



**CYPRUS ACTION PLAN ON ENVIRONMENT
AND CHILDREN'S HEALTH (CY-CEHAP)**

2007-2010



**National Committee
On Environment and Children's Health
March 2007**

OUR VISION

Our children, from conception to adolescent, will enjoy a healthy and safe environment with the minimum possible exposure to environmental risk factors. An environment which will allow them to reach their full physical, mental and psychological development and enjoy a healthy life.

OUR GOAL

To minimize the burden of avoidable environmentally linked diseases and disabilities, through the reduction of children's exposure to chemicals and other hazardous factors.

The Cyprus Action Plan has been drafted on behalf of the 1st National Committee (2004-2007) by the President Dr Stella Canna Michaelidou in cooperation with Dr A. Xatzipanagi. The contribution of the members of the Committee, the constructive comments from Dr C. Michael and the editing by and Dr A. Katsonouri are highly appreciated. In this final draft all the comments received until the 20th of March from the members of the NaCCHE, have been incorporated.

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TABLE OF CONTENTS

<i>PREFACE</i>	3
<i>EXECUTIVE SUMMARY</i>	6
1. INTRODUCTION	10
1.1 ENVIRONMENT AND CHILDREN'S HEALTH	10
1.1.1 <i>The need to act now</i>	10
1.1.2 <i>Environment related diseases</i>	11
1.1.3 <i>The impact of Air pollution on Children's Health (ref. Austria)</i>	14
1.1.4 <i>The impact of physical stressors</i>	16
1.1.5 <i>The application of the Precautionary Principle to protect children's health</i>	19
1.2 INTERNATIONAL CONTEXT AND COMMITMENTS	18
1.3 NATIONAL ACTIVITIES TOWARDS IMPLEMENTATION OF THE BUDAPEST COMMITMENTS	22
1.4 BACKGROUND DATA	23
1.4.1 <i>Geographical Location</i>	23
1.4.2. <i>Socio -economic development</i>	23
1.4.3 <i>Population and Demographic data:</i>	23
1.5. DATA ON THE ENVIRONMENT AND HEALTH.....	29
1.5.1 <i>Health Indicators</i>	30
1.5.2 <i>Cancer data</i>	29
1.5.4 <i>Childhood Asthma</i>	36
1.5.5 <i>Congenital malformations</i>	40
1.5.6 <i>Use of mobile telephones</i>	40
1.5.7 <i>Obesity</i>	40
1.5.8. <i>Environmental data</i>	41

2. THE VISION-GOALS- OBJECTIVES AND THE CONCEPT OF THE CY-CEHAPE.....	46
2.1 THE VISION.....	46
2.2 THE GOAL.....	46
2.3 THE OBJECTIVES.....	46
2.4 THE CONCEPT OF THE CY-CEHAP.....	47
3. DEVELOPING AND IMPLEMENTING THE CY-CEHAP.....	48
3.1 SETTING UP PRIORITIES.....	48
3.2 PLAN OF ACTIVITIES AND TIME FRAME.....	54
3.3 IMPLEMENTATION AND COORDINATION.....	53
3.4. MONITORING THE EFFECTIVENESS.....	54
3.5. FUNDING.....	55
TABLES OF CY -CEHAP GOALS-ACTIVITIES- TIMEFRAME.....	56
REFERENCES.....	76
APPENDICES.....	80
I. European Union Declaration at Budapest Conference , 2004	
II. The EU Action Plan 2004-2010, COM(2004) 416	
III. The WHO Regional Priority Goals for the CEHAPE	
IV. Proposal for the establishment of the National Committee Environment and Health (NaCCEH)	
V. Info on the NaCCEH	

PREFACE

At the onset of the new century, environment and health policies are still confronted with many challenges, such as the effects **that chronic exposure to low levels of cocktails of chemicals and exposures at early stages of life have on human health and well being**. Existing evidence clearly shows that children are more vulnerable than adults to most chemicals and have enhanced exposure, weaker defence mechanisms and particular sensitivities during their development. It is therefore imperative to be proactive and to exercise immediate action in the best interest of our children's health.

Environment and health aspects are ranked highly in the agenda of the Ministry of Health and we fully endorse the principles of Prevention, Precaution and Pro-activeness. The Cyprus Children Environment and Health Action Plan (Cy-CEHAP) provides a global and coherent framework in the field of the environment and children's health for both Policy development and implementation, through specific actions within a well defined timeframe. In line with Ministry's policy, the Cy-CEHAP philosophy is based on three principles: **Precaution, Prevention and Integration** and is aiming at the maximum synergy of goals, multi sectorial targets and activities. The commitments arising from the Budapest Conference 2004, the targets of the E.U. Action Plan and our national priorities and concerns are integrated **under one coherent action plan**.

Our Vision is that children from conception to adolescent, will enjoy a healthy and safe environment with the minimum possible exposure to environmental risk factors. An environment which will allow them to reach their full physical, mental and psychological development and enjoy a healthy life.

By 2010 Prevention and Precaution will become essential elements prevailing in all policies and legislation which may influence children's health and welfare and Cypriot citizens will be well informed and apply these principles in their everyday life.

We aim to minimize the burden of avoidable environmentally linked diseases and disabilities through the reduction of children's exposure to chemicals and physical stressors. Cancer, asthma, neuro-developmental disorders and congenital malformations are in our focus. The Ministry of Health, has the key promoting and coordinating role in the whole process of the Cy-CEHAP and the overall responsibility for its effective implementation.

To this effect, we are committed to providing continuous monitoring and support in order to ensure the proper implementation of the Action Plan. We will foster partnerships and work closely with all other Ministries and stakeholders involved and in particular with the medical community and parents associations, research institutes, the WHO, the European Commission and other countries.

Mr Charis Charalambous

Minister of Health

Nicosia, March 2007

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EXECUTIVE SUMMARY

As a reflection of the interest of the Cyprus Ministry of Health in the issues related to the environment and children's health, an **Advisory Committee for the Prevention of Childhood Injuries and Poisonings**, was established in 2002 and the **National Committee on the Environment and Children's Health (NaCCEH)** was appointed by the Council of Ministers in 2004. The NaCCEH serves as the National Focal Point for all EU, WHO and other national and international activities pertaining to Children's Health and the Environment and is assigned with the responsibility to develop, promote and coordinate the National Action Plan on the "Environment and Children's Health" (Cy-CEHAP).

The framework of the Cy-CEHAP is defined in line with the terms of references upon which the NaCCEH was established, and the action plan of the **NaCCEH**, which was approved by the Ministerial decision of 2004.

In accordance with the Ministry's policy, the Cy-CEHAP concept is based on three principles: **Precaution, Prevention and Integration** and is aiming at the maximum synergy of goals, multi sectorial targets and activities. The Cy-CEHAP addresses **under one coherent action plan** commitments arising from:

- a) the E.U. integrated strategy on Environment and Health (COM 338 (2003)) and the Scale Initiative on children's health,
- b) the Action plan for Environment and Health (COM 416 (2004)),
- c) the WHO Children's Environment and Health Action Plan for Europe (CEHAPE) and the Budapest Inter-ministerial Declaration of 2004, and
- d) National priorities and concerns.

The Cy-CEHAP aims to be multidisciplinary, as it seeks to bring together various stakeholders and fields of expertise e.g. politicians, scientists, administrators, local authorities, parents and health providers associations etc. Finally, the Cy-CEHAP encourages a multi-sectorial approach, aiming to maximise synergies among all policies related to health and the environment e.g. agriculture, transport, energy, industry, etc. In terms of resources, the

Cy-CEHAP contributes real added value, by providing a coherent framework for common activities to most relevant public and private sector actors. These actors are invited to enhance Cy-CEHAP through shared objectives, strengthened cooperation and joint activities and measures.

The Vision

Our children from conception to adolescent will enjoy a healthy and safe environment with the minimum possible exposure to environmental risk factors. An environment which will allow them to reach their full physical, mental and psychological development and enjoy a healthy life.

The Goal: The ultimate goal is to minimize the burden of avoidable environmentally linked diseases and disabilities through the reduction of children's exposure to chemicals and other hazardous factors.

The Objectives:

1. **To raise awareness and bring at the highest level of the political agenda the needs for policy and regulation addressing children's vulnerability to environmental factors and to integrate prevention and precaution into health, environmental and sustainable development policies.**
2. **To reinforce mechanisms for prompt responses to emerging threats and uncertain risks and to promote prevention and precaution in everyday life through education, knowledge dissemination, information on risks, and the training of health professionals, parents and children.**
3. **To strengthen technical infrastructure, capabilities and knowledge for diagnosing and curing environmentally induced diseases and disabilities through the training of professionals.**
4. **To promote surveillance and research in order to:**
 - a. address open questions and foster an/the Environment & Health Information System,
 - b. identify priorities to be addressed at national and international level
 - c. provide feedback for the effectiveness of actions, legislation and policies aiming at the decrease of the exposure to environmental pollutants.

Implementation and coordination

Ministry of Health, has the key promoting and coordinating role in the whole process of the Cehap and the overall responsibility for its effective implementation. However the implementation of the Cy-CEHAP will be the collective responsibility of all Ministries involved e.g Ministry of Health, Ministry of Agriculture, Natural Resources and Environment (MANRE), Ministry of Labor and Social Insurance, Ministry of Communication and Works, Ministry of Education and Culture etc.

The Action Plan is very specific in terms of the basic objectives and the timeframe of its implementation. However it remains flexible enough in terms of implementation of the individual activities. To this effect the four main Cy- CEHAP Objectives are split in 13 working sub-objectives with specific timeframe of achievement. These are addressed in a number of proposed activities which may be changed provided that the specified sub-objectives will be achieved.

The links and relevance of those objectives to the four WHO CEHAPE Goals and the Actions of the EU Action Plan on Environment and Health, are clearly specified. An indicative timeframe is also provided (Tables 10 and 11) as well as the preliminary list of the potential actors involved. Previously implemented activities through the 3 annual programs of the National Committee (2004-2006) form the nucleus of the Action plan. Therefore, some activities have been already initiated and are in progress. For the sake of the completeness and integration of the national activities, those activities are also integrated in the Action Plan 2007-2009 .

Monitoring the effectiveness

The implementation of the CY- CEHAP and the degree of achievement of its goals will be evaluated on an annual basis by the Ministry of Health, based on the annual report that will be prepared by the NaCCEH. Necessary optimization and adaptation to emerging threads and opportunities will be done accordingly.

A set of indicators, which can be used to evaluate the effectiveness of the CEHAP, are presented in the Table 12. These indicators were derived mainly from selected WHO indicators, and were adapted to National conditions. Pe

Reporting to the EU and WHO will be done by the Ministry of Health

Funding

The implementation of CEHAP can be supported by ongoing activities in the field of Health and Environment, both at national and EU levels. Maximum synergies with ongoing activities for the implementation of EU monitoring legislation on environment and health, as well as related to WHO and other international commitments e.g POPs convention, will be developed to minimize extra costs. The overall funding of the activities can be covered from the following three complementary

a) **The yearly budget of the NaCCEH:** , A core yearly budget will be proposed by the NaCCEH and approved by the Ministry of Health. This will mainly cover coordination activities, training, awareness raising, public information and intervention, surveillance /small scale research projects and international commitments (EU and WHO). This funding will ensure stability, undisturbed continuation and smooth implementation of the Cy-CEHAP. This overall stability is expected to create better opportunities for external EU funding.

b) **Indirect funding of activities through the utilization availability of data and information relevant to the realization of the Cy-CEHAP objectives.** To this effect, protocols of agreements will be signed between the Ministry of Health and all relevant ministries, the University of Cyprus and other actors involved to ensure effective cooperation. For example data collected for the implementation of the legislation for air or water quality can be adjusted and utilized for the purposes of the Action Plan. In addition, potential minor adjustments to the monitoring programs aiming to better utilization of the results and added value will be promoted.

3. **Additional Research funds** could be raised from the Research Promotion Foundation (CRPF, ITTE), EU funding schemes through e.g. the Public Health Program and the 7th Framework Program for Research and Development. Training activities can also be supported by the WHO.

1. INTRODUCTION

1.1 Environment and Children's Health

1.1.1 The need to act now.

It is now recognized that children, from the embryonic stage to the stage of adolescence, are often more vulnerable to environmental hazards than adults. The exposure of children to substances or agents, such as polychlorinated biphenyls (PCBs), lead, mercury, phthalates, dioxins, pesticides, tobacco smoke and ionizing radiation, can have serious effects on their health. These effects may develop immediately (i.e. asthma or allergy) or may arise later in life. For example, children may suffer from neuro-developmental or other disorders, mental retardation, effects on their immune, endocrine or reproductive systems or even develop cancer.

The embryo and the child are more vulnerable to the effects of chemical substances compared to adults.

- Due to their dynamic development, children eat and drink more in proportion to their body weight and breathe faster than adults. Furthermore, children are naïve, curious, unaware of risks and often use their mouth to explore things. As a result, they experience enhanced exposure to pollutants found in food, air and water. Because they are under development, they also **absorb a greater proportion of both useful and toxic substances.**
- **The defense mechanisms of a child, such as the toxic substances elimination mechanisms, are weak and not fully developed.**
- There are stages in a child's development, which are considered to be extremely crucial, known as "**critical windows of vulnerability.**" For example, during the 2nd-10th week of gestation, when the organs are being formed, toxic exposure may lead to serious functional disorders and deficiencies. Also, the first 3-4 years in a child's life are crucial for the development of its brain, personality and behavior. Brain development is a rapid procedure and very susceptible to chemical substances. Normal growth may be disrupted if exposure to certain chemicals, like endocrine

disrupters, occurs during the "critical windows of vulnerability". Exposure during these stages of development can cause serious damage to the mental and physical health of the child, as well as to its reproductive system and can negatively affect its learning ability. Such substances may be present in materials and chemicals of everyday use, such as varnishes, sprays, paints, pesticides, solvents, tobacco smoke, etc.

- Children have an entire life-time ahead of them and thus long-term diseases such as cancer, neurological or growth abnormalities have a higher probability of developing.

1.1.2 Environment related diseases

1.1.2.1 Childhood cancer

Cancer is the main cause of death by disease in children between 1 and 14 years of age in the US (ACS, 2002: 10). It is also the most common cause of childhood mortality due to disease in developed countries (NUH, 2002:2), although, mortality from childhood cancer in general and childhood leukemia in particular has sharply declined in economically-developed countries over the last 30 years' (Vecchia *et al.*, 1998: 2223). Nevertheless, this decline is much less pronounced in South America, Eastern Europe, and other economically less-developed areas (Levi *et al.*, 1995). Such trends may be attributed to the medical treatment services now available in the more developed countries compared to the less-developed regions of the world (Levi *et al.*, 2001; Craft, 2000; Vecchia *et al.*, 1998; Hesselting and Wessels 1997; Lukens, 1994; Draper *et al.*, 1994). Childhood leukaemia, brain/CNS and lymphoma continue to rank amongst the top 3 most common incidence types for children under 20 years of age. This is also true for those afflicted between the ages of 0-19 in Europe.

Cancer is a multi phased disease. It may arise from non-environmental (genetic factors) because of the presence in the individual's genome of chromosomal aberrations or cancer-predisposing genes. But at the same time the weight of evidence clearly indicates that cancer may also arise from exposures to carcinogens found in the environment. **The key point is that environmentally induced cancers are largely preventable through the reduction of public exposure to suspected carcinogens.** Thus, a great number of lives could be saved through exposure reduction. However, reduced exposure to environmental carcinogens cannot be

accomplished through regulatory interventions alone. Regulatory intervention is better suited to control risks stemming from *involuntary* exposures. Attention must also be paid to *voluntary* exposures, such as those associated with lifestyle and behavior as well as occupational hazards to pregnant women.

Particular attention must be paid to the *environmental etiology of childhood cancer* because, 'children are highly vulnerable to the most environmental toxicants' (Suk, 2002: A284). Childhood cancer may also be related to low dose exposure to carcinogens. An important source of scientific information is exposure during developmental windows in intra-uterine and post-natal life, when there can be increased vulnerability to the effects of pollutants (Anderson *et al.*, 2000). In the work of the National Academy of Sciences (NAS, 1993), it is clearly stated that for reasons referred in chapter 1.1 "Children are particularly susceptible to the levels generally found in environmental exposure scenarios".

1.1.2.2 Asthma and allergies

Europe faces an epidemic of allergy diseases and asthma, with the reported cases showing a steadily increase in recent years. In most countries in the European Region, from the mid-1970s to the mid-1990s, the prevalence of asthma symptoms in children was reported to increase by 200%. In the European Union, allergy disease is the most common chronic illness of childhood, and in some areas it can be estimated to affect more than one in four children. Recent data projected that asthma and allergy may affect up to one in two children. Both asthma and allergies are multi-factorial conditions, resulting from complex interactions between genes and the environment. In particular, environmental tobacco smoke, poor quality of indoor/outdoor air and some allergens influence the development of allergic reactions.

Among the many factors associated with asthma and allergies, the environmental consequences of climate change have recently attracted the attention of scientists and the public health community. Changes in temperature and precipitation patterns may alter the length and timing of the growing season of plants producing pollen.

On average, the length of the pollen season in Europe increased by 10-11 days over the last 30 years. Longer and more intense exposure to pollen can raise both the number of allergic episodes and the demand for health care.

Measures to reduce or control exposure to environmental allergens are urgently needed to decrease the prevalence and severity of allergic disorders in childhood. This is part of a broader child-focused health policy, based on specific risk assessments.

Draft Council Conclusions on Childhood Asthma endorsed the environmental methodology in the investigation of childhood asthma and called for a multidisciplinary approach in research projects that will facilitate the simultaneous examination of genetic and environmental factors; In this context, it is emphasised that the primary focus should be on approaches to prevent, diagnose and manage asthma in children.

1.1.2.3 Congenital malformations

Congenital disorders include major and minor structural anomalies. These can occur as single malformations or combined malformations as in complex genetic syndromes. A congenital disorder can have trivial or grave effects. The most severe, such as anencephaly, are usually incompatible with life. Birth defects are a leading cause of death in early infancy, accounting for the deaths of nearly 2 out every 1000 infants.

Occurrence Rate

About 2% to 3% of babies are born with significant congenital birth defects. Birth defects involving the brain are the largest group at 10 per 1000 live births, compared to heart at 8 per 1000, kidneys at 4 per 1000, and limbs at 2 per 1000. All other defects have a combined incidence of 6 per 1000 live births. Birth defects of the heart are the most common birth defect leading to death in infancy, accounting for 28% of infant deaths due to birth defects, while chromosomal abnormalities and respiratory abnormalities each account for 15%, and brain defects about 12%.

Causes

Congenital malformations result mainly from genetic defects, including hereditary ones. Chromosomal aberration syndromes, as well as single gene defects, can be the causative factors. Advanced maternal and paternal age have been related to such congenital malformation syndromes, as age increases the incidence of non-disjunction faults and changes in the germ cells of males. Also extremely young age of mothers has been shown to play a role in increasing the incidence of congenital anomalies.

Furthermore, exposure of the fetus in utero to drugs, toxic substances, chemicals, infections, dietary deficiencies and pollution elements plays a significant role in affecting not only the normal structural development of the fetus, but also the general health and the mental capacities of the child to be. These factors are universally known as teratogens.

For example, dietary deficiency of maternal folic acid is associated with spina bifida. Exposure of the fetus to harmful substances during gestation (e.g, alcohol or mercury) or to drugs administered to the expecting mother (e.g., phenytoin), can cause recognizable combinations of birth defects. Many infections which a mother can contract during pregnancy, such as rubella and syphilis, can also affect the baby.

A significant proportion of birth defects cannot be attributed to either genetic abnormalities or environmental exposures. These are referred to as sporadic birth defects, a term that implies an unknown cause, random occurrence, and a low recurrence risk for future children born to the same mother. Epidemiological studies of these disorders will hopefully shed light on their etiology.

There is now a great deal of evidence that men may be the source of most new mutations in the population and therefore may be responsible for most of the congenital diseases that seem to come from nowhere. As men age, their sperm is more likely to carry alterations in genes.

1.1.3 The impact of Air pollution on Children's Health

Many epidemiological studies have assessed and shown the association between ambient air pollution and health effects on adults using different indicators such as particulate matter (PM expressed PM₁₀, PM_{2.5}, Total Suspended Particles - TSP, Black Smoke -BS) or gaseous pollutants (nitrogen dioxide (NO₂), sulphur dioxide (SO₂) and ozone (O₃)).

Although fewer studies have focused on the effects of air pollution on European children, their results suggest that there is a relationship between air pollution in Europe and numerous adverse health outcomes in children, in particular, respiratory disease.

Children, in particular those under two years of age and adolescents, are considered to be more susceptible than adults to the effects of air pollution, partly because of their immature metabolism and their physiology.

Even at relatively low levels, ambient air pollution has been shown to affect children with asthma and other respiratory conditions. Living on busy streets in urban areas, particularly those with heavy motor traffic, has been associated with several respiratory diseases (exacerbation of asthma, chronic respiratory symptoms, allergic symptoms, increased prevalence of atopic sensitization, reduction in lung function).

Results from different studies consistently indicate that neonatal or early post neonatal exposure to air pollution results in mortality; these effects seem to be stronger in the post - neonatal (1-12 months) period and due to respiratory causes. Studies from Brazil suggest that there is a positive relationship between exposure to air pollution and respiratory mortality in young children (< 5 years). There are no European studies using this health outcome.

Technical and legal measures implemented since 1990 (e.g. ban of lead in petrol, decrease in sulphur content of fuels, emission standards for vehicles) have led to a reduction of some vehicles exhaust emissions. In contrast, the effects of road transport - related particulate emissions and their continued increase in many countries are the force of today's health concerns. Models which forecast traffic growth and factor in both the implementation of regulations and improved technical measures, suggest that any improvements archived by the latter measures, will be offset by the increased emissions due to traffic growth. As a result, if emission ceilings and air quality objectives are to be met, technical measures will have to be complemented by economic and structural actions, which act to restrict emissions from road transport and other mobile sources.

Several studies have produced estimates of the health benefits that could be attained by decreasing ambient air pollution levels in European cities, using particulate matter with a diameter smaller than 10µm (PM10) as an indicator. Other important indicators for transport related air pollution are PM2.5, NO₂ and black smoke. It has been estimated by a European Information System (APHEIS) study that a decrease of 5 µg/m³ in ambient PM10 levels (other factors unchanged) in nine French cities would prevent 1,561 anticipated deaths. The same scenario if applied to 19 European cities estimates that 5,547 deaths would be prevented. If a PM10 air quality guide value of 20 µg/m³, which must be implemented by 2010 in Europe, is implemented in 19 European cities, it will prevent 11,855 deaths.

Indoor Air Pollution

People spend a large part of their life indoors. In addition to being at home, this also refers to other public or private indoor environments, such as the working place, schools, cafés and restaurants. Having clean air indoors is very important for the health of the population as whole but it becomes particularly important for vulnerable groups such as babies, children and aged people or people already suffering from respiratory or allergy conditions. The combined exposure to different indoor pollutants, their concentrations and their public health significance are being studied worldwide and for many pollutants, scientific evidence shows a dramatic impact on the health of the population. Various indoor air pollutants are responsible for, or exacerbate respiratory diseases, allergies, intoxication and cancer (e.g. asbestos, radon, environmental tobacco smoke (ETS), combustion products, volatile organic compounds, biological pollutants etc.). Whilst the outdoor air pollution is well regulated at EU and national level, the effective minimization of indoor air pollution and associated exposure depends less on legislative measures. Raising awareness, effective intervention and active involvement of stakeholders and individuals are the most effective tools to address the problem. The following are identified as first priorities at national level;

- **Reduction of the impact of Passive smoking**
- **Minimization of exposure to household chemicals, emissions from building materials and gardening practices** through education, training of parents, teachers and other stakeholders and awareness raising.

1.1.4 The impact of physical stressors

1.1.4.1 Noise Exposure and Health Effects

(based on PEP Transport related health effects on Children, WHO,UNECE,2004).

In Europe, transport (road, rail and air traffic) is the most important source of community noise. Approximately 30% of the European Union's population (EU-15) is exposed to levels of road traffic noise of more than 55 dB. Exposure to high noise levels has decreased in some countries since 1980 due to technological measures, noise barriers and spatial planning. However due to the expected growth in traffic, extra measures will be needed. At the current noise levels many people are annoyed and disturbed in their sleep. A small effect on cardiovascular risk is highly plausible.

The limited number of epidemiological studies in children indicates that noise exposure affects children's learning ability (cognition), motivation and annoyance. In addition, there is some evidence that noise is associated with impacts on the cardiovascular and endocrine system of children. A few intervention studies show the benefits that could be attained by decreasing noise levels: reduction of railway and aircraft noise improved the long - term memory and reading ability of school children. To avoid such effects, protection of children against noise exposure during the night and during learning activities is recommended. Recent estimations of the noise - related health impacts in the Netherlands suggest that current noise levels may be associated with annoyance in 1.5 - 2 million people (out of a population of 16 million) disturbed sleep in 550 000 - 1 million and about 220 000 cases of hypertension. In total, 1-2% of the total disease burden could be attributed to traffic noise. Impacts on children can not be estimated yet. The results of noise and Health Impact Assessment studies in different countries are difficult to compare due to methodological differences. The new EU directive on environmental noise provides a basis for further harmonisation.

Cost-benefit analyses clearly indicate the benefits of implementing several source-measures. For example, it has been estimated in the Netherlands that the implementation of several source - measures on cars and trains will cost about 2 billion Euros. The benefits in terms of reduced annoyance are estimated with about 4-6 billion Euros. Estimations are that in EU-15 the overall external (abatement) cost of road and rail traffic noise amount 0,4% of the total GDP, some 36 billion Euros.

In Cyprus, in order to be in line with the environmental noise directive, the preparation of noise maps in main traffic arteries and highways is currently taking place, so that an action plan for the creation of the appropriate area zoning can be contacted.

1.1.4.2 Improper lighting and Health Effects

Too little is known at the moment about potential effects due to the increased use of artificial lighting in the evening and at night on people's sense of well being (Health Council of the Netherlands, 2002).

1.1.4.3 Electromagnetic fields

Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields. However, some gaps in knowledge about biological effects exist and need further research.

Effects on pregnancy outcome

There have been occasional reports of associations between health problems and presumed exposure to electromagnetic fields, such as reports of prematurity and low birth weight in children of workers in the electronics industry, but these have not been regarded by the scientific community as being necessarily caused by the field exposures (as opposed to factors such as exposure to solvents).

Cataracts

General eye irritation and cataracts have sometimes been reported in workers exposed to high levels of radiofrequency and microwave radiation, but animal studies do not support the idea that such forms of eye damage can be produced at levels that are not thermally hazardous.

Electromagnetic fields and cancer

Despite many studies, the evidence for any effect remains highly controversial. However, it is clear that if electromagnetic fields do have an effect on cancer, then any increase in risk will be extremely small. The results to date contain many inconsistencies, but no large increases in risk have been found for any cancer in children or adults.

1.1.5 The application of the Precautionary Principle to protect children's health

There are many well established environmental risks, such as unsafe drinking-water, indoor and outdoor air pollution and inadequate sanitation, which are at present among the most serious risks to public health. It is important that public health interventions are strengthened to prevent them. However, there are other, often highly uncertain and complex risks such as combined exposure to cocktail of dangerous chemicals, exposure to endocrine disrupting chemicals through food, water, air and from everyday products. These threats can result in effects that take place long after exposure, making the establishment of causal links more difficult. Exposures to these agents can result in effects that are irreversible or take many generations to remediate and are costly to health and the environment. Limitations in the ability to characterize causal relationships are occasionally misinterpreted as evidence of safety.

Thus, the need for more accurate scientific information has sometimes been used as a reason for inaction.

The European Commission adopted in 2000 the COM (2000) 1 on the Precautionary Principle

The European Commission in 2000 adopted the Communication COM 1 of the 2000, on the use of the precautionary principle. The Communication underlines that the precautionary principle forms part of a structured approach to the analysis of risk, as well as being relevant to risk management. It covers cases where scientific evidence is insufficient, inconclusive or uncertain and preliminary scientific evaluation indicates that there are reasonable grounds for concern that the potentially dangerous effects on the environment, human, animal or plant health may be inconsistent with the high level of protection chosen by the EU. The Communication also qualifies the measures that may be taken under the precautionary principle. Where action is deemed necessary, measures should be proportionate to the chosen level of protection, non-discriminatory in their application and consistent with similar measures already taken. They should also be based on an examination of the potential benefits and costs of action or lack of action and subject to review in the light of new scientific data. They should be maintained as long as the scientific data remain incomplete, imprecise or inconclusive and as long as the risk is considered too high to be imposed on society.

Why is precautionary principle very relevant to children's health

It is evident that precaution is needed to protect children against potential but uncertain risks due to environmental exposures in early life. Precaution and prevention will allow them to grow, develop, and reach maturity without incurring neurobehavioral impairment, immune dysfunction, reproductive damage, or increased risks of cancer. Protecting children and future generations from environmental health risks is a compelling reason for developing precautionary approaches that are rational, consistent with available scientific information and mindful of society's needs and values. Application of the precautionary principle is particularly appropriate for the protection of children's health because of the following (ref WHO, 2004):

- the science underlying the impacts of environmental stressors on children (from the stage of the foetus to the age of 18) is more

complex, less researched and less understood than that of such impacts on adults;

- the likelihood of serious harm to children from such impacts can be greater than for adults because of their different and changing stages of biological development, their behaviour and their greater exposure in relation to body weight;
- children are involuntarily exposed to a greater proportion of the risks caused by society's activities than adults, yet they have less power to avoid them;
- children benefit proportionally less than adults from society's risk-generating activities, such as employment, car driving, many consumer products, etc;
- the risks and the benefits of avoided risks have more time to impact on children and society than on adults;
- many of today's serious environmental threats, such as water shortages, climate change, developmental and reproductive effects of toxic substances, endocrine disruption and biodiversity loss, may impinge proportionately more on children and their children than on this generation of adults.

The precautionary principle, when judiciously combined with traditional risk assessment and risk management can promote proactive approach and precaution. The Cy-CEHAP fully endorsed the Precautionary Principle as one of the basic principles of its development. It is specifically addressed through actions of the Plan.

1.2 International Context and Commitments

The setting up of CEHAP in Cyprus took place in a wider European and international context, in which the international community has clearly responded to the call for more attention to children's environment and health. The World Health Organisation (WHO) and the European Union (EU) have played a pioneering and catalytic role. Declarations in the United Nations General Assembly Special Session on Children in May 2002 and the World Summit on Sustainable Development in September 2002 addressed problems that children face globally and especially in developing countries. In Europe, the WHO Third Ministerial Conference on Environment and Health in June 1999 and the WHO Fourth Ministerial

Conference on Environment and Health in June 2004 showed real concern for promoting healthy environments for children. The Children's Environment and Health Action Plan for Europe was agreed at the highest political level, by the WHO, the European Commission and the Member States of the WHO EURO region, setting the scene for national action and implementation. This Ministerial Conference placed its activities within the broad context of sustainable development. To this effect, countries are committed to develop and implement National CEHAPs the latest by 2007. This will put children's health at the top of the political agenda, for the sake of the adults of tomorrow.

In line with World Health Organisation (WHO) recommendations, the European Union initiated a series of major activities from 2002 to 2004, in order to make the environment and health a political priority, reflected in practical actions. The main stages of this process can be summarised as follows: In July 2002, the "Sixth Community Environment Action Programme 2002-2010" took shape, making the environment and health one of its four priorities. In June 2003 the gap between the two issues was bridged through the definition, for the first time, of **an integrated strategy for the environment and health**. At the same time the "Scale" initiative at the EU level demonstrated that the impact of the environment on children's health is a real concern and formed a solid base for the formulation of the European Environment and Health Action Plan 2004-2010, aimed at establishing the adopted integrated strategy. In this action plan, the European Commission advocates an integrated approach at all levels. Other European Union initiatives contribute to this integrated vision of the environment and health. This is a health action programme 2003-2008, which seeks to develop knowledge tools for the principal health determinants. Finally, since its fifth framework programme (FP) and especially in the new 7th FP for research and technological development, the European Commission addresses the environment and health dimension in European research issues.

In May 2004 Cyprus became an EU member state participating at the last shaping stages of the EU Environment and Health Action Plan and since then is actively participating in the development and the implementation of all EU relevant policies networks like the ES BIO biomonitoring network.

1.3. National Activities towards implementation of the Budapest commitments

Environment and health aspects are ranked very high in the agenda of the Cyprus Government and in particular in the agenda of the Ministry of Health. On top of this, issues related to children are of utmost importance and priority. The Ministry of Health was actively involved in the preparation of the Budapest Conference and took a lot of initiatives at the European Union Level on issues related to regulations and activities focusing to children. As a reflection of this interest, the Ministry of Health has proposed the establishment of the National Committee on the Environment and Children's Health (NaCCEH) which has been appointed by the Council of Ministers on January 2004 (Decision 59.304) The Committee is multidisciplinary, with members from the governmental and private sector, who are specialists in the fields of children's health, chemicals, environment and education. The terms of reference of the committee are the following:

- To provide scientific support to the Minister of Health, Regulators and Decision Makers in the field of effects of chemicals on children's health.
- To become National Focal Point for all EU, WHO and other international activities related to Children-Environment and Health and to promote the international cooperation and participation to relevant working groups, programs and research activities of The EU and WHO
- To develop, promote and coordinate the National Action Plan on "Environment and Children Health". In this plan all activities at national and international level, especially those related to the European Union (EU) and the World Health Organization (WHO), will be integrated.

The Committee is accountable and reports to the Minister of Health. The Ministry of Health in its annual budget makes specific provisions to support the activities of the National committee. Complimentary to the NaCCEH, all activities related to the CEHAPE goal II are undertaken by the Advisory Committee on the Prevention of Injuries and Accidents (ACPIA). A good cooperation between the two Committees has been established.

1.4 Background data

1.4.1 Geographical Location

Cyprus is located in the eastern Mediterranean Sea, 97 km east of Syria and 64 km south of Turkey. Cyprus is the third largest Mediterranean island, after Sicily and Sardinia, with a total area of 9.251 square kilometres. Comparatively to its small size, Cyprus has long coastlines that stretch to 778 kilometres. Like all Mediterranean countries, Cyprus shows very noticeable geographical and climatic features.

1.4.2. Socio -economic development

The rapid economic development of the last three decades accompanied with rising standards of living and considerable changes in lifestyles, can lead to a variety of environmental pressures and strains on the country's natural fabric. Socio-economic data depict the human activities exerting strong pressures on the environment.

In Cyprus, a continuous growth of the standard of living is observed, which is also confirmed by the increase in the earnings of households and the growth of the Gross Domestic Product (GDP). Moreover, the levels of private final consumption are illustrating similar growth, which it is of course natural. The average net annual income per household reached 18.575 in 2003 compared to 12.660 in 1997. During 2004, the economy recorded an accelerated growth rate, with GDP expanding by 3,8% in real terms, following a rate of growth of 1,9% in 2003.

1.4.3 Population and Demographic data:

Population

The total population of Cyprus is estimated at 837,3 thousand at the end of 2004 . After the Turkish invasion of 1974 and the occupation of nearly 40% of the territory of the country, the total population experienced negative growth up to mid 1977, through mainly war losses, emigration and fertility decline. In the following years, demographic developments favoured population growth and the total population exceeded in a period of ten years the figure of mid 1974. The total population continued to grow since then.

Demographic data are provided by the Statistic service and are based on the census 2001 updated on 2004. The total population of the island at 2001 was 703.529 and the No of **Children (0-19) is 206.936**

representing the 29% of the total population. In rural areas the % of children is 31 and 29% in urban areas (Table 1). The % of children per age group is shown on Fig.1

The age and sex distribution of the population (2000) compared to 1982 and 1992 data shows a gradual increase in the proportion of old-aged persons and a decrease in the proportion of children, indicating the aging process of the population. An increase has also been observed in the proportion of person's aged 45-64. The proportion of children below 15 had decreased to 21,5% while the proportion of old-aged persons 65 and over increased to 11,7%, as compared to 25,4% and 11,0% respectively in 1992 and 25,0% and 10,8% in 1982

Fig. 1A Population by Age and Sex, 2000.

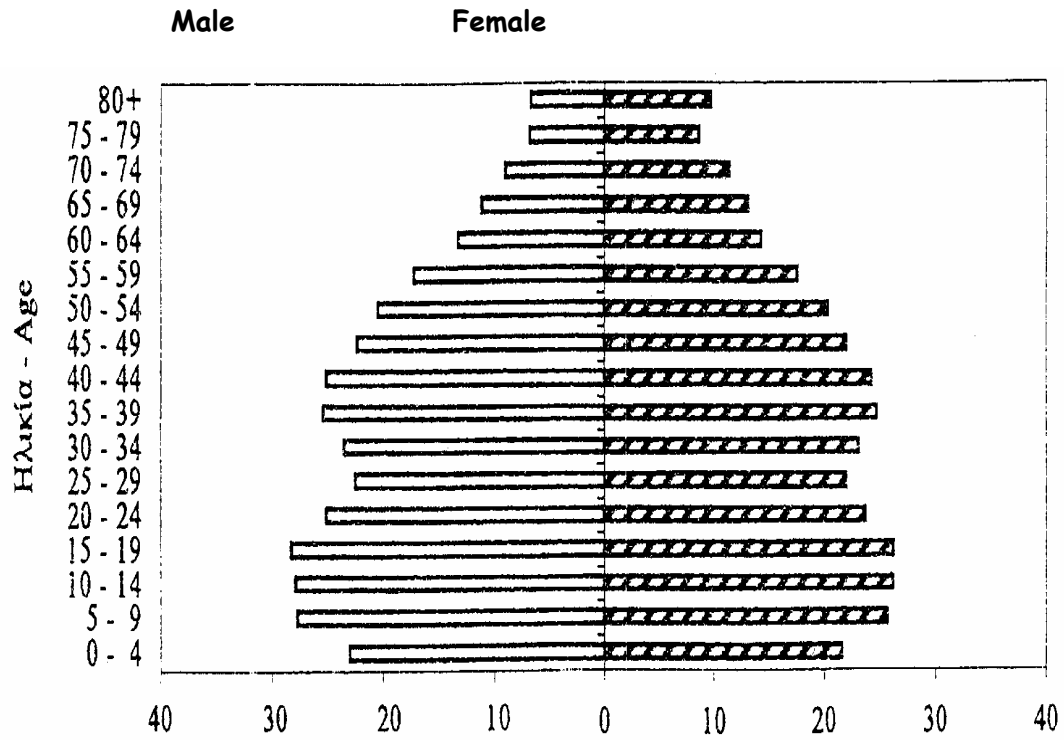


Table 1a

Children Population per age group, gender and rural/urban area , 1.10.2001



Total

Age	Total			Urban			Rural		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
0-4	43.958	22.393	21.565	29.754	15.101	14.653	14.204	7.292	6.912
5-9	53.386	27.357	26.029	35.321	18.020	17.301	18.065	9.337	8.728
10-14	53.973	27.901	26.072	36.414	18.726	17.688	17.559	9.175	8.384
15-19	55.619	28.651	26.968	37.516	19.278	18.238	18.103	9.373	8.730
children	206.936	106.302	100.634	139.005	71.125	67.880	67.931	35.177	32.754
population	703.529	345.322	358.207	485.304	236.402	248.902	218.225	108.920	109.305
children %	29	31	28	29	30	27	31	32	30

Based on the result of the survey

* Διορθωμένα στοιχεία με βάση τα αποτελέσματα της Έρευνας Ελέγχου Κάλυψης της Απογραφής

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Table 1b


Children Population per age group, gender and rural/urban area , 1.10.2001
Total

Age	Total			Urban			Rural		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
0-4	43.958	22.393	21.565	29.754	15.101	14.653	14.204	7.292	6.912
5-9	53.386	27.357	26.029	35.321	18.020	17.301	18.065	9.337	8.728
10-14	53.973	27.901	26.072	36.414	18.726	17.688	17.559	9.175	8.384
15-19	55.619	28.651	26.968	37.516	19.278	18.238	18.103	9.373	8.730
Total	206.936	106.302	100.634	139.005	71.125	67.880	67.931	35.177	32.754
Total population	703.529	345.322	358.207	485.304	236.402	248.902	218.225	108.920	109.305
children %	29	31	28	29	30	27	31	32	30

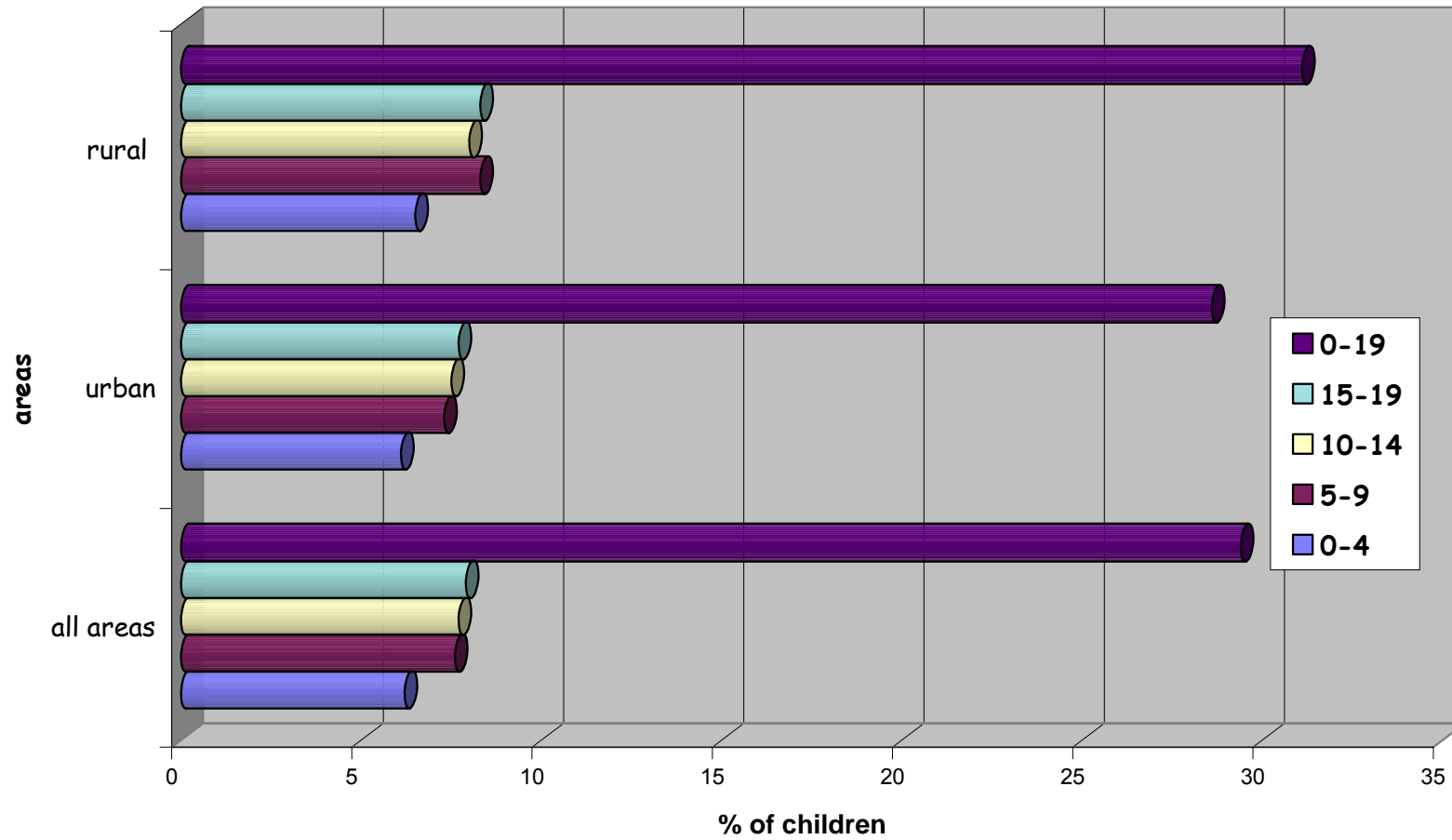
based on the result of the survey

* Διορθωμένα στοιχεία με βάση τα αποτελέσματα της Έρευνας Ελέγχου Κάλυψης της Απογραφής

Updated 17/02/2004)

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Fig 1B. Children % according to age (0-4, 5-9, 10-14, 15-19) and area



1.5. Data on Environment and Health

Concrete and holistic data on the environment and health are still missing in Cyprus. The Health Information System which is under development (2005-2007) by the Ministry of Health and co-funded by EU Transition facility funds, will substantially eliminate existing gaps and deficiencies. Furthermore the data available covers only the government controlled southern part as the Northern part is under Turkish occupation since 1974.

In this section, the most relevant data are provided based on availability and reliability. This chapter will be updated and expanded according to emerging data and information.

1.5.1 Health Indicators

Table 2: Health Indicators *Ref. the Health and Hospital Statistics, 2004 .Statistical Service of the Republic.*

Table 2 Indicators	Year	Value
Birth rate per 1000 population	2004	11.3
Death rate per 1000 population	2004	7.1
Infant mortality per 1000 live births	2004	3,5
Total Fertility Rate	2004	1,49
Life expectancy at birth, in years, male	2003	77,0
Life expectancy at birth, in years, female	2003	81.4
Estimated life expectancy (World Health Report)	2004	78.00
Hospital beds per 10000	2004	41,7
Persons per doctor	2004	375
Health expenditure as % of gross domestic product (GDP)	2004	
• Public		3,2
• Total		6.40

1.5.2 Cancer data

The childhood cancer data are based on the Cyprus Cancer Registry (CyCR). The CyCR started functioning as a population based Cancer Registry in 1998, following internationally accepted standards and guidelines in relation to different aspects of Cancer Registry data. The main sources of information for the registry are the histopathological reports, the cancer patients' files of the government hospitals and the private clinics, and the cytology and the bone marrow registry. The data provided here are the most recent ones for the years 2001-2003, collected but not yet published by the CyCR (Tables 2-5).

In the age group 0-19 years, 123 children have been diagnosed with cancer in the three year period 2001-2003, corresponding to 2.4 % of the total No of cancer cases. Out of them 73 cases were related to children from 0-14 years old (1,7%). For the 3 years period 1998-2000 for the age group 0-14 years, 80 children have been diagnosed with cancer in 1998-2000, representing the 1,7% of the total number of cases with Lymphoid Leukemia being the most common form of cancer in this age group in both sexes and both periods.

Most common forms of cancer in this age group in both sexes were Lymphoid Leukemia and Hodgkin's disease followed by Brain Nervous System, non Hodgkin's Lymphoma and Bone cancer. Per age group the most common forms of cancer are as follows: a) **Age 0-4: Brain Nervous System and Lymphoid Leukemia** followed by Connective soft tissue, b) **age 5-9: Brain Nervous System**, c) **age 10-14:Lymphoid Leukemia and Hodgkin's disease** followed by Bone, d) **age 15-19:Hodgkin's disease** (Table 3 and Fig 2). The Tables 3-5 show the Age Specific Incidence Rate (per 100,000 populations) of Childhood Cancer for the years 2001, 2002 and 2003.

Table 3: Childhood Cancer 2001-2003: Ages 0-19
 (Ref. R.Komodiki, Cancer Registry unpublished data)

Short	CANCER SITE Name	Age 0 - 4			Age 5-9			Age 10-14			Age 15-19			Total all ages
		male	female	total	male	female	total	male	female	total	male	female	total	
NAPHA	NASOPHARYNX	0	0	0	0	0	0	1	0	1	0	0	0	1
OTHOR	OTHER THORACIC ORGANS	3	0	3	0	0	0	0	0	0	0	0	0	3
BO	BONE	0	0	0	0	2	2	3	1	4	5	2	7	13
MELA	MELANOMA OF SKIN	0	0	0	1	0	1	0	0	0	1	0	1	2
CONSK	CONNECTIVE, SOFT TISSUE	3	3	6	0	0	0	1	0	1	1	0	1	8
BREA	BREAST	0	0	0	0	0	0	0	0	0	0	1	1	1
CEUT	CERVIX UTERI	0	0	0	0	0	0	0	0	0	0	1	1	1
OVARY	OVARY	0	0	0	0	0	0	0	1	1	0	1	1	2
Testis	TESTIS	0	0	0	0	0	0	0	0	0	2	0	2	2
KIDN	KIDNEY	1	1	2	0	0	0	0	1	1	1	0	1	4
Brain	BRAIN, NERVOUS SYSTEM	3	5	8	4	2	6	1	1	2	1	0	1	17
THYR	THYROID	0	0	0	0	0	0	1	0	1	1	4	5	6
AdreGla	ADRENAL GLAND	1	0	1	0	1	1	0	1	1	0	0	0	3
HODDI	HODGKIN'S DISEASE	2	0	2	0	0	0	0	5	5	5	8	13	20
NOHOD	NON-HODGKIN'S LYMPHOMA	1	0	1	2	1	3	2	0	2	4	4	8	14
LYLE	LYMPHOID LEUKEMIA	5	3	8	2	1	3	3	3	6	2	1	3	20
MYLE	MYELOID LEUKEMIA	0	0	0	1	0	1	0	0	0	1	3	4	5
LEUNS	LEUKEMIA UNSPECIFIED	0	0	0	0	0	0	0	0	0	0	1	1	1
ALL	ALL SITES	19	12	31	10	7	17	12	13	25	24	26	50	123

**Fig 3.: Main cancers per age group
2001-2003**

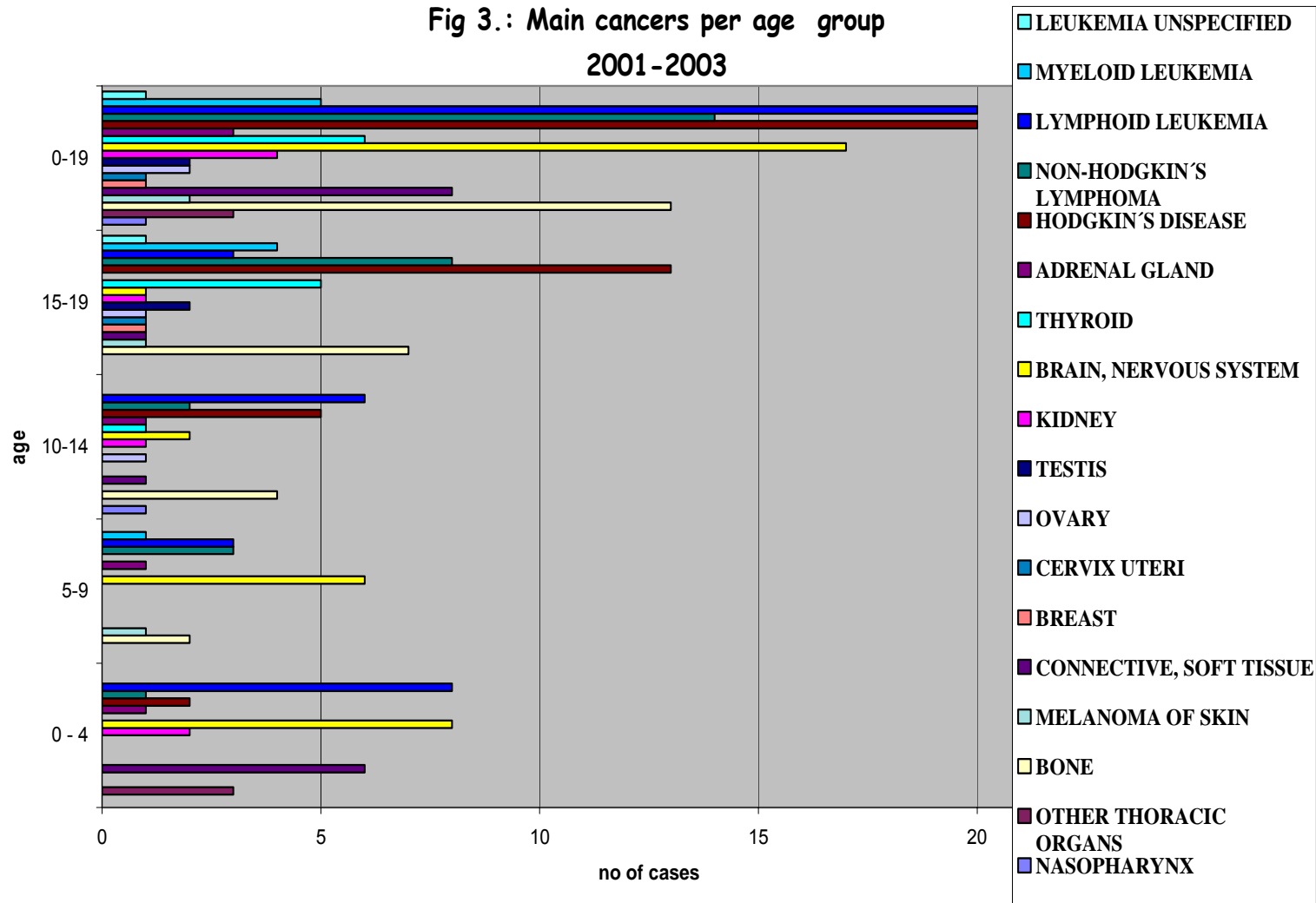


Table 4: Age Specific Incidence Rate per 100,000 population (ASIR)of Childhood Cancer Cases, 2001

Age Group	Male		Female		Total	
	No	ASIR	No.	ASIR	No.	ASIR
0-4	6	26.9	4	18.5	10	22.7
5-9	1	3.7	2	7.6	3	5.6
10-14	2	7.1	4	15.2	6	11.1
15-19	6	21.0	8	29.6	14	25.3

Table 5: Age Specific Incidence Rate per 100,000 population (ASIR) of Childhood Cancer Cases, 2002

Age Group	Male		Female		Total	
	No	ASIR	No.	ASIR	No.	ASIR
0-4	6	27.6	5	24.2	11	25.9
5-9	6	22.8	3	12.0	9	17.4
10-14	2	7.0	5	18.6	7	12.8
15-19	10	35.0	10	36.6	20	35.8

Table 6: Age Specific Incidence Rate per 100,000 population (ASIR) of Childhood Cancer Cases, 2003

Age Group	Male		Female		Total	
	No	ASIR	No.	ASIR	No.	ASIR
0-4	7	32.9	3	14,9	10	23.9
5-9	3	11,7	2	8,2	5	9.9
10-14	8	28,1	4	14.9	12	21,5
15-19	8	27.9	8	28.9	16	28.4

(Tables 4-6, ref Dr Komodiki unpublished data, Cyprus Cancer Registry)

1.5.3 Exposure to Environmental Tobacco Smoking (ETS)

The first phase of the pilot project addressing was performed between November 2004 and May 2005. A questionnaire was distributed to 524 families with young children, 272 in Nicosia and 252 in Larnaca. The questionnaire included questions on demographic data, smoking attitudes, knowledge and perceptions in relation to passive smoking and its impact on children's health and smoking practices followed. The results were evaluated using the Epiinfo /CDC, USA, epidemiological software.

The main findings are summarized as follows:

Percentage of smokers

- In 42,7 % of the houses at least one parent is a smoker. The corresponding range in European countries is 25-37%
 - In 5,7% of the houses both parents are smokers
 - In 37% one person is a smoker.

Knowledge and attitudes

- 50% of the parents who responded to the questionnaire were university graduates and 30% had at least secondary education. Despite this high level of education, parents had only a general idea of what ETS is and that it can threaten children's health, but were unaware of more specific effects of ETS. More specifically,
 - 71% knew what ETS is, and 95% knew that it can harm children's health ,
 - 80% knew that ETS can promote asthma development and worsen its symptoms and 82% knew that it can increase the risk for cancer. However,
 - Between 64 to 80%. of the parents did not know some other specific effects of smoking , such as sudden infant death syndrome (SIDS), otitis , effects on behaviour and pneumonia

- 30 % of the parents had the erroneous perception that by smoking in another room or next to a window or in a ventilated room, they were protecting their children,
- The % of parents who provided wrong answers was higher among smokers than non smokers. The same also applied to their willingness to adopt protective or antismoking measures.

Practices

In general, smokers follow wrong practices. This can be attributed partially to their ignorance about the multiple, negative impact of ETS on their children's health, but also to their wrong perception and their misunderstanding of the measures they take to protect their children. 68% of the smokers smoke at least occasionally in the presence of their children, whilst this % increases to 72% when children are in different room or are accompanying the smoker outdoors. 28% of the smokers smoke in the car, even in the presence of children.

Based on the above findings, the aims of the CY- CEHAP strategy should be formulated as follows:

- **To create antismoking culture and attitudes in children from childhood through the adolescent so that they can act as a pressure group against ETS.** This will be achieved by educating them
 - on the impacts of active and passive smoking on their health and to teach them why and how they can demand their rights for a smoke free environment- home, and
 - how they can be protected from passive smoking and how they can avoid becoming smokers themselves **To invest in changing the attitudes and practices of the parents-smokers in order to minimize exposure to ETS and to create smoke-free homes.** Considering the high educational level and the high degree of ignorance or wrong perception of parents evidenced in questionnaires, it is obvious that intervention has to move from just providing guidance, towards:
 - the development of in depth understanding as to why children are vulnerable, and what the real, multiple and

irreversible consequences of parents' behaviour on their children's health are

- making smokers fully responsible and accountable for caused harm, and finally by
- providing guidance on how smokers can and must protect the children even if they cannot quit smoking.

This intervention must be flexible and continuously adjusted in order to have lasting impact and must also be integrated within the overall national antismoking policy.

1.5.4 Childhood Asthma

Little information is available on the epidemiology of childhood asthma in Cyprus. The prevalence and epidemiology of childhood asthma in Cyprus is described in a study by Yiallourou P K et al in 2001. An abstract and Tables from their work is provided below.

The prevalence of asthma and related symptoms in a large sample of schoolchildren from two centers in central (Nicosia) and southern coastal (Limassol) Cyprus was investigated. Questionnaires including the International Study of Asthma and Allergies in Childhood (ISAAC) core questions on asthma diagnosis and wheeze as well as questions on epidemiological parameters that may be involved in the development of asthma were completed by the parents of 4,944 schoolchildren aged 7-8 years and by 6,297 schoolchildren aged 13-14 years themselves.

- Wheeze in the previous 12 months was reported for 8.1% of the children in Nicosia and 6.2% in Limassol in the younger age group and for 11.2% in Nicosia and 6% in Limassol in the older age group.
- In the younger age group, significantly higher prevalence of current wheezing was reported for children of male gender, with residence in the urban areas of Nicosia, whose mothers smoked during pregnancy, and for those with a personal history and or an immediate family history of atopy.
- In the older age group, significantly higher risk for current wheezing was associated with the presence of cat(s) in the

household and with a personal history and or immediate family history of atopy.

The results of this study are summarized in Tables 7 and 8.

Table 7. Prevalence of wheezing and asthma in children in Nicosia & Limassol, and hospitalisation rates of current wheezers for asthma

	7-8 years old			13-14 years old		
	Nicosia	Limassol	Difference	Nicosia	Limassol	Difference
Children already diagnosed with asthma	12.2 (10.9, 13.5)	11.3 (9.9, 12.6)	0.9 (-0.9, 2.7)	7.8 (6.9, 8.7)	8.1 (7.1, 9.2)	-0.2 (-1.6, 1.1)
Children who experienced wheezing at some point	20.8 (19.2, 22.4)	17.5 (15.9, 19.1)	3.3 (1.1, 5.5)	16.1 (14.9, 17.4)	8.8 (7.8, 9.9)	7.2 (5.6, 8.9)
Current wheezers	8.1 (7.1, 9.2)	6.2 (5.2, 7.2)	1.8 (0.4, 3.3)	11.2 (10.1, 12.2)	6.0 (5.1, 6.9)	5.1 (3.7, 6.5)
Current wheezers hospitalized for asthma over the last 12 months	6.8	8.0		6.9	9.4	

All values are percentages of the total number of children who participated in the study. Values in brackets are the 95% confidence intervals.

Table 8. Prevalence of wheezing and asthma in urban and rural areas in Nicosia & Limassol

	7-8 years old						13-14 years old					
	Nicosia			Limassol			Nicosia			Limassol		
	Urban	Rural	p-value	Urban	Rural	p-value	Urban	Rural	p-value	Urban	Rural	p-value
Children already diagnosed with asthma	13.2 (11.7, 14.8)	9.5 (7.5, 12.0)	0.01	11.2 (9.7, 12.8)	11.4 (9.0, 14.3)	0.9	7.6 (6.7, 8.8)	8.0 (6.3, 10.1)	0.8	8.3 (7.2, 9.5)	7.4 (5.4, 10.0)	0.5
Children who experienced wheezing at some point	22.1 (20.2, 24.1)	17.4 (14.7, 20.1)	0.01	16.6 (14.8, 18.5)	20.2 (17.0, 23.7)	0.06	16.4 (15.0, 17.9)	15.1 (12.7, 17.8)	0.4	9.3 (8.1, 10.6)	6.9 (5.0, 9.4)	0.08
Current wheezers	9.0 (7.7, 10.4)	5.8 (4.2, 7.8)	0.009	6.1 (5.0, 7.4)	6.1 (4.4, 8.4)	0.9	11.5 (10.3, 12.8)	9.8 (7.8, 12.1)	0.2	6.0 (5.0, 12.1)	5.3 (5.0, 7.1)	0.61

All values are percentages of the total number of children who participated in the study. Values in brackets are the 95% confidence intervals.

1.5.5 Congenital malformations due to exposures

Data

Congenital anomalies are among the leading causes of death in high income countries. It is estimated that

- 20% of all birth defects are due to gene mutations
- 5-10% to chromosomal abnormalities
- 5-10% to known teratogenic substances
- The aetiology of the remaining 60-70% remains "unexplained"

A national registry of congenital anomalies is already among the goals of the Ministry of Health of Cyprus and the relevant services are planning its establishment very soon. The data to be gathered will relate to environmental elements as well as other information and this action will hopefully identify teratogenic factors and ways to manage them.

1.5.6 Use of mobile telephones

A pilot study was performed by the National Committee on the use of mobile phones by children of twelve years old. A questionnaire was disseminated to 878 children in the Famagusta and Larnaca districts. The questionnaire was answered by the children themselves and the response rate was 93%.

The majority of the children (88%) had their own mobile phone, and 25% stated that they started using a mobile phone when they were 9 years old. Almost half of the children (46%) are using their phone at school. Although 70% of the children were aware of potential risks, they continued to use the phones without any restrictions.

1.5.7 Obesity

The prevalence of childhood and adolescent obesity was estimated for the first time in a cross-sectional study of a representative sample of 2467 children 6 - 17 y of age, performed during October 1999 to June 2000 by S.C.Savva et al, and published with the title "Obesity in children and adolescents in Cyprus. Prevalence and predisposing factors", in the International Journal of Obesity (2002) 26, 1036 - 1045. A summary of this publication is provided in the Annex. The prevalence of obesity in males was 10.3% and in females 9.1% using the NHANES I definition and 6.9 and 5.7%, respectively, using the IOTF definition. The percentages

presented a decreasing trend with age. In addition, **16.9% of males and 13.1% of females were defined as overweight by the NHANES I definition and 18.8 and 17.0%, respectively, by the IOTF definition. The most significant factor associated with childhood/adolescence obesity was parental obesity status.** These results indicate the need for individual and population measures for the treatment and prevention of paediatric obesity.

A second publication by S.C.Savva et al focused on a cross-sectional study on preschoolers. This work was published in European Journal of Clinical Nutrition (2005) 59, 1259-1265, under the title "Prevalence and socio-demographic associations of under nutrition and obesity among preschool children in Cyprus" The study concluded that the prevalence of under nutrition among preschool children in Cyprus was low but obesity prevalence was higher. The parental obesity and high body weight were significantly associated with obesity while low body weight was associated with under nutrition in preschool children.

1.5.8. Environmental data

1.5.8.1. Air Pollution (2003)

Ref Environmental Statistics

NOX: The total emissions of NOX in Cyprus were estimated at 20,88 thousand tonnes compared to 21,63 thousand tonnes in 2000, showing a decrease of 3,5%.

SO₂: The total emissions of SO₂ were estimated at 45,43 thousand tonnes compared to 52,75 thousand tonnes in 2000, recording a decrease of the order of 13,9%. The largest part of SO₂ emissions originates from stationary sources, e.g. power stations. During 2003, 38,50 thousand tonnes of SO₂ were produced from stationary sources compared to 44,95 thousand tonnes in 2000, recording a decrease of 14,3%.

CO - Carbon Monoxide

Carbon monoxide is produced by incomplete combustions, generally due to badly adjusted equipment. During 2003, total emissions of CO were estimated at 83,63 thousand tonnes compared to 87,50 thousand tonnes in 2000, showing a decrease of 4,4%. Mobile sources and specifically road transport, constitute the main contributor to CO emissions. These basically refer to motor vehicle exhaust fumes, especially in closed parking places or along roads at peak traffic hours. During 2003, CO emissions from mobile sources were estimated at 81,63 thousand tonnes

compared to 85,61 thousand tonnes in 2000, registering a decrease of 4,6%.

Non-Methane Volatile Organic Compounds ((NMVOC)

Non-Methane Volatile Organic Compounds ((NMVOC) are a multitude of organic chemical compounds, excluding methane (CH₄), that under normal conditions can vaporise and enter the atmosphere. NMVOCs include such compounds as benzene, xylene, propane and butane and are mainly emitted from transportation, industrial processes and use of organic solvents. In 2000, emissions of 15,97 thousand tonnes of NMVOC were reported in Cyprus.

Acid rain is created when gases such as nitrogen dioxide (NO₂) and sulphur dioxide (SO₂), generated during the burning of fossil fuels such as coal and oil, react in the atmosphere with sunlight to produce acids such as nitric and sulphuric acid. These acids dissolve in the rain to become acid rain. The amount of these compounds was reduced by 1,3% to 15,76 thousand tonnes, of which 9,53 thousand tonnes were from mobile sources, whereas the remaining 6,23 thousand tonnes were from stationary sources.

Lead (Pb)

Cars using leaded gasoline constitute the main source of lead emissions. It is also produced by other sources, like the first and second fusion of lead, the manufacture of electronic batteries, etc. Lead is very toxic and may cause serious illnesses such as lead poisoning. Therefore, lead emissions are very severely regulated at low levels. In 1998, 0,08 thousand tonnes of lead emissions were reported, exclusively from road transport. In recent years, the emission of lead in Cyprus shows a decreasing trend, mainly as a result of the substitution of leaded gasoline. The emissions in 2004 were substantially reduced from 50 tons in 2003 to 9,77 tons.

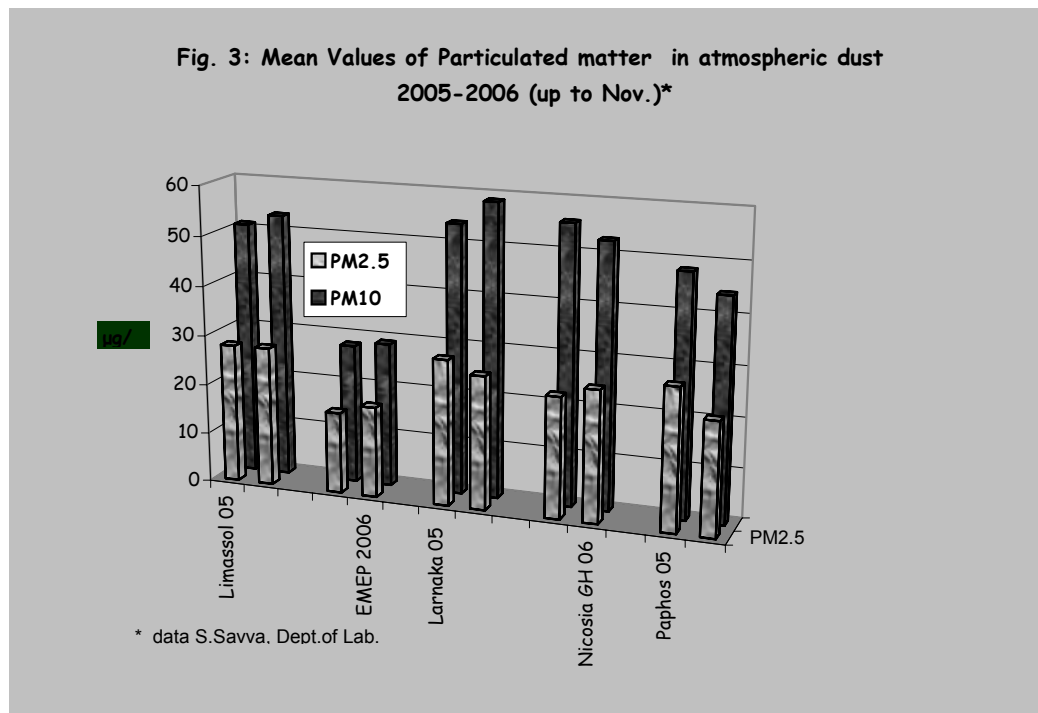
Emissions of greenhouse gases

The annual inventories of emissions of greenhouse and other gases constitute a necessary tool for designing environmental policy in a country. They can offer information about the extent of national emissions with respect to a pre - selected reference year, while they also contribute to the process of monitoring the measures taken to reduce greenhouse gases emissions to the atmosphere. Naturally existing

greenhouse gases are steam, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and ozone (O₃). In the latest years, a new category of greenhouse gases was added that includes fluorohydrocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). These gases do not exist naturally, but are synthesized and used in many, primarily industrial, activities. The European Union has committed itself, based on the Kyoto Protocol, to reduce its emissions to 8% below 1990 levels by the period 2008-2012. The Environment Service, in cooperation with the Department of Labour Inspection, has conducted an inventory of the greenhouse gases emissions from all sectors of activity for the years 1990-2003, according to the IPCC and CORINAIR methodology. The inventory of the emissions included the gases CO₂, CH₄ and N₂O, while at this stage of the project an inventory of the remaining three gases (HFCs, PFCs and SF₆) from their consumption at the final demand level was not possible, due to lack of appropriate data. Nevertheless, it is judged that their amounts are actually negligible.

Particulate matter (PM 10 and PM2,5)

In the following graph (Fig. 3) data collected by the Dept. of Labour Inspection for the 2005 and 2006 are graphically presented as mean values.



1.5.8.2. Indoor Air Pollution

At present, at National level no data related to the indoor environment and indoor exposure to NO₂, CO, VOCs, benzene, formaldehyde, particulate matter, asbestos, biological agents, noise and electromagnetic fields, nor about the quality of indoor air in public buildings and public transport are available. No effects have been established at population level for any of these substances and agents.

To fill this gap, indoor pollution has become a priority issue of the Ministry of Health and various surveys and research project are undertaken by the State General Lab in cooperation with other EU member states and the National Committee.

1.5.8.3 Drinking Water

Microbiological Quality

In 2004, 2677 samples were tested for microbiological parameters, 65% of which were found to comply with the Cyprus Water Law and the EU directive 98/83/EC. In 2005 the number of samples increased to 2881, with the percentage of complying cases increasing to 68%. The majority of non-complying samples (34% of total samples in 2004 and 30% in 2005) concerned the parameter of total coliforms. The majority of the non complying samples were from small water supplies in villages, where no systematic chlorination is applied, and corresponds to a very small % of population. The central distribution systems and the main water reservoirs of the towns of Cyprus (Nicosia, Limassol, Larnaca and Paphos) had satisfactory drinking water quality for both 2004 and 2005. The percentage of water samples not complying for the parameter of *Escherichia coli* was 2.0% for 2004 and 2.9% for 2005, whereas for *Enterococcus* were 6.6% and 7.5%, respectively. The majority of these cases had counts between 1-10cfu/100mL. Comparing the samples not complying for 2004 and 2005, a 3% reduction was observed for the year 2005. However, the samples not complying for *E.coli* and/or *Enterococcus* showed a small increase, which should be of concern. The results for the total viable count were satisfactory for the main water reservoirs.

Chemical quality

pH, conductivity, chlorides, sulphates, nitrates, sodium, boron, fluoride, nitrite, ammonium, oxidize-ability lead, cadmium, chromium and nickel are routinely monitored. A relatively low % (0,4 -9,7%) of the analysed

samples exceeded the guidelines of the Drinking Water Directive 98/83/EE, mainly chlorides, sulphates and sodium. These non-complying samples are obtained from specific known areas and the reasons for non-conformity are related to the climatic conditions of Cyprus and the mineral composition of the geological formations. The increase in the levels of the chemical parameters mentioned above affects the taste of the water. The concentration of boron ranged from 0.1 mg/L to 0.37 mg/L and 1.5% of the analysed samples exceeded the acceptable limits.

None of the water samples exceeded the accepted limits of the EU directive 98/83 for heavy metals i.e. Lead, Cadmium, Chromium and Nickel. Their values were far below these limits.

Additionally, the drinking water was monitored for most of the organic parameters (9 parameters out of the 26), defined in the Annex I Part B, Chemical Parameters, of the Directive 98/83/EE on the quality of water intended for human consumption.

These parameters are:

A) Total pesticides - that is the sum of all individual pesticides detected and quantified. The pesticides monitored included 4 different groups: the organochlorine pesticides for 14 individual substances, the Organophosphates pesticides for 15 substances, the Triazines pesticides for 3 substances and N-methyl carbamates for 10 substances.

B) Polycyclic Aromatic Hydrocarbons covering 15 compounds although only 5 compounds are specified in the Directive.

C) Organic Micropollutants covering 43 individual organic semi-volatile compounds.

D) Volatile Organic Compounds covering 60 substances including the 4 specified in the Directive

E) The four Trihalomethanes (THMs)

Complementary to the above, the general chromatographic profile of waters is acquired and assays 46 organic parameters, thereby providing early information on potential emerging or accidental pollution.

In general, organic pollutants e.g. pesticides, volatile organic compounds and others were found at extremely low levels, mostly well below the

acceptable limits. The maximum values for the total pesticides were 0.14 ug/L during 2004 and 0,054 ug/L during 2005, while the permitted limit is 0,5ug/L.

The chlorination by-products Trihalomethanes (THM), were found in trace amounts with the maximum values of all 4 individual THM compounds but also total THMs (the sum of the concentrations of the 4 specified compounds) being within the legal limits. The maximum concentration of total THMs in drinking waters was found to be 57 ug/L in 2004 and 62,8 ug/L in 2005, while the permitted value is 100ug/L.

2.THE VISION-GOALS- OBJECTIVES AND THE CONCEPT OF THE CY-CEHAPE

2.1 The Vision

The Vision:

Our children, from their conception to adolescent, will enjoy a healthy environment with the minimum exposure to environmental risks. This will ensure their normal physical and mental development and secure healthy life a

2.2 The Goal

The ultimate goal is to minimize the burden of avoidable environmentally linked diseases and disabilities through the reduction of children's exposure to chemicals and hazardous factors.

2.3 The Objectives

- 1. To raise awareness and bring at the highest level of the political agenda the needs for policy and regulation addressing children's vulnerability to environmental factors and to integrate prevention and precaution into health, environmental and sustainable development policies.**
- 2. To reinforce mechanisms for prompt responses to emerging threats and uncertain risks and to promote prevention and precaution in everyday life through education, knowledge dissemination, information on risks, and the training of professionals, parents and children.**

3. **To strengthen the technical infrastructure, capabilities and knowledge to diagnose and cure environmentally induced diseases and disabilities through the training of professionals.**
4. **To promote surveillance and research in order to**
 - address open questions and foster an Environment & Health Information System,
 - identify priorities to be addressed at the national and international level and
 - provide feedback for the effectiveness of actions, legislation and policies aiming at the decrease of the exposure.

2.4 The concept of the Cy-CEHAP

The development of the CEHAP in Cyprus takes place in the wider European and international context described in section 1.2. The framework for the CY-CEHAP has been defined in the terms of references and the proposed action plan of the NACECH, which was approved by the Ministerial decision of 2004.

The Cyprus Environment and Children Health Action Plan (Cy-CEHAP) provides a global and coherent framework in the field of environment and children's health for both Policy development and implementation, through specific actions within a defined timeframe. In line with Ministry's policy, the Cy-CEHAP concept is founded on three principles, **Precaution, Prevention and Integration**, and aims at the maximum synergy of goals, multi sectorial targets and activities. The national priorities and concerns and the commitments arising from :

- a) the Commitments of Budapest Inter ministerial Conference 2004
- b) the E.U. integrated strategy on Environment and Health (COM 338 (2003)) and
- c) the Action plan for Environment and Health (COM 416 (2004))

are integrated **under one coherent action plan**. The strategy of implementation is holistic and proactive aiming at full exploitation of synergies among all these priorities and actions, so that effectiveness and added value can be ensured. Presently, the Cy-CEHAP covers only the government controlled southern part of the island as the northern part is

under Turkish occupation. The Cy-CEHAP will remain flexible enough to incorporate the necessary adaptation to the new needs of a united Cyprus.

3. DEVELOPING AND IMPLEMENTING THE CY-CEHAP

Adopting the developments at both WHO and EU level, the NaCCEH has since its establishment implemented three action programs (2005, 2006 and 2007) aiming to realize the CEHAP regional goals and the objectives of the EU Action Plan. The activities covered research and small-scale surveillance, awareness raising training of professionals and input for legislation development at EU level addressing children needs. Cyprus proposed special provisions for Dioxins and Dioxins like-PCBs in food eaten by babies and children.

These action programs of the Cy- NaCCEH implemented since 2004 constitute a growing nucleus around which the CY-CEHAP can be further developed.

On 24 - 26 November 2005, a workshop on developing the CY-CEHAP was organized by the NaCCEH in cooperation with WHO. The lack of complete information and gaps in data on environment and health were identified.

3.1 Deciding on priorities:

Despite the lack of complete information it was decided that action should be taken by making the best use of expert judgement, and all available experiences, knowledge and information at both national and international level.

In setting up priorities the following criteria were used:

- **Priorities identified by the EU and WHO.** These were evaluated against available data, information and expert judgment at the national level and the most relevant ones to Cyprus were selected as the first set of priorities.
- **Scientific data and information on the effects of the environment on children's health and the most effective measures to address them,**

- Existing capacities at national level and foreseen opportunities for international networking, cooperation and funding in particular for areas of active research.

The following criteria implemented under PINCHE (the EU-funded Policy Interpretation Network on Children's Health and Environment, (ref. <http://www.pinche.hvdgm.nl/index.html>)) have also been considered:

- the number of children potentially exposed and the degree of potential exposure;
- the severity and persistence of adverse health effects and the likelihood that these health effects will occur at the current level of exposure;
- the extent to which children are more susceptible than adults;
- the possibility of influencing exposure.

In deciding priorities, the Table 9, composed by the WHO, on the relationship between Health effects and exposure to environmental risk factors and associated priority was used and amended (Table 9) to reflect national priorities.

Based on the above, the following priorities were defined during the National Workshop "Building the Cy-CEHAP" as provisional priorities upon which an initial plan of actions should be based:

a) Childhood Diseases to be addressed

- asthma
- cancers
- congenital malformations

b) Environmental risk factors

- indoor pollution in houses, schools, gym centres, kindergartens
 - environmental tobacco smoke
 - use of chemicals
- outdoor pollution from traffic
- pollution from the application of pesticides in rural areas
- Electromagnetic fields and noise,

c) Horizontal priorities

- **Biomonitoring**
- **Research on key areas**
- **Development of infrastructure and knowledge**

In relation to the four CEHAP Regional Priority Goals (RPG) the lowest priority was put on RPG I, "water sanitation" because of the high quality and efficiency of the water supply system in Cyprus, which covers 100% of the household and premises.

The bulk of the RPG II "accidents and injuries" is adequately covered by the Action Plan of the Advisory Committee for the Prevention of Childhood Injuries and Poisonings and is therefore not addressed under this Action Plan.

Table 9. Health effects associated with exposure to environmental risk factors. (Ref: WHO), The last column reflects the CYPRUS NaCCEH priorities

Risk factors	Respiratory diseases, including asthma	Diarrhea diseases	Neuro-developmental disorders & cognitive impairment	Physical growth, including and obesity	Cancer	Cardio-vascular diseases, including adult life	Injuries	Overall burden of disease ^a	Cyprus Priority
Indoor air pollution	A				B			High	HIGH
Outdoor air pollution	A				B			High	Moderate to high
Inadequate water and sanitation		A		B				High	Low
Inadequate nutrition	A	A	A	A		A		High	Low
Food contamination		A						Moderate	Moderate

A: the association is strong and based on sound epidemiological studies B: still inconclusive and based on general and indirect inferences and ^asemi quantitative estimates of the overall burden of disease High refers to at least 2% of all deaths or of all DALYs in any group among those aged 0-19 years in at least one sub region of the WHO European Region; moderate refers to any deaths or DALYs less than that, or to instances where available information on burden of disease is lacking

Risk factors	Respiratory diseases, including asthma	Diarrhea diseases	Neuro-developmental disorders and cognitive impairment	Physical growth, including and obesity	Cancer	Cardio-vascular diseases, including adult life	Injuries	Overall burden of disease ^a	Cyprus Priority
Unsafe buildings and play materials	A				B		A	High	Moderate
Hazardous chemicals			A		A			High	HIGH
Radiation					A			Moderate	Moderate
Noise			A				A	Moderate	Moderate to high
Transport/Mobility	A			A		B	A	High	HIGH
Natural disasters				B			B	Moderate	Low
<p><i>A: the association is strong and based on sound epidemiological studies B: still inconclusive and based on general and indirect inferences and ^asemi quantitative estimates of the overall burden of disease High refers to at least 2% of all deaths or of all DALYs in any group among those aged 0-19 years in at least one sub region of the WHO European Region; moderate refers to any deaths or DALYs less than that, or to instances where available information on burden of disease is lacking</i></p>									

Risk factors	Respiratory diseases, including asthma	Diarrhea diseases	Neuro-developmental disorders and cognitive impairment	Physical growth, including and obesity	Cancer	Cardio-vascular diseases, including adult life	Injuries	Overall burden of disease ^a	Cyprus Priority
Child labour	B		B	B	B		A	High	Low
Adverse social environment	A	A	A	A		B	B	High	Moderate
Armed conflict			A	B			A	High	Low

A: the association is strong and based on sound epidemiological studies B: still inconclusive and based on general and indirect inferences and ^asemi quantitative estimates of the overall burden of disease High refers to at least 2% of all deaths or of all DALYs in any group among those aged 0-19 years in at least one sub region of the WHO European Region; moderate refers to any deaths or DALYs less than that, or to instances where available information on burden of disease is lacking

3.2 Plan of Activities and Timeframe

The Action Plan is very specific in terms of the basic objectives and the timeframe of its implementation. However it remains flexible enough in terms of implementation of the individual activities. To this effect the four main Cy- CEHAP Objectives (Section 2.3) are split in 13 working sub-objectives with specific timeframe of achievement. These are addressed in a number of proposed activities which may be changed provided that the specified sub-objectives will be achieved.

The links and relevance of those objectives to the CEHAP (European) Goals (GPR) and the Actions of the EU Action Plan on Environment and Health are clearly specified. An indicative timeframe is also provided (Table 10) as well as a preliminary list of potential actors involved. Previously implemented activities through the 3 annual programs of the National Committee (2004-2006) form the nucleus of the Action plan. Therefore, some activities have already been initiated and are in progress. For the sake of the completeness and integration of the national activities, those activities are also integrated in the Action Plan 2007-2010 .

A number of Cy-CEHAP activities are directly or indirectly linked with on-going monitoring activities in the area of health, food and the environment. Therefore, the maximum synergy between the Cy-CEHAP and those activities is essential to achieve multiple /efficient use of data, avoid duplication of efforts and to ensure cost effectiveness. Existing or continuously collected data will be used by the NaCCEH and evaluated against children specific criteria. Feedback to competent authorities and stakeholders for proper risk management can then be provided.

To implement the Action Plan, an effective coordination mechanism, flexibility and capacities for a continuous dynamic development and adaptation to new developments and opportunities. These needs are addressed under four horizontal / management goals which are relevant to all objectives and will be implemented across all activities (Table II).

3.3 Implementation and Coordination

Ministry of Health, has the key promoting and coordinating role in the whole process of the Cy-CEHAP and the overall responsibility for its effective implementation. However the implementation of the Cy-CEHAP

will be the collective responsibility of all Ministries involved e.g. Ministry of Health, Ministry of Agriculture, Natural Resources and Environment (MANRE), Ministry of Labor and Social Insurance, Ministry of Communication and Works, Ministry of Education and Culture etc.

To make progress in this respect, CEHAP encourages a number of synergies among the various administrations and between public actors and civil society, such as municipalities associations of parents, doctors etc

The Cy- CEHAP aims to be multidisciplinary, as it seeks to bring together various stakeholders and fields of expertise e.g. politicians, scientists, administrators, local authorities, parents and health providers associations etc. Finally, Cy-CEHAP encourages a multi- sectoral approach, aiming to maximise synergies among all policies related to health and the environment e.g. agriculture, transport, energy, industry, etc. In terms of resources, the Cy-CEHAP contributes real added value, by providing a coherent framework for common activities to most relevant public and private sector actors. These actors are invited to enhance Cy-CEHAP through shared objectives, strengthened cooperation and joint activities and measures.

Since 2004, the mechanism of multi - sectoral involvement has gradually been established through the activities of the Cy-NaCCEH. Upon approval of the Action Plan by the Ministerial Council, **cooperation agreements will be developed to ensure smooth cooperation, effective implementation , continuation and further development.**

3.4. Monitoring the effectiveness

The implementation of the CY- CEHAP and the degree of achievement of its goals will be evaluated on an annual basis by the Ministry of Health, based on the annual report that will be prepared by the NaCCEH. Necessary optimization and adaptation to emerging threads and opportunities will be done accordingly. Reporting to the EU and WHO will be done by the Ministry of Health

A indicative set of indicators, which can be used to evaluate the effectiveness of the CEHAP, are presented in the Table 12. These indicators were derived mainly from selected WHO indicators, and were adapted to National conditions.

3.5. Funding

The implementation of CEHAP can be supported by ongoing activities in the field of Health and Environment, both at national and EU levels. Maximum synergies with ongoing activities for the implementation of EU monitoring legislation on environment and health, as well as related to WHO and other international commitments e.g POPs convention, will be developed to minimize extra costs. The overall funding of the activities can be covered from the following three complimentary

a) **The yearly budget of the NaCCEH:** , A core yearly budget will be proposed by the NaCCEH and approved by the Ministry of Health. This will mainly cover coordination activities, training, awareness raising, public information and intervention, surveillance /small scale research projects and international commitments (EU and WHO). This funding will ensure stability, undisturbed continuation and smooth implementation of the Cy-CEHAP. This overall stability is expected to create better opportunities for external EU funding.

b) **Indirect funding of activities through the utilization availability of data and information relevant to the realization of the Cy-CEHAP objectives.** To this effect, protocols of agreements will be signed between the Ministry of Health and all relevant ministries, the University of Cyprus and other actors involved to ensure effective cooperation. For example data collected for the implementation of the legislation for air or water quality can be adjusted and utilized for the purposes of the Action Plan. In addition, potential minor adjustments to the monitoring programs aiming to better utilization of the results and added value will be promoted.

c. **Additional Research funds** could be raised from the Research Promotion Foundation (CRPF, ITTE), EU funding schemes through e.g. the Public Health Program and the 7th Framework Program for Research and Development. Training activities can also be supported by the WHO.

TABLES OF CY -CEHAP GOALS _ACTIVITIES ANR TIMEFRAME

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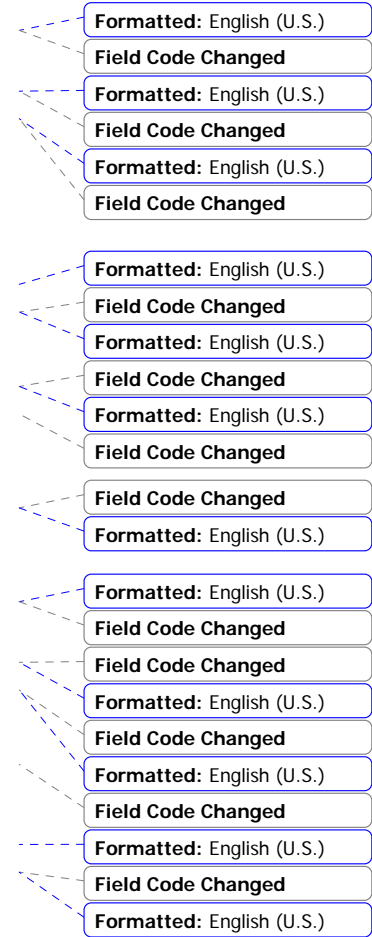
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Table 12: Proposed indicators which can be adopted to monitor the effectiveness of the Cy-CEHAP. *In italics those selected from WHO core indicators*

Main WHO-Regional Goals	Selected set of indicators	Potential Source of data
I. Safe water and adequate sanitation	<ul style="list-style-type: none"> ➤ <i>Wastewater treatment</i> (% of treated effluents and degree of treatment) ➤ <i>Compliance with standards for recreational waters</i> ➤ <i>Compliance with standards for drinking-water</i> ➤ No of water supply systems from small communities in compliance to drinking water standards 	Data are collected by MANRE and Public Health services
II. Injury prevention and supportive environments	<ul style="list-style-type: none"> ➤ <i>Childhood mortality from traffic accidents</i> ➤ <i>Childhood mortality from external causes, excluding traffic</i> 	Data are collected by the Committee on Injuries and Poisonings)
III. Reduced disease due to air pollution	<ul style="list-style-type: none"> ➤ <i>Policies and programs to reduce children's exposure to tobacco smoke</i> ➤ <i>Children exposed to tobacco smoke</i> ➤ <i>Children's exposure to air pollutants</i> ➤ <i>Prevalence of allergies & asthma in children</i> ➤ Post-neonatal infant mortality due to respiratory diseases 	Min. of Health, Health Information System Cy NaCCEH, Research Institutes

Main WHO-Regional Goals	Selected set of indicators	Potential Source of data
IV. Reduced risks from chemical and physical factors	<ul style="list-style-type: none"> ➤ <i>Percentage of children exposed to harmful noise at schools</i> ➤ <i>Incidence of childhood cancer: leukaemia and solid tumors</i> ➤ <i>Incidence of melanoma in people under 50 years old</i> ➤ <i>Children's exposure to chemical hazards in food</i> <ul style="list-style-type: none"> ○ Pesticide residues in baby food and milk ○ Pesticide residues in fruit and vegetables ○ Environmental contaminants in food ➤ <i>POPs in breast-milk and in milk /milk products</i> ➤ <i>Adoption of international conventions</i> 	<p>Min. Of Health, CY Cancer Registry</p> <p>MANRE, Min of Education + Min. of Labour</p> <p>State General Lab, University of Cyprus</p> <p>Cy-NaCCEH,</p>

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List of Selected Resources

European Commission

- <http://ec.europa.eu/health>
- http://www.europa.eu.int/comm/dgs/health/index_en.htm
- http://ec.europa.eu/environment/index_el.htm
- http://ec.europa.eu/environment/health/index_en.htm

World Health Organization

- WHO Children's Environment and Health http://www.euro.who.int/childhealthenv/policy/20020724_2

- Guidelines on the Prevention of Toxic Exposures: education and public awareness activities / International Programme on Chemical Safety, WHO http://www.who.int/ipcs/poisons/prevention_guidelines/en/index.html
- Children's health and environment. Developing action plans www.euro.who.int/eprise/main/WHO/InformationSources/Publications/Catalogue/20050812_1
- Children's Environmental Health www.who.int/phe/ceh
- Healthy Environments for Children Alliance www.who.int/heca/en/
- Resources for Teaching Healthy Environments for Children <http://www.who.int/heca/advocacy/press/resources/en/>
- WHO Regional Office for Europe - Children's Health and Environment <http://www.who.dk/childhealthenv>
- Healthy Environments for Children Alliance <http://www.who.int/heca/en/index.html>

Intergovernmental Forum on Chemical Safety

- Protecting Children from Harmful Chemical Exposures, Chemical Safety and Children's Health - Information document 11INF. http://www.who.int/ifcs/Forums/ForumIV/Meet_docs.htm
- Decision Document 14W - Protecting Children from Harmful Chemical Exposures http://www.who.int/ifcs/Forums/ForumIV/Meet_docs.htm
- Brochure of Forum IV Recommendations - "Protecting Children from harmful chemical exposures" <http://www.who.int/ifcs/champions/Children/Children.htm>
- Chemical Safety in Children's Health - Protecting the World's Children from harmful chemical exposures: a guide to resources <http://www.who.int/ifcs/champions/Children/Children.htm>

US Environmental Protection Agency:

- Office of Children's Health Protection <http://yosemite.epa.gov/ochp/ochpweb.nsf/homepage>
- Health School Environment Resource <http://cfpub.epa.gov/schools/index.cfm>

- Toxicity and Exposure Assessment for Children's Health (TEACH)
<http://www.epa.gov/teach/index.html>
- Where you live - protecting our children
- Information on how to protect children from toxins, the sun, lead, and other potential environmental health threats.
<http://www.epa.gov/epahome/children.htm>

Others

Children's Environmental Health in Latin America and the Caribbean
www.cepis.org.pe/bvsana/i/chelac.html

Health Care Without Harm - an international coalition of hospitals and health care systems, medical professionals, community groups, health-affected constituencies, labor unions, environmental and environmental health organizations and religious groups. Home page <http://www.noharm.org/>

Healthy Schools Network - national environmental health not for profit organization, centered on children, and dedicated to assuring every child and school employee an environmentally safe and healthy school.
<http://www.healthyschools.org/>

International Research and Information Network on Children's Health, Environment and Safety www.inchesnetwork.org/

International Society of Doctors for the Environment www.isde.org

Canadian Association of Physicians for the Environment - Children's Environmental Health Project <http://www.cape.ca/children/>

Canadian Partnership for children's health and the environment - Child Health and the Environment - A Primer
<http://www.healthyenvironmentforkids.ca/english/>

Children's Environmental Health Coalition - a national non-profit organization dedicated to educating the public, specifically parents and caregivers, about environmental toxins that affect children's health.
http://www.chechnet.org/improve_main.asp

Children's Environmental Health Network - a national multi-disciplinary organization whose mission is to protect the foetus and the child from environmental health hazards and promote a healthy environment.
<http://www.cehn.org/>

APPENDICES

APPENDIX I: EU DECLARATION, BUDAPEST CONFERENCE 2004

European Union Declaration at Budapest Conference , 2004



**BUDAPEST CONFERENCE ON ENVIRONMENT AND HEALTH
EUROPEAN COMMISSION DECLARATION**

The European Commission welcomes the political impetus created by the Ministerial Conference on Environment and Health that was held in Budapest on 23-25 June 2004.

The Conference Declaration sets out a valuable road map for future action and records the commitments made on all conference topics, including Children's Environment and Health Action Plan for Europe (CEHAPE), various tools for policy-making and the future development of the WHO's Environment and Health process in Europe.

The CEHAPE in particular is an important document which lays the foundation for developing comprehensive policies to improve the health of young people across our continent, bringing together environment and health policy in an effective way.

The European Commission shares the Conference's desire to secure a healthier future for Europe's children. The Commission is committed to working actively with its Member States and with international organisations, in particular the World Health Organization, to achieve the goals set out in these two documents.

In 2003 the Commission adopted its European Environment and Health Strategy¹ which is now being followed up with the EU Action Plan on Environment and Health². The CEHAPE and the Ministerial Declaration provide both input and impetus for the actions at EU level. Synergies between these EU-level actions and the actions arising from the Budapest conference should be fully exploited. The Commission will work in close cooperation with the WHO and the EU Member States to ensure that this happens.

Signed on behalf of the European Commission


Margot Wallström

Budapest, 25 June 2004


Pavel Teficka

¹ COM (2003) 338 final of 11.6.2003

² COM (2004) 416 final of 9.6.2004

APPENDIX II: Part of the Proposal for the establishment of the NaCCEH

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ΠΡΟΤΑΣΗ ΠΡΟΣ ΤΟ ΥΠΟΥΡΓΙΚΟ ΣΥΜΒΟΥΛΙΟ

ΔΗΜΙΟΥΡΓΙΑ ΕΘΝΙΚΗΣ ΕΠΙΤΡΟΠΗΣ «ΠΕΡΙΒΑΛΛΟΝ – ΠΑΙΔΙ ΚΑΙ Η ΥΓΕΙΑ ΤΟΥ»

I. ΑΙΤΙΟΛΟΓΙΚΟ – Η ΔΙΕΘΝΗΣ ΔΙΑΣΤΑΣΗ ΤΟΥ ΠΡΟΒΛΗΜΑΤΟΣ

Η έκθεση σε τοξικές, περιβαλλοντικές ουσίες στο στάδιο της κύησης καθώς και κατά την παιδική ηλικία και την εφηβεία, είναι καθοριστική για την υγεία και την πνευματική και σωματική ανάπτυξη των παιδιών. Μπορεί επίσης να ευθύνεται για την εκδήλωση ασθενειών στην ενήλικη ζωή τους. Υπολογίζεται ότι τα παιδιά ηλικίας κάτω των 5 ετών, (10% του γενικού πληθυσμού) υπόκεινται στο 40% των επιπτώσεων στην υγεία από διαφόρους περιβαλλοντικούς παράγοντες.

Η βρεφική και παιδική ηλικία θεωρούνται οι πλέον τραπές στην επίδραση των καρκινογόνων ουσιών και άλλων τοξικών ουσιών και περιβαλλοντικών παραγόντων και στην ανάπτυξη και εξέλιξη των νόσων. Τα παιδιά έχουν μεγαλύτερη έκθεση σε τοξικές ουσίες, δηλαδή μεγαλύτερη ημερήσια έκθεση ανά kg βάρους. Η έκθεση γίνεται μέσω της τροφής και του περιβάλλοντος. Επιπλέον έχουν ατελείς ή μη ενισχυμένους μηχανισμούς άμυνας (αδρανοποίησης /απέκκρισης τοξικών ουσιών) σε σχέση με τους ενήλικες.

Η παιδική ηλικία συνεπάγεται ταχύτερους ρυθμούς ανάπτυξης του οργανισμού, και κατά συνέπεια μεγαλύτερη ταχύτητα πολλαπλασιασμού των κυττάρων περιλαμβανομένων και των καρκινικών. Ο ταχύς πολλαπλασιασμός των κυττάρων σε συνδυασμό με την ατελή άμυνα και τους σχετικά αδύναμους μηχανισμούς επανόρθωσης των προσβεβλημένων κυττάρων, επιταχύνουν τους ρυθμούς ανάπτυξης του καρκίνου και άλλων ασθενειών.

Ιδιαίτερα επικίνδυνη για τη σωματική, πνευματική ανάπτυξη των βρεφών και των παιδιών και την ευφυΐα τους, είναι η επίδραση των ενδοκρινικών διαταρακτών που παρεμβαίνουν και επηρεάζουν το ενδοκρινικό σύστημα που είναι ιδιαίτερα ευάλωτο στα αρχικά στάδια ανάπτυξης του παιδιού.

Για τους πιο πάνω λόγους η αποτελεσματική πρόληψη και προστασία του παιδιού έχει τεράστια ηθική, κοινωνική αλλά και οικονομική σημασία.

Το θέμα Περιβάλλον Παιδί και η Υγεία του, αποτελεί πλέον διεθνή προτεραιότητα και ευρίσκεται στην ημερήσια διάταξη πολλών διεθνών επιτροπών. Συγκεκριμένα:

1. Το θέμα εμπίπτει στους άμεσους στόχους της στρατηγικής της Ε.Ε για το Περιβάλλον και Υγεία. Ειδικότερα προωθείται η έρευνα με στόχο την πρόληψη και αντιμετώπιση των επιπτώσεων του περιβάλλοντος στο στάδιο της κύησης, στην παιδική ηλικία και την εφηβεία. Τέτοιες επιπτώσεις είναι ο παιδικός καρκίνος, η λευχαιμία, οι αναπνευστικές

APPENDIX III: Info on the National Committee
ENVIRONMENT AND CHILDREN'S HEALTH (Ministerial Council
 Decision No. 59.304, 28/1/04)

The National Committee on Environment and Children's Health (NaCCE) has been appointed to coordinate and promote the related actions

The Committee is a multidisciplinary one with members from the governmental and private sector, which are specialists in the fields of children's health, chemicals, environment and education with the following terms of reference:

1. To provide scientific support to the Minister of Health, Regulators and Decision Makers in the field of effects of chemicals on children's health.
2. To become National Focal Point for all EU, WHO and other international activities related to Children-Environment and Health and to promote the international cooperation and participation to relevant working groups, programs and research activities of The EU and WHO
3. To develop, promote and coordinate the National Action Plan on "Environment and Children Health". In this plan all activities at national and international level, especially those related to the European Union (EU) and the World Health Organization (WHO), will be integrated

The members of the Committee 2004-2007

Dr Stella Canna Michaelidou (Ministry of Health) President

Dr Annita Anastasiadou Ministry of Health

Dr Violetta Anastasiadou, Medical and Public Health Services, Min. of Health

Mrs Despo Louca Christodoulou , State General lab, Min, of Health

Dr Adamos Hatzipanagi Paediatric Association

Dr Soula Ioannou, min. of Education and Culture

Dr Savvas Kleanthous and Dr Tasoula Kyprianidou Dept of Labour Inspection

Mrs Paraskevi Mama , Medical and Public Health Services, Min. of Health

Dr Christos Rodoulis Association of Doctors

Dr Savvas Savva Paediatric Association

Dr Maro Solomou Paediatric Association

Mrs Eleni Stylianopoulou Environment Service

APPENDIX IV: The EU Action Plan 2004-2010, COM(2004) 416 final

The Targets

1. IMPROVE THE INFORMATION CHAIN by developing integrated environment and health information to understand the links between sources of pollutants and health effects:

Action 1: Develop environmental health indicators

Action 2: Develop integrated monitoring of the environment, including food, to allow the determination of relevant human exposure

Action 3: Develop a coherent approach to biomonitoring in Europe

Action 4: Enhance coordination and joint activities on environment and health

2 - FILL THE KNOWLEDGE GAP by strengthening research on environment and health and identifying emerging issues

Action 5: Integrate and strengthen European environment and health research

Action 6: Target research on diseases, disorders and exposures

Action 7: Develop methodological systems to analyze interactions between environment and health

Action 8: Ensure that potential hazards on environment and health are identified and addressed

3 - RESPONSE : REVIEW POLICIES AND IMPROVE COMMUNICATION by developing Awareness Raising, Risk Communication, Training & Education to give citizens the information they need to make better health choices, and to make sure that professionals in each field are alert to environment and health interactions.

Action 9 : Develop public health activities and networking on environmental health determinants through the public health program.

Action 10 : Promote training of professionals and improve organizational capacity in environment and health by reviewing and adjusting risk reduction policy

Action 11 : Coordinate ongoing risk reduction measures and focus on the priority diseases

Action 12 : Improve indoor air quality

Action 13 : Follow developments regarding electromagnetic fields

The Commission will implement the actions through existing initiatives and programs, which already have allocated resources, notably the Public Health Program, the Sixth Framework Program for Research and under the operational budget of the services concerned.

APPENDIX V :WHO Regional Priority Goals for the CEHAPE

CEHAPE GOALS

RPG I – Gastrointestinal disease arising from inadequate water supply & sanitation WATER SANITATION
RPG II – Accidents and injuries, lack of physical activity and Urban Planning ACCIDENT AND INJURIES
RPG III – Respiratory disease arising from indoor and outdoor air pollution AIR
RPG IV – Diseases arising from exposure to Chemicals, Physical, Biological Agents, and Occupational Health CHEMICALS-RADIATION
Other risks : food safety-intake , disasters, social environment, conflicts , urban environment etc