility, its transparency and its responsiveness to crises to maintain the confidence of every Cypriot and European citizen towards the SGL.



2. MAIN AREAS OF ACTIVITY

The wide range of the SGL responsibilities and competences is covered by the following four wide areas:

- **Foodstuffs**
- **Environment**
- **Consumer Products**
- **Forensic Science and Toxicology**

2.1 Foodstuffs

2.1.1 Quality and Safety of Foodstuffs

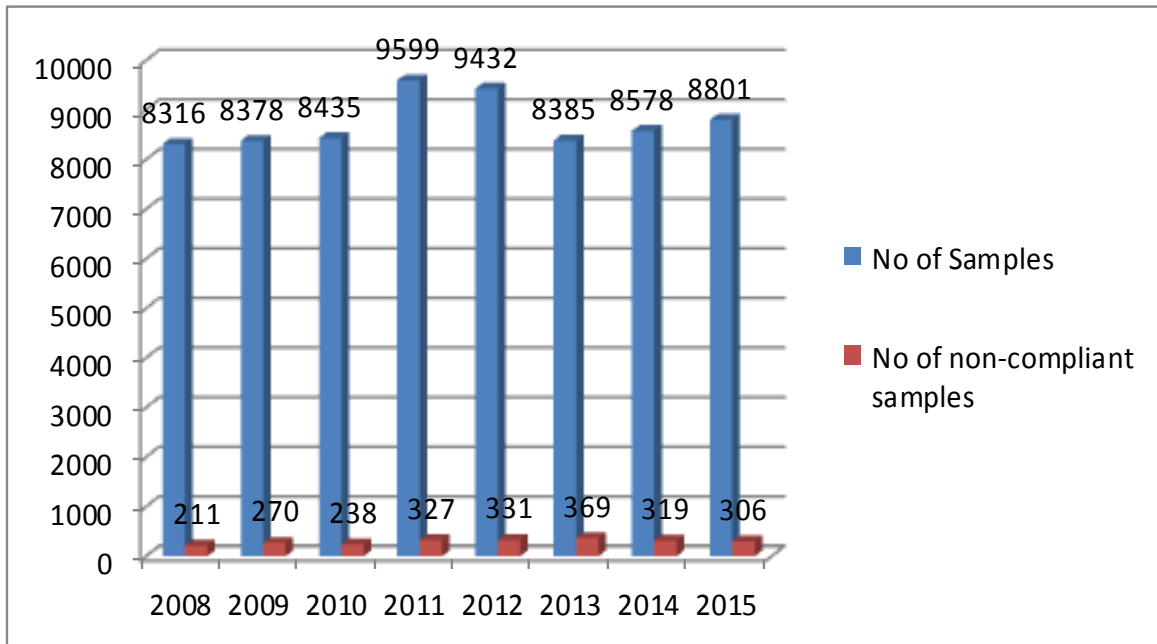
Ensuring safe, healthy and quality food is a very important component of protecting public health. The SGL carries out regular official controls and surveillance on foodstuffs, covering all parts of the food production chain, "from the field or farm to the consumer's table". For this purpose, it carries out various national control programmes with the cooperation of the competent authorities. Controls are of a preventive nature and focus mainly on basic foods that are consumed frequently or may raise a specific problem and on foodstuffs expected to be consumed by vulnerable groups of the population such as children and pregnant women. The SGL goes one step beyond the analysis. It evaluates the degree of exposure to toxic substances and to related risks, therefore, providing scientifically sound advice to competent authorities for risk management through appropriate measures.

The SGL has been designated as the National Reference Laboratory (National Reference Laboratory, NRL), for a large field of food analyses and applies an Integrated Multiannual National Control Plan consisting of individual programs for surveillance, monitoring and control programs, as well as applied research, focusing on:

- The prevention, investigation and problem solving throughout the food chain for long-term food safety.
- The effective implementation of the "acquis communautaire".
- Risk assessment, nutritional data and food composition in order to achieve stable supply of safe and wholesome food and healthy choices to consumers.
- The right information, through its laboratory data, to help consumers form correct nutritional/eating habits.

- The analysis, characterization, standardization and authenticity of traditional or local food.

The effectiveness of the **56** national control programs on foodstuffs (chemical, microbiological/biological, radiological and physical safety), managed to prevent the trade of non-compliant food both in the national and EU market and to provide useful information for the compilation of future control programs.



Chemical and Microbiological Control on Foodstuffs (2008-2015)

There are in total 16 specialized food laboratories which support and guarantee the extensive analytical control of the highest standards.

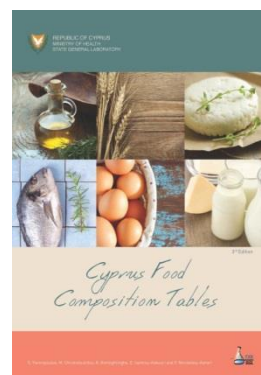


Surveillance and control is carried out based on annual and multi annual programmes in the areas of Quality/ Authenticity and Safety of Foodstuffs:

2.1.1.1 Quality/Authenticity of Foodstuffs

Nutritional value, Composition, Adulteration and Authenticity of foodstuffs

- **Nutritional value and Composition of foodstuffs** (moisture, proteins, fat, carbohydrates, salt, total dietary fibre, fatty acids, cholesterol, ω 3- ω 6 fatty acids etc)
- **Milk and Dairy Products** (moisture, fat, proteins, ash, salt)
- **Determination of Milk Identity** (cow's, sheep's, goat's) on Dairy products
- **Honey** (Sugars-fructose, glucose, sucrose-, hydroxy-methyl-furfural, Diastase activity, electrical conductivity, iso-glucose)
- **Olive and Vegetable Oils** (acidity, peroxide number, UV absorbance, ECN42, fatty acid profile)
- **Detection of Animal DNA** (Detection of Horse DNA in meat products)
- **Fish Products** (Histamine, Total Volatile Base Nitrogen)
- **Authenticity and geographical origin of foodstuffs (e.g. alcoholic beverages, wines, honey, juices, vinegar)** (Use of spectroscopic and isotopic techniques: NMR, IR-MS, ICP, FTIR-NIR, and chemometrics)
- **Cyprus Food Composition Tables** (macro & micro components: moisture, proteins, fat, carbohydrates, salt, total dietary fibre, fatty acids, cholesterol, ω 3- ω 6 fatty acids, calcium, magnesium, iron, zinc etc)
- **Food Customs control and other samples** (eg. Chocolates, biscuits, cake mixtures, Food Supplements and any agricultural products of chapters 17-21 of the Combined Nomenclature which are imported from third countries) (parameters: moisture, total fat, butyric acid methyl ester, milk fat, protein, milk protein, cocoa, caffeine, theobromine, starch/glucose, sucrose/isoglucose), Juices and Baby Foods (sugars), Nuts (polyphenoloxidase, peroxidase, moisture, salt), Seaweeds (brix, salt, moisture, swelling properties), Determination of Aroma complex HPLC (unsaturated ketones & heterocyclic substances) in Dry/Roasted Nuts, Determination of denatuls (isopropanol, methyl ethyl ketone and bitrex) in denatured products e.g. bioethanol.

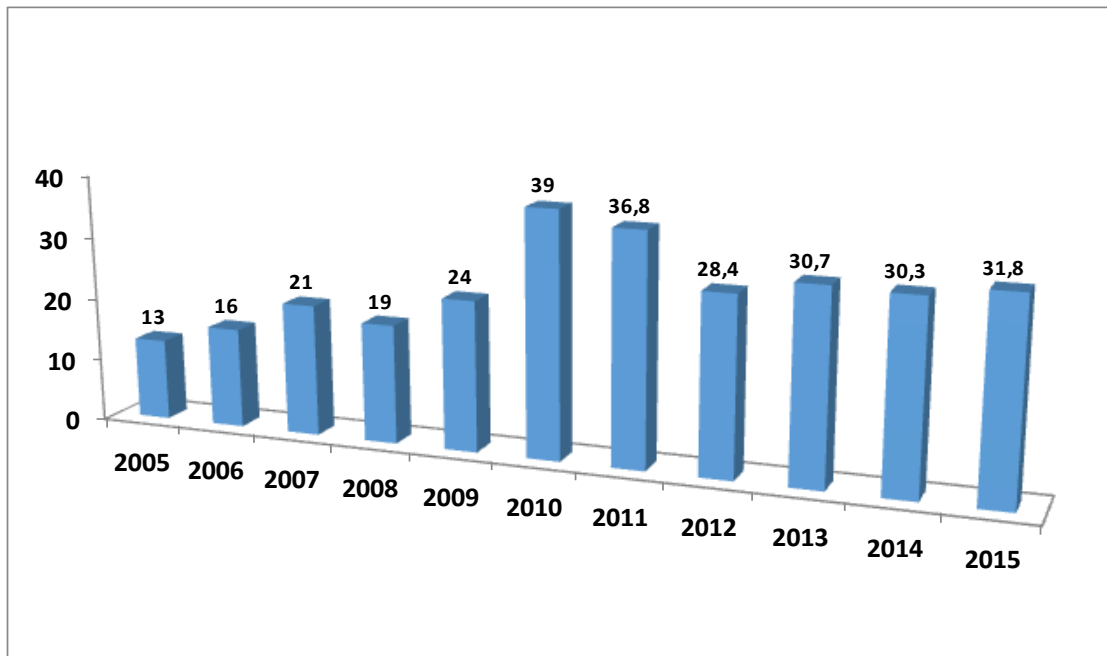


2.1.1.2 Safety of Foodstuffs

- **Food Additives: Preservatives** (Sulphur dioxide, Benzoic/Sorbic acid, Propionic acid, Nitrates/Nitrites), **Natural and Watersoluble synthetic colours**

(Tartrazine, Carmoisine, Ponceau 4R, Allura Red AC, Carmines etc.), **Synthetic colours** (Sudan I, II, III, IV, Para Red), **Sweeteners** (Acesulfame potassium, Aspartame, Saccharin, Cyclamates, Steviol Glycosides), **Antioxidants** (Ascorbic acid), **Flavouring Enhancers** (Glutamic acid). **Food Flavourings** (Coumarin), **Caffeine**, **Methanol in spirits**

- **Pesticide residues** mainly in fruit and vegetables, cereals, pulses, baby foods, biological products, products of animal origin and oils, wines and honey (Organophosphorous, Organochlorines, Carbamates, Pyrethroids, Amides, Strobilurines, Dinitroanilines, Triazoles, Benzimidazoles, Neonocotinoides, Phenylureas, Benzoylureas, Dithiocarbamates, Chlormequat, Mepiquat and other pesticides including highly polar pesticides)

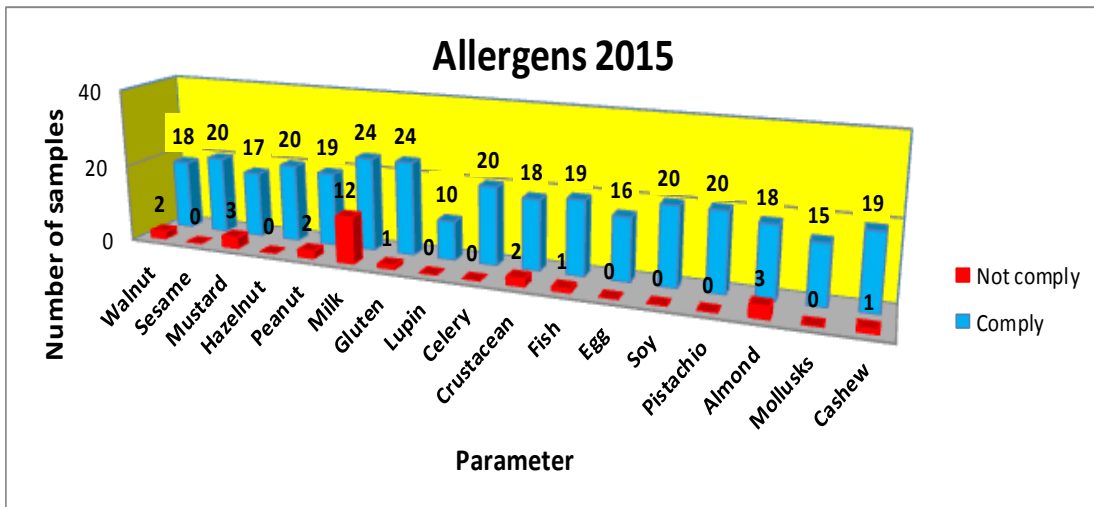


Percentage of samples with multiple pesticides in plant origin samples over the years 2005-2015

- **Veterinary drug residues in meat and animal products** (Tetracyclines, Sulphonamides, Penicillins, Cephalosporines, Aminoglycosides, Quinolones, Chloramphenicol, Nitrofurans, Carbadox, Olaquinox, Dyes, Nitroimidazoles, Coccidiostats, Anthelmintics, Tranquillizers, Zearanols, NSAIDs, β -Agonists, Hormones, Anabolic substances, Thyreostats, Gestagens, Corticosteroids)
 - **Environmental and other contaminants in foodstuffs and Natural Toxins** (Aflatoxins B₁, B₂, G₁ and G₂, Aflatoxin M₁, Ochratoxin A, Zearalenone, Deoxynivalenol, Fumonisin B₁ and B₂, Toxins T₂ and HT₂, Patulin, Citrinin, Alternaria Toxins [AOH, ALT, AME, TEN, TEA], Tropane Alkaloids [Atropine, Scopolamine], Chemical Elements [Al, Cr, Mn, Fe, Co, Ni, Cu, Zn, Se, Sn], Heavy Metals [Pb, Cd, Hg, As, etc], Nitrates/Nitrites, Polycyclic Aromatic

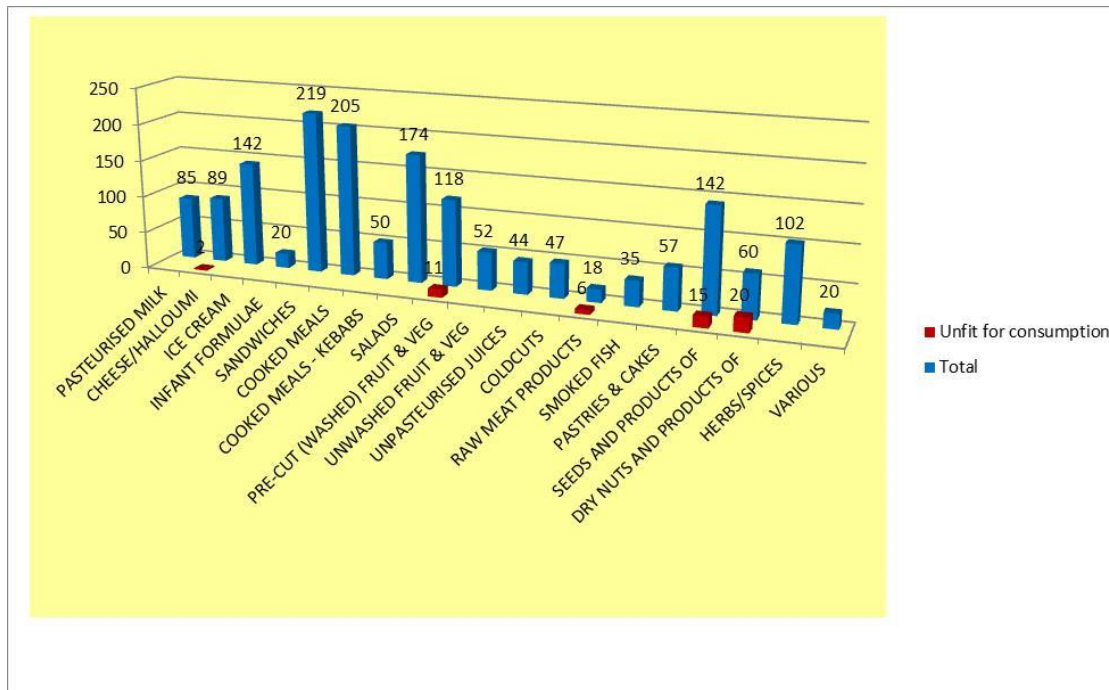
Hydrocarbons-PAHs, PFOA and PFOS, Furan, Acrylamide, 3-MCPD, Ethyl Carbamate, etc)

- **Radioactivity levels in foodstuffs** (Gamma Radionuclides, Sr-90)
- **Materials and Products in contact with food and various substances, including endocrine disruptors** (Overall & specific migration of substances: Polyadipates, Cadmium, Lead, Formaldehyde, Phthalates, Primary Aromatic Amines, Melamine, Styrene, Bisphenol A etc)
- **Genetically Modified Organisms** (Detection of *GMOs* in food and feed containing soya, maize, rice, honey papaya, oilseed rape, flax).
- **Meat fraud** (Beef, pork, chicken-poultry, horse, turkey, fish)
- **Allergens** (Milk, soya, egg, fish, crustacean, peanut, mustard, celery, hazelnut, almond, walnut, pistachio, gluten, sesame, lupin, mollusks and cashew)



Summarized results in food category for allergen detection-2015

- **Microbiological quality control of foodstuffs** (*Salmonella spp.*, *Listeria monocytogenes*, *Campylobacter spp.*, *Cronobacter spp.*, coagulase-positive staphylococci, staphylococcal enterotoxins, *Bacillus cereus*, *Enterobacteriaceae*, *Escherichia coli*, Shiga toxin - producing *E. coli*, *Clostridium perfringens*, aerobic colony count, yeasts and moulds, noroviruses, hepatitis A virus)

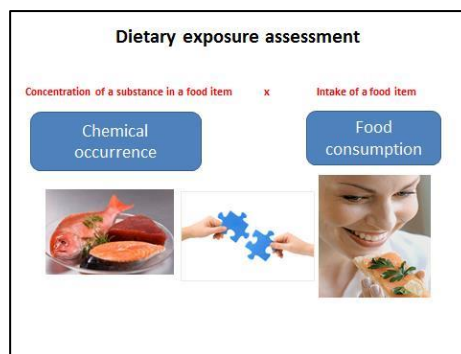


Microbiological Quality of Foodstuffs per category - 2015

- **Food supplements** (Anabolic Steroids, Stimulants, Vitamins, Heavy metals, PDE-5 analogs, pharmaceutical substances for Weight loss and other Pharmaceutical substances as Levodopa, as well as the substance 1,3-DMAA (1,3-Dimethylamylamine) in Food Supplements)
- **Novel Foods/ Nutrition and Health Claims of Foodstuffs** (according to EU Regulations 258/97 and 1924/2006 respectively)

2.1.2 Risk assessment in the areas of foodstuffs and water

The SGL provides risk assessment for the exposure of the population to chemical substances, microbiological or other hazards from food consumption (Regulation No. 178/2002). Risk assessment is carried out by the SGL within its remit and its participation in the National Food Safety Council, and is continuously upgraded mainly due its participation in EFSA's Advisory Forum and EFSA's Networks, as well as being the Cyprus Focal Point of EFSA.



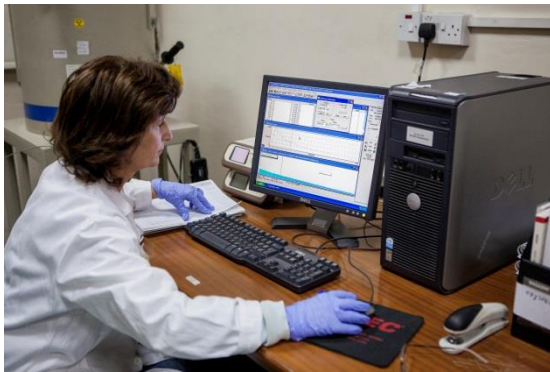
In 2015, the SGL continued the dietary exposure assessment to chemicals at individual level of the Cyprus population, using the deterministic exposure assessment model «Improrisk» that was developed at the SGL.

2.2 Environment

The EU strategy for the Environment and Sustainable Development is a framework for a long-term vision of sustainable development, where economic growth, social cohesion and environmental protection go hand in hand and are mutually supporting. To this end, the European Commission prepared a proposal for the 7th EU Environment Action Programme to 2020 which includes a comprehensive environmental policy to be implemented according to the principles of sustainability, prevention, the principle of "the polluter pays" and the reparation of the pollution at source. The substantial contribution to the implementation of such policy is one of the key objectives of the SGL.

The SGL contributes significantly to pollution prevention and effective treatment having developed **16** monitoring programs that meet the environmental "acquis communautaire" and enable the early identification of accidental or malicious contamination.

It has a unique infrastructure to cover chemical, microbiological, biological, ecotoxicological and radiological aspects of environmental monitoring and pollution control of water as well as human biomonitoring to detect the environmental impact to human health.



Seven specialized laboratories provide a wide range of highly sophisticated analytical services, which keep abreast with the latest worldwide scientific and technological trends.

The SGL, as a vital supporting service of the environmental authorities, utilizes its state-of-the-art infrastructure and expertise aiming at the:

- Continuous support, development and implementation of the environmental policy and legislation by providing reliable laboratory results and expertise.
- Development of effective mechanisms for the early detection of pollution. The ultimate goal is to contribute to the prevention and the long term safety and sustainability of the water resources.

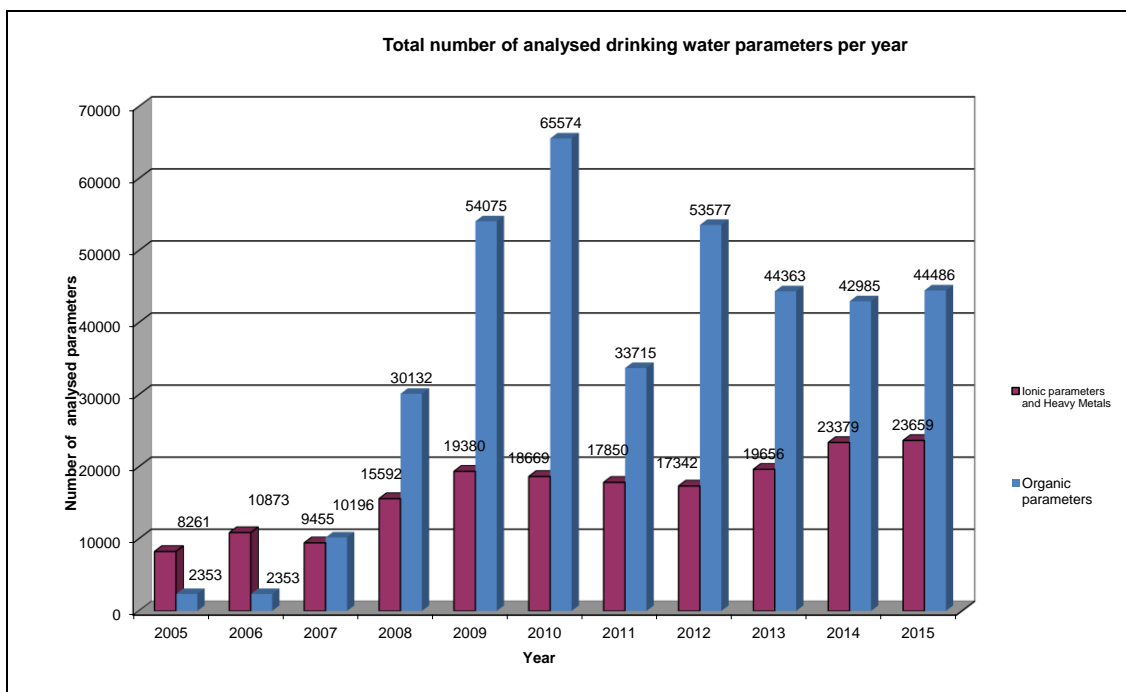
- Investigation of the links between environment and health and, in particular, the effects of pollution on health, which aim at the prevention and reduction of potential health hazards originating from environmental factors, as well as support of political decisions. Emphasis is also given to the quality of indoor air and the effects of toxic substances on children. In addition, human bio-monitoring is being developed in order to investigate the real levels of toxic substances in the human body.
- Furthermore, new programmes are being developed, that focus on new potentially dangerous substances and emerging hazards, such as pharmaceuticals in water.

Surveillance and control is carried out based on annual and multi annual programmes in the areas of Water, Effluents, Atmospheric Air and Environment and Health

2.2.1 Water

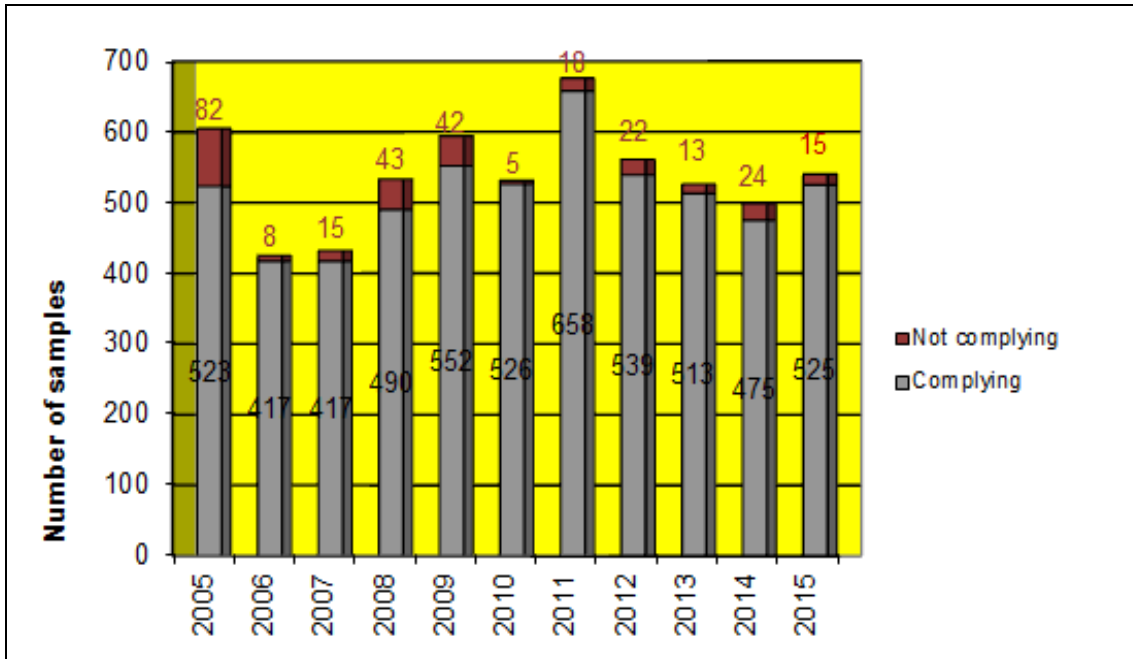
Drinking Water, Bottled Water and Natural Mineral Water

-**Physicochemical parameters/ Anions/ Cations** (Conductivity, pH, Chlorides, Sulfates, Nitrates, Nitrites, Sodium, Boron, Ammonium, Fluorides, Total Organic Carbon, Cyanides), Heavy metals (Lead, Cadmium, Chromium, Nickel, Arsenic, Selenium, Antimony, Mercury, Manganese, Copper, Aluminium, Iron, Barium)



Presentation of control parameters in drinking water (2005-2015)

- **Organic pollutants** (THMs, Pesticides, VOCs, PAHs, Organic micropollutants)
- **Radioactivity levels** (Gamma Radionuclides, Gross α/β - activity)
- **Microbiological control** (Total coliforms, *Escherichia coli*, *Enterococci*, *Pseudomonas aeruginosa*, Total Bacterial Count at 22 & 37°C, Sulphite reducing clostridia, *Clostridium perfringens*, *Legionella species*)



Microbiological control of bottled water through the years 2005-2015

- **Determination of Toxicity** (Tap water: Microtox Test using *Vibrio fischeri* (EC10-TU10 measured at 5', 15' and 30'/ Water from Water Refineries: {EC20-TU20 or (depending on the stage of the process) EC10-TU10 measured at 5', 15' and 30'}). Also Thamnotox test using *Thamnocephalus platyurus* is applied on tap water and water from Water Refineries {LC50-TU50 measured at 24Hrs}

Surface and Ground Water (Dams, rivers, freshwater, underground water, boreholes, salt lakes)

- **Chemical Control** (pH, Conductivity, Sodium, Potassium, Calcium, Magnesium, Chromium, Zinc, Copper, BOD5, COD, Mercury, Cadmium, Lead, Nickel, Boron, Barium, Iron, Manganese, Cobalt, Arsenic, Total Phosphorus, Free Ammonium, Total Ammonium, Chlorides, Sulfates, Fluorides, Silicates, Total Hardness Carbonates, Bicarbonates, Nitrites, Total Alkalinity, Total residual chlorine, Suspended solids, Total Organic Carbon (TOC), VOCs, Pesticides, PAHs, Organic micropollutants, PCBs, Dissolved Organic Carbon (DOC) and Nitrates)
- **Microbiological Control** (Total coliforms, *Escherichia coli*, *Enterococci*)
- **Determination of Toxicity** (Microtox Test using *Vibrio fischeri* (EC20-TU20 measured at 5', 15' and 30'), Daphtox Test using *Daphnia magna* (EC50-TU50

measured at 24 and 48 hours), Algaltox test using *Pseudoklebsiella subcapitata* (EbC50-TU50 measured at 72))

- **Environmental Biomonitoring** (Spectrophotometric determination of Chlorophyll a)
- **Radioactivity levels** (Gamma Radionuclides, Gross a/b-activity)

Seawater/ Coastal Sea Water

- **Chemical Control** (Chromium, Iron, Nickel, Copper, Cadmium, Zinc, Lead, Mercury)
- **Microbiological Control** (*Escherichia coli*, Enterococci)
- **Radioactivity levels** (Gamma Radionuclides)

Swimming pools water

- **Chemical Control** (Conductivity, pH, Total Residual Chlorine, Free Chlorine, Total Alkalinity)
- **Microbiological Control** (Total coliforms, *Escherichia coli*, Total Bacteria Count 37°C, *Staphylococci* species, *Pseudomonas aeruginosa*)

Monitoring of the Ezousa underground water

- **Chemical Control** (Nitrates, Total Phosphorous, Ammonium, TOC, Kjeldhal-N, BOD5, COD, total Nitrogen, Suspended solids, Arsenic, Lead, Cadmium, Mercury, Trichloroethylene, Tetrachloroethylene, Pesticides residues, Organic pollutants)
- **Microbiological Control** (*Escherichia coli*, Somatic coliphages)
- **Determination of Toxicity** (Microtox Test using *Vibrio fischeri* (EC20-TU20 measured at 5', 15' and 30'), Daphtox Test using *Daphnia magna* (EC50-TU50 measured at 24 and 48 hours), Algaltox test using *Pseudoklebsiella subcapitata* (EC50-TU50 measured at 72 hours))

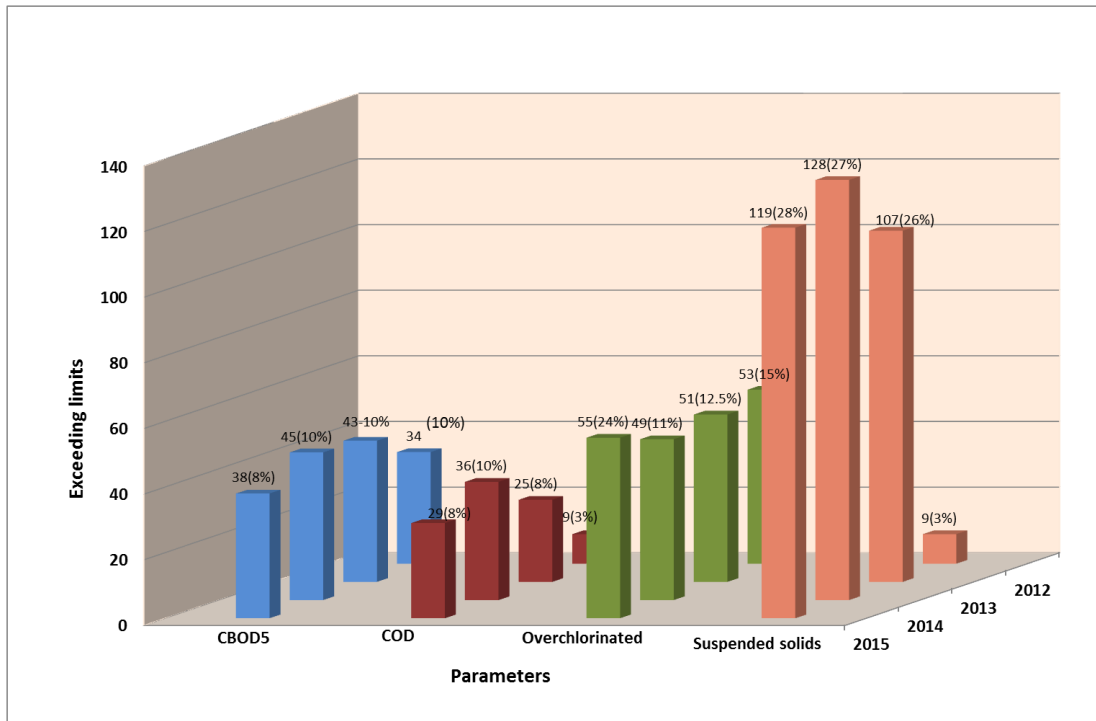
2.2.2 Effluents

Domestic effluents-Treated Water

Water scarcity, increased needs due to population growth but also the lifestyle and climate changes make the safe reuse of recycled water from liquid municipal waste, extremely important for the water balance of Cyprus. Important prerequisite for the use of recycled water is the strict quality control to ensure the protection of human health and the environment from possible effects of the long term use as well as to neutralize the concerns and the bias of the citizens in the use of recycled water.

The quality control of the recycled water includes both chemical and toxicity control:

- **Chemical Control** (pH, conductivity, residual chlorine, BOD₅, COD, suspended solids, chlorides, nitrates, sulphates, boron, total phosphorus, Kjeldahl-Nitrogen, metals (Calcium, Magnesium, Potassium, Sodium, Zinc, Copper, Lead, Cadmium, Mercury, Chromium, Nickel), carbonates, bicarbonates
During 2015, four methods for the determination of pesticides and Polyaromatic Hydrocarbons (PAHs) have been applied determining in total 20 compounds in treated domestic wastes. PAHs have also been determined in sediments using another method.



Chemical Parameters exceeding operating limits of waste water treatment plants

- **Determination of Toxicity (Recycled Water of Tertiary Wastewater Treatment Plants):** Microtox Test using *Vibrio fischeri* (EC50-TU50 measured at 5', 15' and 30'), Daphtox Test using *Daphnia magna* (EC50-TU50 measured at 24 and 48 hours), Algaltox test using *Pseudoklebsiella subcapitata* (EC50-TU50 measured at 72 hours))

2.2.3 Atmospheric Air

Quality of Outdoor Air

Chemical Control (Metals): Aluminium, Calcium, Iron, Potassium, Magnesium, Sodium, Zinc, Titanium, Vanadium, Chromium, Maganese, Nickel, Cobalt, Copper, Arsenic, Cadmium, Tin, Barium, Mercury, Lead)

Anions : Fluorides, chlorides, bromides, nitrates, phosphates, sulphates

Cations: Lithium, sodium, ammonium, potassium, magnesium, calcium

Polyaromatic Hydrocarbons: Benzo(a)anthracene, Benzo(j)fluoranthene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, dibenzo(a,h)anthracene, Benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene)

Radioactivity levels (Gamma Radionuclides, Gross β - activity)

2.2.4 Environment and Health

According to the World Health Organization, many diseases are associated with human exposure to environmental factors, such as toxic chemicals in the food chain, the environment and consumer items. These diseases are often chronic (e.g. cancer, allergies, asthma, neuro-developmental abnormalities, disorders of the reproductive system) and influence healthy ageing.

Recognizing that the study of the relationship between environment and health can lead to better public health policy and the prevention of diseases, the SGL implemented several actions in response to commitments arising from European, international and national strategies and action plans, as well as from other national priorities.

The major areas of work focused on:

a) Human Biomonitoring (HBM)

HBM investigates the degree of exposure of the general population to chemical pollutants, through the analysis of human specimens. It is an important evidence based policy-support tool for the protection of human health, since it provides a direct measure of the levels of environmental chemicals in the human body. In combination with other findings, human biomonitoring can be used to assess whether the level of exposure of the public to environmental pollutants is acceptable or whether measures need to be taken. Since 2004, the SGL has been actively involved in EU efforts to harmonize HBM in Europe.

The SGL was a partner in the two large European projects, ("COPHES" -funded by DG-Research FP7 and "DEMOCOPHES" - funded by DG-Environment LIFE+ and national funds of participating countries), which concern the development of a common methodology for biomonitoring. With these projects, which were completed in 2013, a common methodology was elaborated and tested in parallel in 17 European countries, including Cyprus. The outcomes of these complementary projects were published in 2015 in peer reviewed international journals.

Currently, the SGL is representing Cyprus in the EU Steering Group for the preparation of a new European Human Biomonitoring Initiative.

b) Quality of indoor air

Poor indoor air quality has respiratory and other adverse health effects. Students are a particularly vulnerable population group and they spend more time in school than in any other place outside the house. Studies show that several air pollutants within a school environment can negatively affect health, growth and yield of the child. Pollutants can come from the air or produced indoors by building materials and other products or activities.

The SGL participated in the European project SINPHONIE, funded by the European Commission, which investigated the indoor air quality in European schools and the impacts on health, in order to develop guidance with best practices. The guidelines for healthy school environment as drafted by the SINPHONIE, in 2014 are available on the: www.sinphonie.eu



2.3 Consumer Products

The laboratory testing of Consumer products (pharmaceuticals (for human and veterinary use), medical devices, cosmetics, textiles, adhesives, stationery, chemical mixtures household, and toys), and Customs samples is executed by five specialized laboratories of the SGL having developed a number of monitoring programs in the framework of national and EU legislation.

2.3.1 Pharmaceuticals

The control of pharmaceuticals, along with the foodstuffs control, was one of the first priorities of the SGL, since its foundation in 1932.

The SGL contributed over time to ensure the quality, efficacy and safety of pharmaceuticals traded in the domestic market or produced by the Cypriot pharmaceutical industry for export. Furthermore, the frequent laboratory control contributed to the qualitative development of the Cypriot pharmaceutical industry as well as to the trade improvement of pharmaceuticals.



In order to protect public health, the SGL performs quality control of pharmaceuticals for human and veterinary use to evaluate their quality, safety and efficiency according to the specifications of the finished product dossier of the MHA and/or official compendial method.

The SGL has also participated in the drafting of the Counterfeit Medical Products Convention (Medicrime Convention) of the European Council. The Convention was signed by the Republic of Cyprus, in October 2011 in Moscow.

Physicochemical and Pharmaceutical specifications that are usually tested:
(**Quality:** identification, uniformity of weight, assay of the active ingredient, uniformity of content, pH, water determination, optical rotation, clarity and degree of opalescence of liquids, refractive index, **Efficiency:** disintegration of tablets, capsules and suppositories, dissolution test for solid dosage forms, **Safety:** related substances, impurities, degradation products, visible and sub-visible particles in parenteral preparations)

Microbiological Control (Sterility test, *Limulus amoebocyte* lysate endotoxin test, Bioassay, Presence/absence of *Escherichia coli*, Total aerobic microbial count, Total yeast and molds count).

2.3.2 Medical Devices

The market surveillance for the application of relevant national and EU legislation on Medical Devices started in 2014, after the signature of the Cooperation Protocol between the SGL and the Competent Authority of Medical Devices of the Ministry of Health.

2.3.3 Cosmetics

The SGL is also the official laboratory for the quality control of cosmetics, in collaboration with the Pharmaceutical Services of the Ministry of Health.

Chemical Control (Determination of Preservatives, presence of Phthalic Esters, Glycols (Ethylene glycol, Diethylene glycol), Fluoride, Oxidative dyes, Bleaching agents (such as Hydroquinone, Hydroquinone - monomethyl ether, 29 Hydroquinone-monomethyl ether) Lidocaine, Benzocaine, Heavy metals, NDELA, Free Formaldehyde, Para-Phenylenediamine (PPD), Allergens, Hydrogen Peroxide), Triclosan, Methylchloroisothiazolinone/ Methylisothiazolinone (MCI/MI).



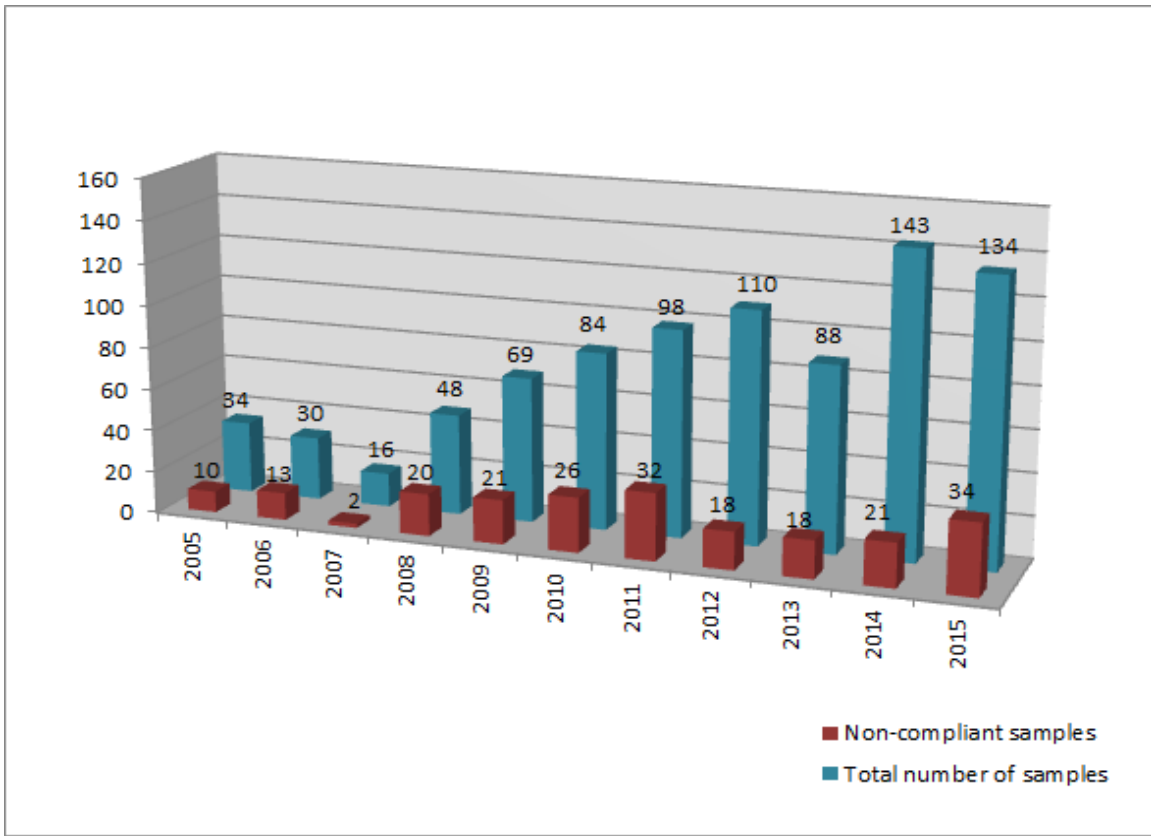
Microbiological Control (Presence/absence of *Escherichia coli*, Presence/absence of *Staphylococcus aureus*, Presence/absence *Pseudomonas aeruginosa*, Presence/absence of *Candida albicans*, Total aerobic microbial count).

2.3.4 Children's Toys

The main purpose of the control of children's toys is to protect children and babies from exposure to chemical risks ie. chemicals (heavy metals, phthalates, etc.) found in children's toys, as well as risks from poor mechanical/physical properties or flammability. Especially children can be endangered from either poor quality materials or poor construction of toys which can result in injury or drowning of a child.

Mechanical Properties (Drop test, impact tests etc)

Chemical Control (Phthalate esters, migration of certain elements from: wooden and metallic toys with painted surfaces, plasteline, crayons, colored pencils and watercolours).

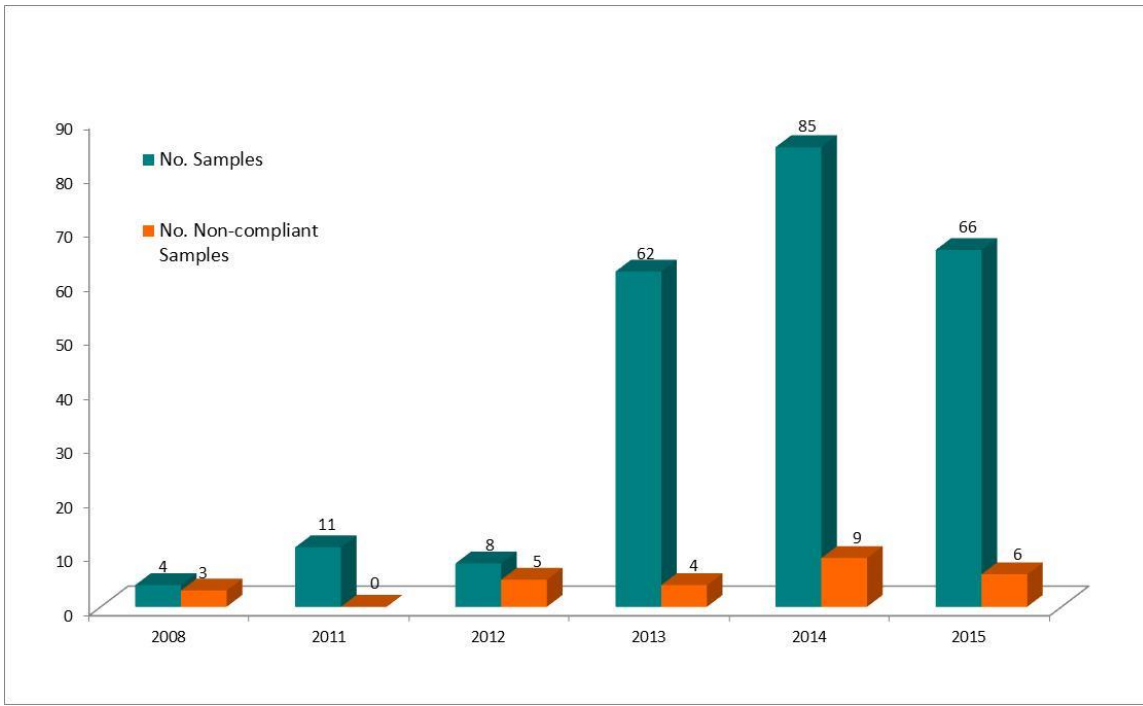


Official control of Toys over the years 2005-2015

2.3.5 Other Consumer's Products

The SGL collaborates with the Cyprus competent authority (the Department of Labor's Inspection of the Ministry of Labor, Welfare and Social Insurance) for the implementation of the Chemical Substances Law of 2010 (N.78(I)/2010) and the European Regulation (EC) No. 1907/2006 (REACH) for controlling the quality and content of dangerous chemicals of various consumer products available in the Cypriot market.

In 2015, the following consumer products have been analyzed for their safety:
Adhesives (rapid-acting and cosmetic use) for chloroform, toluene and benzene,
Felt-tip pens and markers (water soluble and indelible) for chloroform, toluene, benzene and xylenes,
Air Fresheners for 1,4-dichlorobenzene, other restricted chemicals and allergens
Chemical household preparations to determine pH.



Official Control of Solvents in Adhesives over the years 2008-2015



2.4 Forensic Chemistry and Toxicology

The Laboratory of Forensic Chemistry and Forensic Toxicology of the SGL is the only official laboratory in Cyprus conducting analyses of police exhibits in relation to: trafficking and use of drugs, arson, explosives materials and explosives residues, traffic accidents, malicious damage, unnatural deaths and poisoning cases, murder, robbery, rape, etc.



The scientific results of the SGL provide the basis for the Police to investigate cases and for the Attorney General's for the administration of justice.

2.4.1 Forensic Chemistry

Controlled drugs (Cannabis, Heroin, Cocaine, and New Synthetic Drugs: Synthetic Cannabinoids, Cathinones, Benzofurans etc).

Ignitable Liquids (Petrol, Diesel, Kerosene, Thinners and other Ignitable liquids).

Explosives and Explosives Residues (Trinitrotoluene (TNT), Nitroglycerine (NG), Ethylene glycol dinitrate (EGDN), Cyclotrimethylenetrinitramine (RDX), Pentaerythritol tetranitrate (PETN), Inorganic explosive mixtures and Pyrotechnic compositions).

Scanning Electron Microscope (Gunshot Residues, hairs, wood etc)

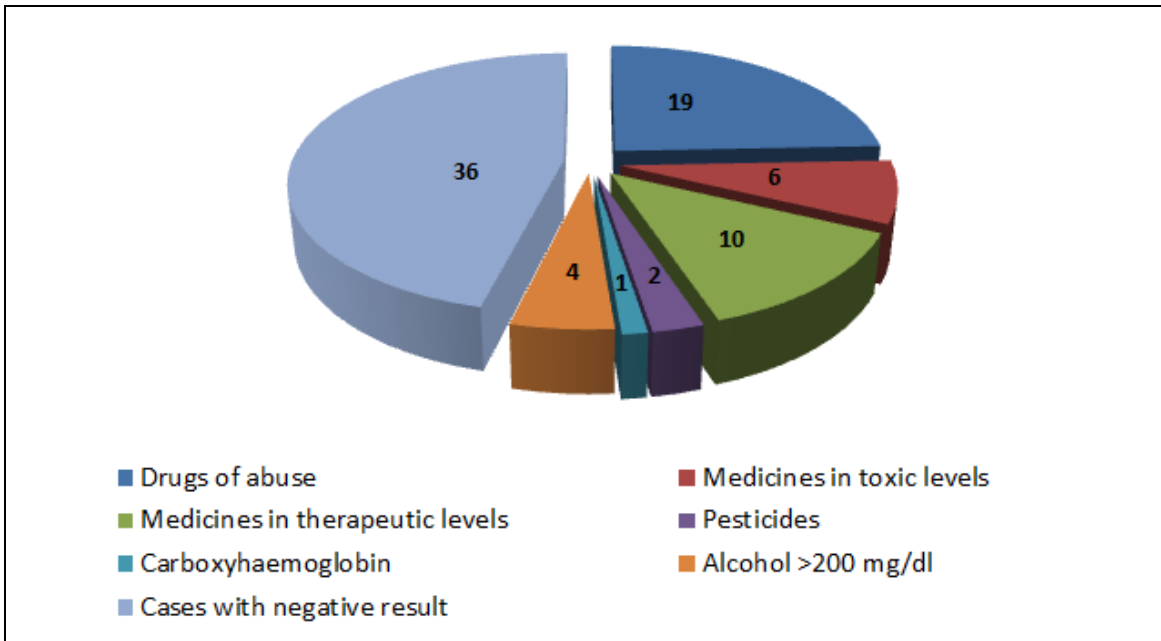
Tear Gases (α -Chloroacetophenone (CN), 2-Chlorobenzalmalonitrile (CS), Capsaine (OC), Nonivamide, etc).

2.4.2 Forensic Toxicology

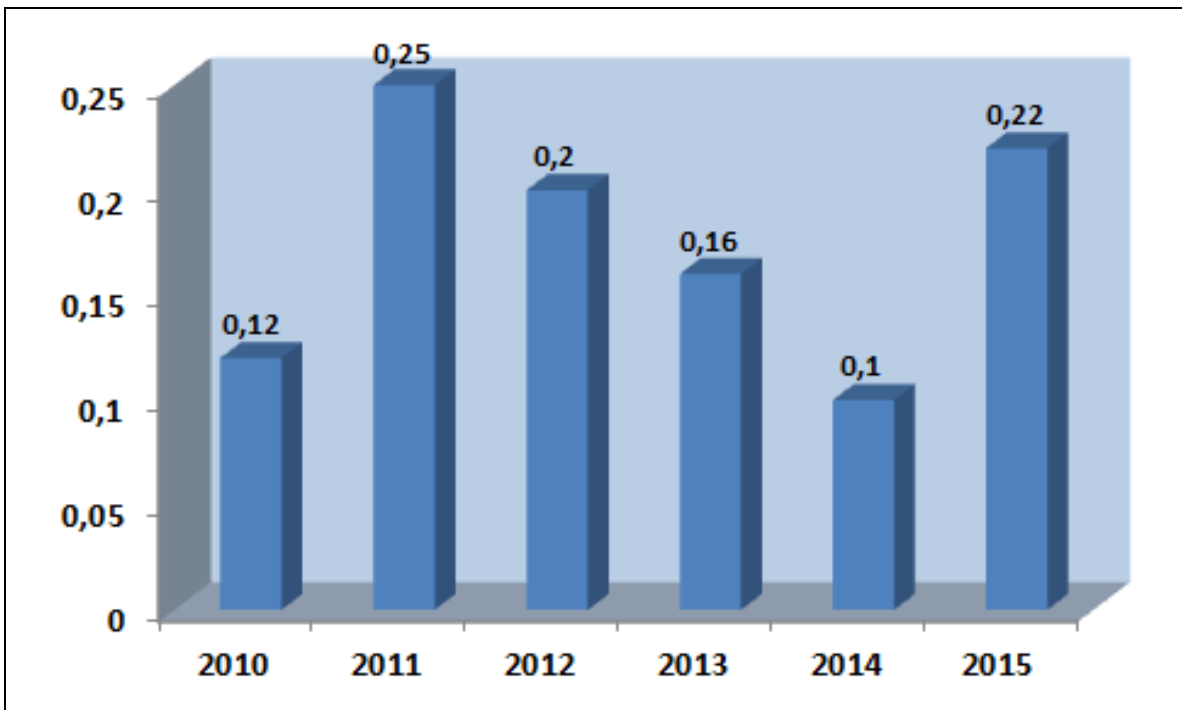
Qualitative Control Controlled Drugs, Benzodiazepines, Antidepressants, Pesticides, and Various drugs according to each case.

Quantitative Analysis: Alcohol in blood, urine or eye fluid, and various drugs according to each case.

The scientific results are utilized both by the Police and coroners to cast light on unnatural deaths. In certain cases, when samples are sent from the hospitals, the results provide profound information for the treatment of patients in the intensive care units.



Substances detected in unnatural death cases



Percentage of drugs of abuse detected in fatal road accidents



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Tel.: +357 22809115, Fax.: +357 22316434
Web Page: <http://www.moh.gov.cy/sgl>
