

# Profile of Children's Environmental Health in Argentina



Asociación Argentina de Médicos  
por el Medio Ambiente



Canadian Institute of Child Health  
Institut canadien de la santé infantile

Sociedad Argentina  
de Pediatría



Ministerio de Salud  
PRESIDENCIA DE LA NACION



# Health Profile

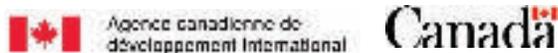
## Profile of Children's Environmental Health in Argentina

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and from:

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# Health Profile 2007

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The Ministry of Health of Argentina, Asociación Argentina de Médicos por el Medio Ambiente and the Canadian Institute of Child Health would also like to recognize the hard work and commitment from the many individuals and institutions who shared their experience and vision in the development of this document.

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- National Bureau of Environmental and Social Impacts, Secretariat of Environment and Sustainable Development, Chief of Cabinet of the Presidency of Argentina
- Ministry of Labour, Employment and Social Security of Argentina
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## MESSAGE FROM THE MINISTRY OF HEALTH OF ARGENTINA

It is very gratifying to be able to introduce the *Profile of Children's Environmental Health in Argentina* due to its contribution to improve public health in the country.

This work highlights the convergence of two factors that do not always come together:

- the use of existing information and its systematization, a relevant fact that makes an important contribution to the decision-making process and to the quality of the decisions themselves, and
- the international cooperation that allows, through financial support, the collaborative work of Non-Governmental Organizations and the Argentinean Government, another element that characterizes its success.

These two factors came together in 2005, at the precise moment when Argentina assumed true regional leadership on the problems of environmental health and agreed to guide the Secretariat of the Initiative of the Health and Environment Ministers of the Americas (HEMA).

The following international meetings of HEMA (Washington/1995, Ottawa/2002, Mar de la Plata/2005) created not only a sustainable political framework but also a course of actions defined by consensus that included Children's Environmental Health. This regional process was reflected in our country by a series of decisions supported by the same vision of integration: the creation of the Ministry of Health and Environment (May/03), National Health Plan, consensus of the National Health Councils (COFESA) and Environment (COFEMA) to develop a National Health and Environment Initiative (2005), creation of the Pediatric Environmental Health Units (UPAs) and, more recently, the creation of the National Secretariat of Determinants of Health and Sanitary Relationships, Ministry of Health of Argentina (October/07), as well as creation of the Intergovernmental Commission of Environmental and Worker's Health (CISAT) in the framework of Mercosur and Associate States, just to mention some relevant examples.

About 5 years ago, Argentina went through the greatest economic crisis of its contemporary history. Today, the country has seen 52 consecutive months of economic growth and unemployment has fallen below the two digit level, resulting in a reduction of poverty. At the same time child mortality and the mortality of children under 5 years of age decreased by 23% and 20%, respectively.

The country's economic and health frameworks are developing favorably. This underlines the importance of health as a determinant of development, in this sense, to generate major growth of the economy. The challenges that Argentina assumed when establishing its Millennium Development Goals require strengthening the path and making the process sustainable.

The *Profile* clearly demonstrates where our country is in terms of Children's Environmental Health, but also clearly sets out the work that remains to be done. In this sense then, to give Children's Environmental Health priority is a strategic course of development that allows for the creation of a better future with equity and social justice.



**Atilio Savino**

*National Secretariat of Determinants of Health  
and Sanitary Relationships  
Ministry of Health of Argentina*

## MESSAGE FROM ASOCIACIÓN ARGENTINA DE MÉDICOS POR EL MEDIO AMBIENTE

This *Profile on Children's Environmental Health* was born through the collaboration of two organizations from two countries of the Americas: the Canadian Institute of Child Health (CICH, Canada) and the Asociación Argentina de Médicos por el Medio Ambiente (AAMMA, Argentina). The work evolved through the active participation and collaboration of government, non-government, scientific and professional sectors, and public interest groups. The publication fulfills the saying “educating to empower and informing without alarming” and seeks to promote action.

We all recognize the value and power of information and the importance of sharing it. In the *Profile* we made efforts to identify, collect, report and analyze the available information and to organize it, as far as possible, in a Children's Environmental Health indicators framework. The conclusions will allow for more and improved interventions in high risk situations and action to prevent and assure the full development of the child's potential, resulting in a healthy and productive generation and country.

When information is shared, responsibilities are also shared. Agenda 21, approved by governments gathered at the United Nations World Earth Summit in 1992, refers to “shared but differentiated responsibilities”. Interventions are more effective when all relevant stakeholders and sectors operate with a common goal. Governments, non-governmental organizations, professional groups, scientific associations, researchers and community groups may and must work together, because ensuring a healthy environment for children is a collective responsibility.



**Lilian Corra**

*President*

*Asociación Argentina de Médicos  
por el Medio Ambiente*

## MESSAGE FROM THE CANADIAN INSTITUTE OF CHILD HEALTH

The Canadian Institute of Child Health (CICH) has published three editions of *The Health of Canada's Children: A CICH Profile* (1989, 1994 and 2000) with accurate, timely information that has helped to change the way people across Canada think about and act to improve the health and well-being of children and youth. CICH added a new chapter reporting on children's environmental health in the most recent edition of this internationally respected publication, because the environment in which children and youth live, work and play has a major influence on their well-being.

CICH was very pleased to be able to share the experience gained by our organization through the production of these reports and to partner with the government of Argentina, Asociación Argentina de Médicos por el Medio Ambiente and the Argentine Society of Pediatrics in the preparation of this unique publication that gathers together and reviews available information on children's environmental health in Argentina.

We wish to thank a number of Canadian organizations that provided valuable assistance to the project including University of Ottawa, Memorial University of Newfoundland and Health Canada. This project would not have been possible without their support and that of the Canadian government through the Canadian International Development Agency (CIDA) who funded the project.

We are confident that this important document will have a positive impact on the health of the children and youth of Argentina and their families.



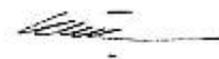
**Angus A. Bruneau**  
*Chair, Board of Directors*  
*Canadian Institute of Child Health (CICH)*

## MESSAGE FROM THE ARGENTINEAN SOCIETY OF PEDIATRICS

The health of the world's children is closely related to the quality of the environment in which they live. This relationship begins before conception, continues during the very important period of pregnancy, passes through the different stages of childhood and culminates at the end of adolescence.

To research the environmental threats that children of a country or region are exposed to is a real challenge. The Coordinating Committee of the *Profile of Children's Environmental Health in Argentina* accepted this challenge. The decision was based on the conviction that through the *Profile* the main environmental risks that affect the children of our country would be identified, and we would then be able to work on them.

Taking care of the quality development of all Argentinean children is a goal that involves not only health professionals, but also the different sectors of society, and especially the Government. These important issues relate to equity, social integration, peace and the future of Argentina as a nation, and its integration into a global and highly competitive world.



**Daniel Beltramino**

*President*

*Sub-commission on Child Health and Environment,*

*Society of Argentine Pediatrics*

## MESSAGE FROM WORLD HEALTH ORGANIZATION

Childhood diseases linked to environmental risk factors represent a growing global public health concern, not only for the present but also because of their impact on the future of public health. Environmental exposures from the time of conception into adolescence can result in disease, having an adverse effect on the health of girls and boys. It can also impact their health later, during adulthood. To recognize, evaluate and reduce the health risks related to the quality of water, air and food for children in their settings is crucial. It is also important to take action in responding to global changes to prevent emerging risks – for example, threats potentially posed by endocrine disrupting substances. Addressing these problems is fundamental to protecting the future of children and of nations.

The preparation of a national *Profile on Children's Environmental Health* represents a major effort, and an important initial step to establish a national baseline for planning interventions. It is also the step that allows the identification of partners to work in collaboration to plan and implement initiatives. This *Profile* summarizes the state of children's environmental health in Argentina, identifying the problems, reporting on successes and challenges, and establishing the basis to help define policies and future actions. To implement the work, all the relevant sectors are called upon to play a specific role and contribute to providing safer environments for children and a healthier future for the community.

This *Profile* contributes to the Buenos Aires Commitment on Healthy Environments, Healthier Children agreement of November 2005, that calls for translating knowledge into action, as the children of today are the adults of tomorrow, and they require a safer, cleaner and healthier world.



**Dr. Jenny Pronczuk**  
*Public Health and the Environment*  
*World Health Organization*

## Preface

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“The three pillars of sustainable development are society, economy and environment, but the ‘heart’ of sustainable development is the future generations: our children.”

Gro Bruntland

*Healthy Environments for Children’s Alliance (HECA)*

*World Health Organization (WHO) 2002*

### **Lilian Corra**

*Asociación Argentina de Médicos por el Medio Ambiente, AAMMA*

*International Society of Doctors for the Environment, ISDE*

*International Network on Children’s Health, Environment and Safety, INCHEs*

The *Profile of Children’s Environmental Health in Argentina* is the result of a three-year collaboration to develop a document that presents children’s environment health issues in a comprehensive way. Driven by a commitment to create healthier environments for children and youth in Argentina, individuals from many sectors offered their expertise and time to ensure the document presents as complete a picture as possible.

The *Profile* is unique in that it places the child in the centre of the analysis: all issues are examined from the perspective of the child. Children experience the world differently because they are not little adults: they are going through enormous developmental changes and growing quickly. As a result there are specific windows of vulnerability that need to be taken into consideration.

Because children are different, attention needs to be paid to the impact the environment has on their health. Children live, play, learn and work in a different way that makes them much more vulnerable to all these hazards. They consume more food, water and air than an adult in proportion to their body weight. They behave and interact with their surroundings in a different way, spending a lot of time in close to the ground, where they are exposed to dust and

toxic substances that accumulate there. They are immature organisms and therefore are less resistant and able to eliminate toxins from their bodies than adults.

Children also have little control over their environments and depend completely on their surroundings to survive. Contrary to adults, children are not aware of risks and are not able to make decisions to protect themselves. A world designed by adults creates challenges with which children must cope despite their immaturity.

The *Profile of Children’s Environmental Health in Argentina* begins to look at the known and possible linkages between the environment and child health. In many cases it raises more questions than answers; however the information presented in this way is a tool for researchers, decision makers, industry, communities and individuals to be able to identify risks and to take action to better protect children from environmental hazards.

Children are a country’s greatest asset and we have a responsibility to give them the healthiest environment possible to assure they are able to grow, flourish, learn and reach their full potential.



The *Profile of Children's Environmental Health in Argentina* is the result of a three year collaboration between different sectors in Canada and Argentina.

This document is based on “*The Health of Canada's Children – A CICH Profile*”, the principal publication of the Canadian Institute of Child Health (CICH), a primary partner in this project. In Canada, three editions of the CICH Profile have been published, providing a better understanding of the state of children's health in Canada, and promoting action to better protect the health of Canadian children. Although built on the Canadian *Profile* framework, the *Profile of Children's Environmental Health in Argentina* is specifically focused on issues related to children's health and the environment.

### **What is a profile? What is it after? What is its use?**

While data collection is a necessary part of producing any profile, the *Profile* itself is not a primary research project, but a compilation of published data and information that can be used to encourage and facilitate political and societal action.

In collecting and analyzing the data, networks are created that bring together stakeholders from many parts of society including professionals, decision-makers (from local to national areas of government), non-governmental organizations and industry.

The *Profile* operates on the premise that knowledge and understanding precede action. Once people recognize and understand the problem, the problem can then be addressed.

### **Why focus on Children's Environmental Health?**

The impact of environmental exposure is a growing concern, affecting health now and for decades to come. The resulting health impacts can compromise children's ability to fully develop and contribute to society.

The WHO has been working on children's health and the environment for a number of years and estimates\* that:

- More than 13,000 child deaths per day are a result of the present dangers in the environment where children live, learn, play and grow.
- Environmental risks constitute more than a third of the global burden of disease, more than 40% of that burden falls on children under 5 years of age – a group that makes up just under 10% of the population.
- A real possibility exists to improve child health through actions that address environmental threats. The protection of a healthy environment produces dividends.
- The protection of child health is a fundamental objective of public health and of environmental safety.



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\* *Healthy Environments for Children Alliance (HECA), World Health Organization, OMS, 2002*

### WHO calculates that:

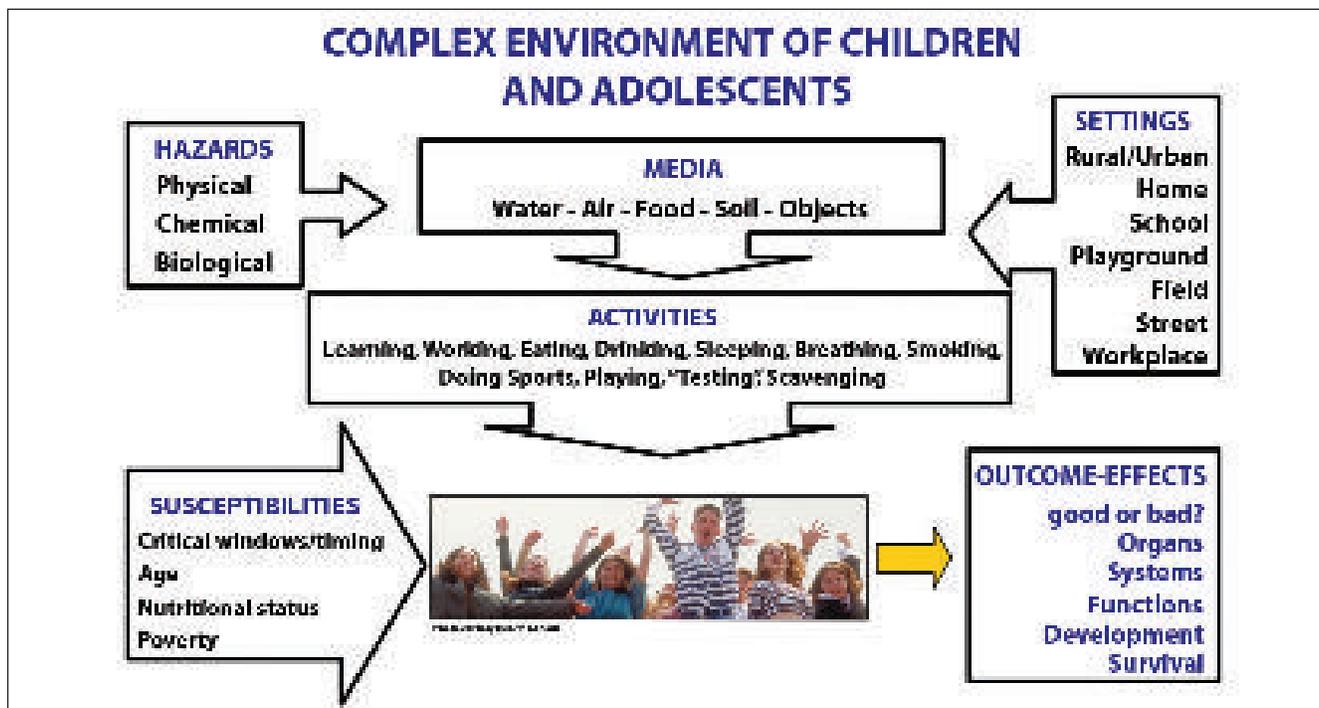
- 24% of the world's burden of morbidity-mortality and 23% of all deaths can be attributed to environmental factors.
- 36% of deaths of children 0 to 14 years of age may be attributed to the environment.
- There are big differences among regions but developing regions are affected by almost 50% more than are developed regions.
- Environmental risk factors influence 85 of the 103 categories of main diseases, groups of diseases and traumatismas that are covered by the State of the World's Health Report 2004.

*Healthy Environments and Disease Prevention: Toward an estimate of the burden of attributable morbidity to the environment, WHO, 2006*

Recognizing, understanding and addressing these challenges together can contribute to a healthier environment that allows Argentinean children to reach their full potential, be healthier and better equipped to protect their environment for future generations.

Children are, for a number of reasons, the group most vulnerable to the health impacts of environmental conditions and contaminants. The biology, behavior, and developmental status of children make them especially at risk to the environmental contaminants that they encounter.

Pound for pound, a child eats, drinks and breathes more than adults do, thereby causing them to have relatively greater exposures to environmental contaminants. Children also have more hand-to-mouth contact, resulting in a greater intake of dust and soil, and hence a greater amount of lead and other contaminants contained therein. The health impact resulting from an exposure to a contaminant may have an effect for decades to come, and affect the ability of that child to build a good quality life and contribute to the ongoing development of society.



Source: WHO Training Modules on Children's Environmental Health for Healthcare Professionals, 2006

The physical environment is only one of the determinants of health. Other factors, such as the availability and quality of the infrastructure, medical care, education, income, and employment all play a role in determining the level of health for a community or an individual. This *Profile* recognizes that the impact of the environment on child health is only one factor that contributes to overall health, and will be viewed in that context.

By focusing on children in this *Profile* we are examining issues from the child's lens, ensuring that the conclusions drawn and recommendations brought forward keep the child at the centre of the decision-making process.

### ***Why Develop the Profile of Children's Environmental Health in Argentina?***

Development of the *Profile* is very timely for a number of reasons:

- Over the last several years there has been a growing interest in the area of children's environmental health in Argentina by government, professionals, civil society and the general population. This growing interest helped to establish the need to develop a *Profile* and fostered partnerships that greatly assisted in the collection of information.
- There is a need for credible, evidence based, consolidated information on children's health and the environment to inform the development of programs, policies, interventions and research.
- Information on health, education, environment, among other topics, is well collected but not shared or communicated in a way that is easily understood and publicized. The *Profile* provides an opportunity for multi-sectoral partners to include their information in a meaningful way that will allow us to start seeing the connections.
- Around the world countries are starting to examine the connection between health and the environment. This *Profile* helps to advance this emerging research which will benefit Argentinean children and children from other countries.
- The *Profile* reports on what information was found but also highlights where more research or additional work should be focused.



# Developing the *Profile* in Argentina

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## Background

The Canada–Argentina partnership began in 1998 when the Canadian Institute of Child Health and the Asociación Argentina de Médicos por el Medio Ambiente initiated discussions to develop a collaborative project focused on children's environmental health in Argentina. A proposal was submitted to Canadian Government through the Canadian International Development Agency's Technology Transfer Fund. The project was approved in 2004.

The *Profile of Children's Environmental Health in Argentina* is one of several activities that took place between 2004–2007 as part of a larger project entitled: *Measuring the Environmental Impact on Children's Health in the Southern Cone*. The main activities of the project included: a survey of 14,000 pediatricians, coordination of two case studies (one examining lead exposure in children and the other examining pesticide exposure in children) and the development of this *Profile*.

The proposed technology to be transferred to Argentinean partners was Canada's experience working with multi-sectoral stakeholders to develop and publish three editions of *The Health of Canada's Children – a CICH Profile*.

Representative stakeholders from a number of sectors were invited to be part of the Steering Committee and became the project's primary partners. They guided the project, bringing their unique resources, expertise and concerns to the table. This multi-sectoral partnership played a key role in identifying content experts, data, supervising the production of all materials, providing guidance around dissemination activities and monitoring the on-going development of the *Profile*.

The Steering Committee had Canadian and Argentinean partners. In Canada the partners consisted of: Health Canada, the University of Ottawa and the Canadian Institute of Child Health (CICH). In Argentina, the partners consisted of: the Ministry of Health and Environment of Argentina, the Argentine Society of Paediatrics (SAP) and the Asociación Argentina de Médicos por el Medio Ambiente (AAMMA).

Throughout the development of the document numerous experts were involved (please see acknowledgement section). The *Profile of Children's Environmental Health in Argentina* is the result of this comprehensive process of expert consultation and review, designed to ensure accuracy, reliability and overall usefulness. This process was extensive and participatory. The Steering Committee is confident that the content of this document is credible and reflects the views of leading experts in Argentina.

## Choosing the Organizing Framework

The process of developing the *Profile* began in 2004 with a review of models and indicator frameworks that hold the child at the centre – that is, those that consider children's environmental health based on children's developmental stages, their lives and experiences.

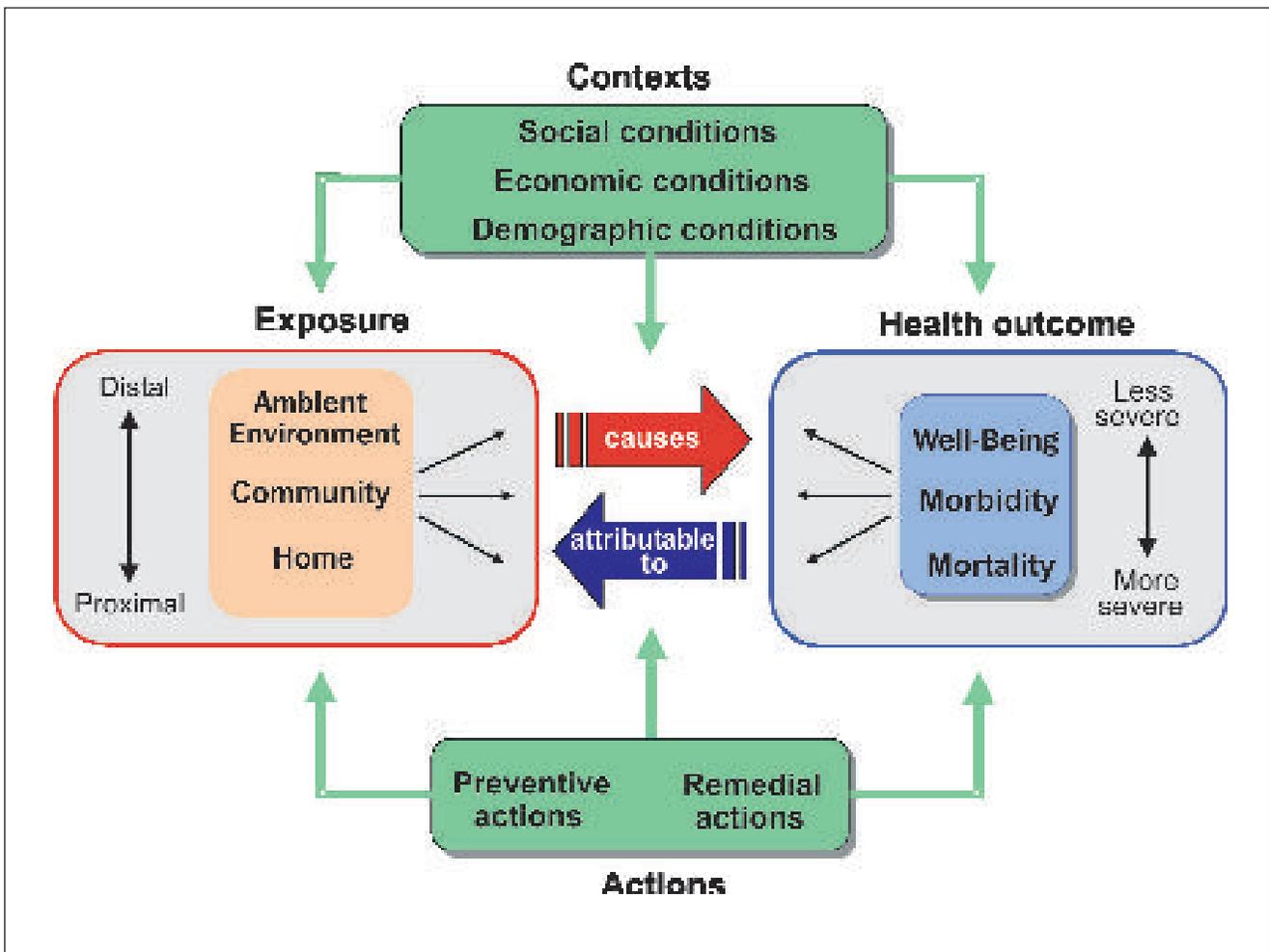
It was agreed that the chosen model must consider at least four things: the context of children's lives; their unique exposure to environmental hazards; their health and developmental well-being; and the actions that can be taken to protect them.

The Multiple Exposure-Multiple Effect (MEME) Model was found to be a widely recognized model for describing children's environmental health indicators. It has been used in *Making a Difference: Indicators to Improve Children's Environmental Health*, WHO, Geneva (2003); *From Theory to Action: Implementing the WSSD Global Initiative on Children's Environmental Health Indicators*, WHO, Geneva, (2004) and in *Children's Health and the Environment in North America - A First Report on Available Indicators and Measures*, Commission for Environmental Cooperation (CEC) prepared in collaboration with IJC - HPTF, PAHO, WHO, and the Governments of Canada, Mexico and the United States. Montréal, Canada, (2006).

The following diagram of the MEME framework from Briggs 2003 demonstrates that individual exposures can lead to many different health outcomes, and that specific health outcomes can be attributed to many different exposures.

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\*Publications available at: <http://www.who.int/ceh/publications/en/>



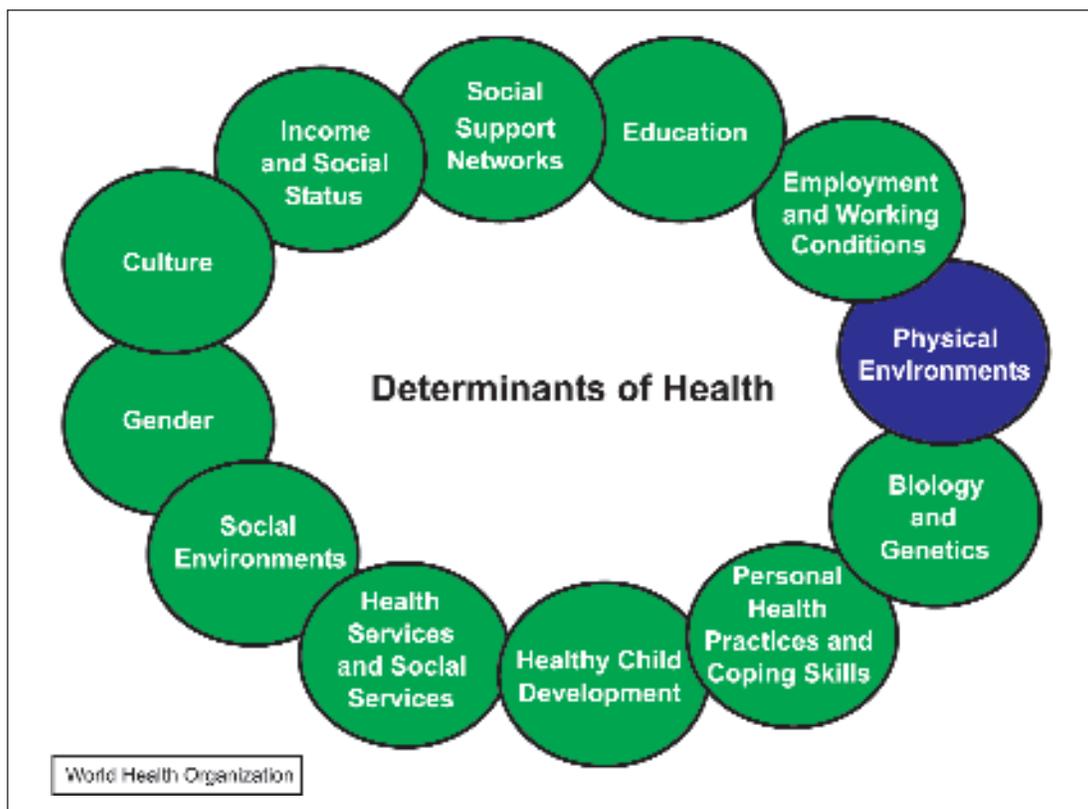
Multiple Exposure – Multiple Effect (MEME) framework.

Source: Proposal for a Baseline Indicators Report: Environmental Influences on Children’s Health in Canada: Fourth Draft. Prepared for Environment Canada. Prepared by Carol Murray, ESSA Technologies Ltd.

The MEME framework indicators are organized into four categories: context, exposure, health outcomes and action indicators. Using this model as a framework to develop the Profile made sense for three important reasons:

First, it is well understood that the context within which children learn and grow influences their health and development. The contextual domain can be thought of as the

“inputs” – or the environments children live in that influence their health, well-being and developmental outcomes. These are things like their socio-economic status, access to food and nutrition, among others. The determinants of health, as defined by the WHO and articulated in the diagram below, have a profound impact on children’s health status.



Source: Proposal for a Baseline Indicators Report: Environmental Influences on Children's Health in Canada: Fourth Draft. Prepared for Environment Canada. Prepared by Carol Murray, ESSA Technologies Ltd.

However, these determinants do not act in isolation, which means that some groups of children are especially vulnerable to the effects of environmental hazards. For example, several chronic diseases, including asthma and cystic fibrosis, are worsened by exposure to poor air quality\*, and children living in low income families are more likely to grow up in neighbourhoods adjacent to polluting industries, major roads and waste dump sites\*\*.

Second, it reflects the differences in how environmental health issues are framed, based on different people's perspectives. People working in environmental concerns think about the issue from the perspective of environmental

exposure – e.g., air, water, food, soil. Health experts tend to think about the issues from the perspective of health outcomes in children (e.g., asthma and other respiratory diseases). Presenting exposure indicators in one section and health outcome indicators in another section allows professionals and agencies to focus on and identify actions in the domain within which they have jurisdiction and are most able to effect positive change.

Third, this model matches the current knowledge – that being that there is evidence of environmental risks and evidence of health outcomes of concern, but we have little understanding of the relationships between them.

\* Wigle, D. 2003. *Child Health and the Environment*. Oxford University Press, New York, NY, 396 pp.

\*\* Chaudhuri, N., 1998. "Child Health, Poverty and the Environment: The Canadian Context." *Canadian Journal of Public Health*. 89 (Suppl. 1): 26-30.

## Choosing Indicators on Children Environmental Health

When choosing indicators we needed to ensure that they were meaningful and suited our intended purpose. Therefore the indicators had to meet certain criteria. Taking into account criteria used in a number of children's indicator reports, the following criteria was considered:

- *Relevant*: the indicators should be directly relevant to one or more of the issues pertaining to environmental influences on children's health.
- *Credible*: the indicators and their underlying data should be unbiased and come from reliable sources.
- *Comparable*: wherever possible indicators should be comparable across jurisdictions and over time.
- *Understandable*: the indicators must be easy to understand.
- *Responsive*: the indicators should be sufficiently sensitive to signal positive changes in a timely fashion, and to provide early warning of problems.
- *Feasible*: the data should be available or if not, producing them should be technically and financially feasible, whether through new analyses of existing data, or new data collection (e.g., environmental monitoring, health surveillance). It is recognized that there may not be sufficient data at present to populate a full suite of indicators for each issue. One of the important objectives of our work will be to help identify important information gaps.

Using this framework, a broad consultation took place with members of the Steering Committee to review the complete list of proposed context, outcome, environmental exposure and action indicators. During this consultation the indicators were discussed in relation to the relevance of the indicator in Argentina and the potential availability of data. Based on this discussion the indicator model was revised to include only those indicators with available data and relevance. The Steering Committee also decided to add chapters and discussion to bring together the three domains of the variables (context, outcome and environmental exposure) as they specifically relate to Argentina.

Using Sharepoint, a web-based tool that allows information to be posted electronically, the indicator model was populated with available data. In those instances where the indicator was relevant to Argentina, but there was no data, it

was agreed that the information would be discussed using a question mark table.

## Data Sources

Information in the *Profile* came from traditional sources such as census data, vital statistics and hospitalization data. It also came from population-based national and provincial surveys. Some non-population-based survey data are also presented to stimulate discussion and future research.

Population and socioeconomic data came from documents published by the National Institute of Statistics and Census. Argentina carried out National Surveys on Population and Housing in 1869, 1895, 1914, 1947, 1960, 1970, 1980, 1991 and 2001; however for the most part demographic variables presented in the *Profile* belong to the last two population censuses (1991 and 2001).

Some variables are measured and registered in intercensal years through the Permanent Survey of Households (PSH), a national survey that has been conducted by the National Institute of Statistics and Census (INDEC) since 1972. Since 1974 it has been carried out jointly with the Provincial Statistics Departments (PSD). The PSH gathers socio-economic information in urban agglomerates. It utilizes a family questionnaire (for data on housing and demographic characteristics of the home) and an individual questionnaire (for labor, income, education and migrations data) for each one of the individuals of the home. This data is collected in off census years to supplement the census data.

The Permanent Survey of Households is carried out to increase the level of socioeconomic data in selected urban agglomerates across the country. The number of urban agglomerates included keeps growing as the years pass according to the growth of the population. An urban "agglomerate" is an urban center with more than 100,000 inhabitants, provincial capitals (although they might have fewer inhabitants), and some well defined urban-rural areas (i.e., Alto Valle de Río Negro).

Health and environment information was collected from information published by the Ministry of Health and Environment of Argentina (Ministry of Health and

Department of Environment and Sustainable Development since the end of 2006).

For very specific issues, data came from published documents and statistical information from groups such as the Argentine Society of Pediatrics (SAP) and the Child-Youth Cancer Registry of the Kaleidos Foundation.

## The Charts

The charts have been standardized as much as possible to ensure that the presentation of the material is clear.

All the information used to create the chart is contained in the chart. For example, with bar graphs, the figures appear directly over the bars and with line graphs, the figures appear in a box below the graph. Where possible the sample size has been included in the charts (N). This number is often important for interpreting the chart. The sources of information are reported under the charts, with the full citation available in the reference section. Notes from the original sources are presented, along with any other required notes.

## Guiding Principles

The Steering Committee recognizes the importance of linking data to action in order to help our society move toward a healthier future. The guiding principles for this document connect us continually to this objective.

- *Ground the document in child development while maintaining a holistic approach to the child.*

Because child development is an interactive process, it is important to maintain a holistic approach. Children are not small adults and the determinants of health that have an impact on their lives can only be understood within a child development framework.

- *Acknowledge that children are important as children.*

Children are important not only as the next generation of adults but because they play a role in shaping their own lives by contributing to their families, their schools and their communities. Strategies must target improving children's lives now just as much as they aim to improve their futures.

- *Focus on critical issues*

Critical issues drive policy development. A focus on critical issues ensures that the *Profile* has the greatest possible impact. This means paying enough attention to the most vulnerable children.

- *Focus on prevention and health promotion*

Primary prevention seeks to avoid the onset of disease by eliminating or at least minimizing environmental factors and unhealthy behaviours that increase the risk of death, illness and injuries. Health promotion creates an environment whereby individuals are able to reach their highest potential for health. Strategies must include how one would like things to be in the future, reducing disease and setting goals for the promotion of health.

- *Identify important issues even where available data are incomplete at this time*

The Precautionary Principle urges action in the best interest of children based on information available at a given point. In regard to widely distributed environmental toxins, to wait for absolute and conclusive research can potentially put a generation of children unnecessarily at risk.

- *Recognize the disparities that exist for children and youth*

Data needs to be presented in such a way that the disparities within Argentina are made visible. Disparities may be regional or economic or they may be related to ethnicity, disability status or gender.

## Profile Structure

The *Profile* is divided into 6 chapters, one appendix and a glossary. Chapter 1 gives an overview of the demographic situation in Argentina today. Chapter 2 provides health outcome information for children in Argentina, exploring the environmental burden of disease. Chapter 3 presents information on environmental exposures specifically related to Argentina. Chapter 4 deals with specific actions such as legislation, policies and programs that are currently in place in Argentina that protect children from environmental hazards. Chapter 5 presents some specific studies on child health and environment where the relationship between exposure and outcome are examined and tools

developed. Chapter 6 provides recommendations and considerations for the future. The appendices provide additional information on studies, reports, tools, programs, websites, organizations, international agreements and ongoing processes, allowing the reader to see the wide range of activity happening both within Argentina and internationally related to children's environmental health. There is also a glossary of definitions included to assist the reader in defining technical terms. A complete reference section completes the *Profile* document.

Each chapter includes explanatory text boxes that generally serve three functions: providing a brief synopsis of an important issue that cannot be presented in terms of statistics; offering background information necessary to interpret other charts; and, presenting case studies specific to Argentina to emphasize the relevance of information presented more generally.

The chapters also include "Question Mark" charts consisting of a map of Argentina with a question mark superimposed on it. These highlight areas where data, from surveys or other sources, is needed to provide a more complete picture of the issue. The purpose of the question mark tables is to raise awareness, stimulate discussion and promote positive action.

## Special Considerations for Developing the Profile - The Argentinean Context

Argentina is the eighth largest country in the world, ranking third in South America in total population and 30<sup>th</sup> globally. However, the population is not evenly distributed, with most Argentineans living in the cities. The Argentine population is concentrated in the three main cities of Cordoba, Rosario and Buenos Aires with Buenos Aires being considered a megacity.

The climate in Argentina is predominantly temperate with extremes ranging from subtropical in the north to subpolar in the south.

Argentina is a melting pot of different peoples, but unlike most other Latin American nations, citizens of European descent make up the greatest majority of the population.

Argentina benefits from abundant natural resources, an export-oriented agricultural sector and a diversified industrial base including mining, petroleum, gas and other industries.

Over the years, the Argentinean economy has suffered several shocks but none as great as the one that took place at the end of 2001 and continuing to the end of 2002. In 2003, the process of economic recovery began slowly in Argentina. However, it is important to highlight the economic context of the crisis to help the reader understand the information presented in the following chapters, as the information may show variations that should be considered as a result of the socio-economic-political process.







## CHAPTER 1

# Context



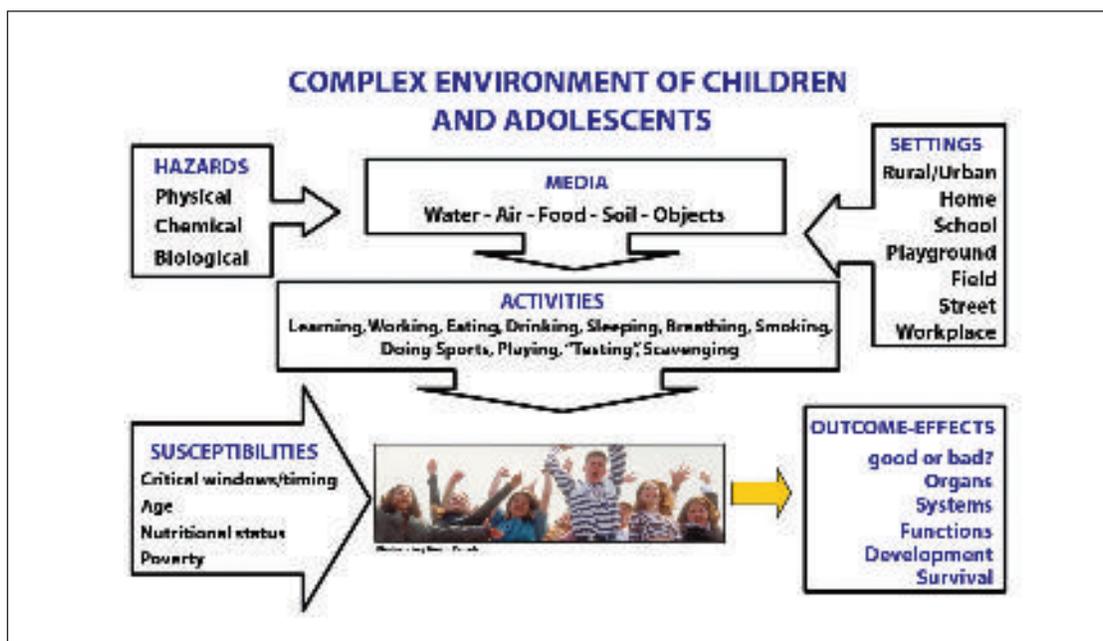
*Chapter 1 describes the population of children and youth in Argentina as well as the places within which they grow, play, learn and work.*

## Who are the children of Argentina – where and how do they live?

The context within which children and youth grow and learn influences their health and development. This context can be thought of as several interrelated factors that are determined by the socio-economic status, access to food and nutrition, the political, historical, and cultural situation, among other factors that children live in which influence their health, well-being and developmental outcomes.

The determinants of health, as defined by the WHO and articulated in the diagram below, have a profound impact on children's health status. However, these determinants do not act in isolation, which means that some groups of children are especially vulnerable to the effects of environmental hazards. For example, low income families and their children tend to be grouped in communities or neighborhoods that are located in close proximity of industrial sites, near streets, in heavy traffic areas or near urban waste disposal sites.<sup>1</sup>

In order to describe this context, Chapter 1 explores the population, family, economic, education and workplace conditions that are part of a child's environment in Argentina.



Source: WHO Training Modules on Children's Environmental Health for Healthcare Professionals, 2006

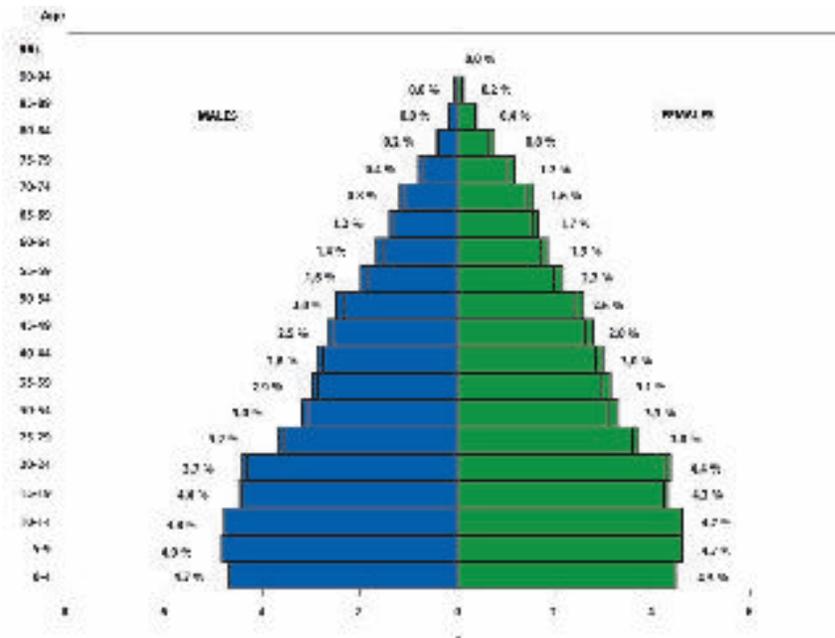
# Demographics

## Population pyramid in Argentina

Argentina has a young population as can be clearly seen in the population pyramid. In addition, there is a balance of boys and girls among all age groups of children.

The population pyramid of Argentina has the characteristic shape of Latin American countries in their initial development periods of demographic transition. This is illustrated by a high birth rate and a progressive decrease in the mortality rate resulting from a gradual improvement of sanitary conditions and health assistance.

TOTAL FOR THE COUNTRY. POPULATION, STRUCTURE BY AGE, GENDER YEAR 2001



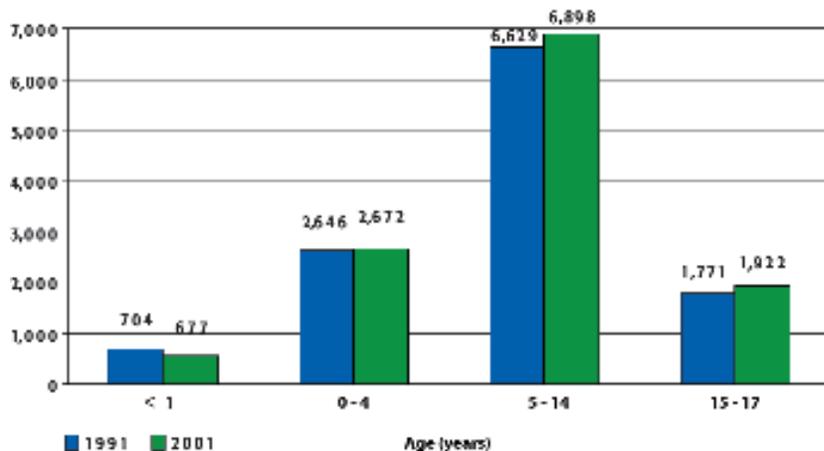
Source: INDEC. National Population Census, Home and Household 2001

## What percentage of Argentineans are children and youth?

In 1991, there were 11,750,000 children and youth age 0 and 17 years living in Argentina. They represented 36% of the population. By 2001, that number had risen to 12,170,000, representing 33.6% of the total population. Therefore, while children and youth represent a declining proportion of the population, their absolute numbers are increasing.<sup>2</sup>

The number of young children – aged 0 to 4 years – remained virtually unchanged between 1991 and 2001, while the number of children and adolescents 5 to 17 years old increased slightly.

NUMBER OF CHILDREN AND YOUTH BY AGE GROUP ARGENTINA, 1991 AND 2001



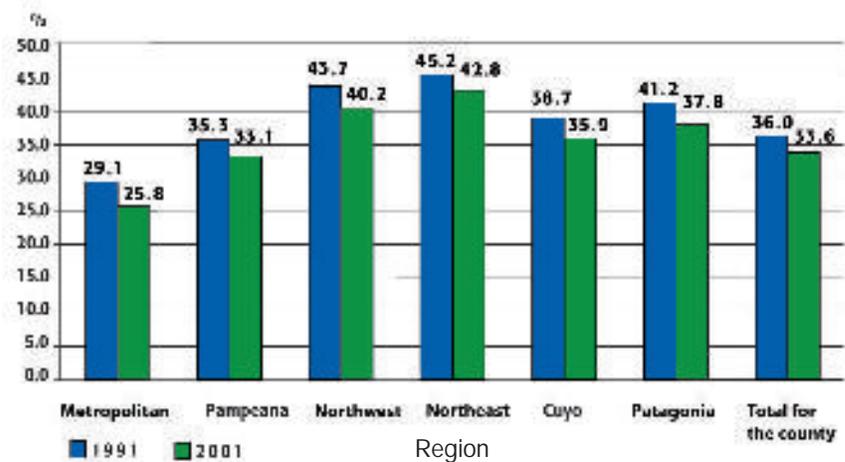
Source: INDEC. National Census of Homes and Households. 1991. Report No.: Synthesis N° 4.

## Regional comparisons

Some regions of Argentina have higher concentrations of children and youth than do others. For example, in the Northeast (NEA) and Northwest Regions (NOA) the population is 'young' and children and youth represent more than 40% of the total population.

It is particularly important in those regions where children make up almost half the population, that regulations, policies and programs be developed with the protection of children and youth in mind. Between 1991 to 2001 the population of children and youth as a proportion of the total population declined in all regions, by between 2.3% to 3.4%.

CHILDREN AND YOUTH UNDER 18 YEARS OF AGE AS A PERCENTAGE OF TOTAL POPULATION BY REGION ARGENTINA, 1991 AND 2001



Source: INDEC. National Population Census, Homes and Households 1991 and 2001.



## Rural and urban population

According to the census of 2001, 90% of the population of Argentina resides in urban centers. (INDEC, 2001).

In Argentina, the Permanent Household Survey\*,\*\* is conducted in 28 urban agglomerates\*\*\*. Of the total population of children and youth in Argentina in the year 2001 (12,170,000), 58.3% (7,095,696) lived in these 28 urban agglomerates. Of these over 7 million children and youth, 29.5% lived in urban agglomerates of the Metropolitan Region and only 1.9% lived in urban agglomerates of the Patagonian Region.

## Percentage of homes in Argentina with at least one resident under 18 years

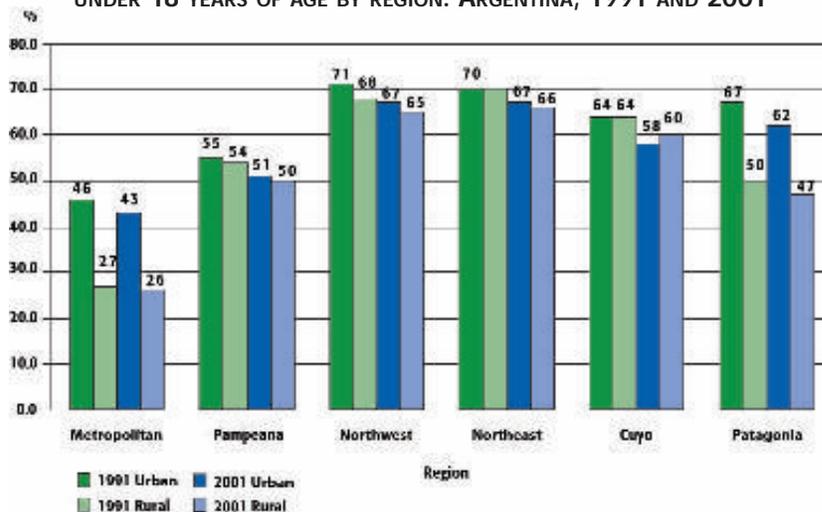
For both census years (1991 and 2001), the Metropolitan Region had the lowest percentage of urban and rural homes with at least one child or adolescent under 18 years of age. The Northwest Region (NOA) had the highest percentage. The percentage of households with at least one child or adolescent under 18 years of age decreased between 1991 and 2001 in all regions of the country.

DISTRIBUTION OF CHILDREN AND YOUTH UNDER 18 YEARS OF AGE IN 28 URBAN CENTRES BY REGION ARGENTINA. OCTOBER 2001

Region	Total number of children and youth in the urban region	Percentage of all children and youth that live in urban agglomerates
Metropolitan	3,589,439	29.5 %
Northwest	784,963	6.4 %
Northeast	451,193	3.7 %
Pampeana	1,566,266	12.9 %
Cuyo	478,536	3.9 %
Patagonia	225,299	1.9 %
Total of 28 agglomerates	7,095,696	58.3 %

Source: INDEC. Permanent Household Survey, special processes of the Provincial Bureaus of Statistics, October 2001.

PERCENTAGE OF URBAN AND RURAL HOMES WITH AT LEAST ONE RESIDENT UNDER 18 YEARS OF AGE BY REGION. ARGENTINA, 1991 AND 2001



Source: INDEC. National Population Census, Homes and Households 1991 and 2001.

\* The Objective of the Permanent Household Survey (PHS) is to collect socioeconomic information in a dynamic form in urban agglomerates selected across the country. It is based on sampling for coverage reasons An urban "agglomerate" is an urban center with more than 100,000 people, provincial capitals even if they have less than 100,000 people, and some well defined urban-rural areas (for example "Alto Valle del Río Negro"). In addition, "agglomerates" are those towns that cross provincial border limits, departments or parties, and by being next to each other form a unique labor market (for example unique agglomerate of "San Salvador de Jujuy-Palpala"). The number of urban agglomerates keeps growing as the population of the country grows. The PHS is a national Program developed by the National Institute of Statistics and Census. (INDEC) since 1972 and since 1974 it is carried out jointly with the Provincial Directorate of Statistics (PDS). The PHS collects socio-economic information in domestic urban agglomerates. The information is collected via a family questionnaire (that collects data on housing and demographic characteristics of the home) and an individual questionnaire (for occupational data, income, education and immigration) for each member of the family.

\*\* Total number of agglomerats surveyed: Makes reference to the data collected by the PHS in the domestic urban agglomerates surveyed. Between 2003 and the second trimester of 2006 the PHS surveyed 28 urban agglomerates. Since the second trimester of 2006 the coverage expanded to 31 urban agglomerates (San Nicolás and Villa Constitution, Rawson and Trelew, and Viedma and Carmen de Patagonia).

\*\*\* "Urban total" refers to numbers for all urban domestic agglomerates. Because the PHS accounts for about 70% of the urban population, figures from non-surveyed cities are assumed to possess a similar structure to that of the agglomerates from similar regions. These results, added to numbers from the Great Buenos Aires Region help obtain national figures from the different occupational categories. To obtain data in absolute numbers the urban population estimates used were provided by INDEC.

## Native child population

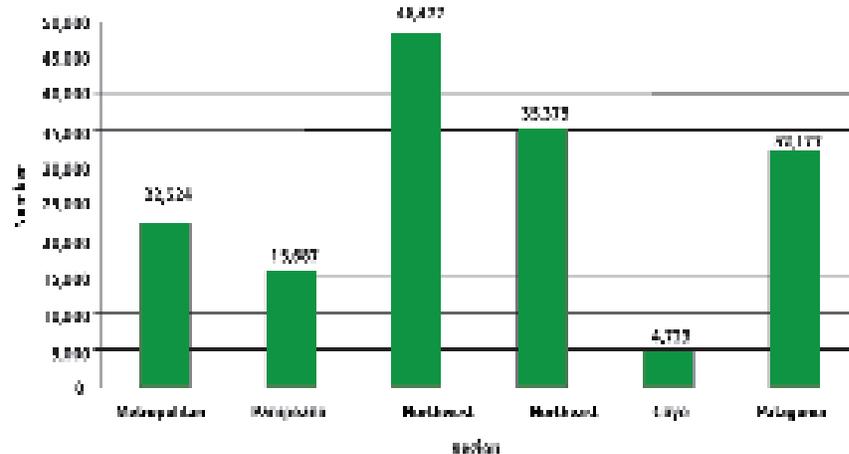
According to the Complementary Survey of Indigenous Communities (ECPI), INDEC, 2004–2005 (Complement of the National Census of Population and Housing) 158,763 children and youth between 5 and 19 years of age are recognized as belonging to a native community. This represents 1.6% of the total population of this age category.

Thirty percent of the indigenous population is concentrated in the NOA region\*.

It is important to highlight that there is a considerable population of indigenous people in the Metropolitan Region (14% of the total indigenous population in the country). These people migrated to live and work in the city.

DISTRIBUTION OF CHILDREN AND YOUTH BETWEEN 5 AND 19 YEARS OF AGE RECOGNIZED AS BELONGING TO A NATIVE COMMUNITY BY REGION

(N=158,763)  
ARGENTINA, 2004 AND 2005



Source: INDEC, Permanent Household Survey, special processes of the Provincial Bureaus of Statistics October 2001.

***For the first-time ever in the country a complementary survey was conducted in 2004 and 2005 to identify the native population of each community.***

***Two criteria were used in combination: first the auto-identification or auto-recognition of belonging to an indigenous community and second the indigenous descendents of the first generation.***

## Migratory movement in Argentina

Argentina has a long history of migration. In addition to the traditional arrival of Central European immigrants, which were very important from the middle of the 19<sup>th</sup> Century until after World War II, the country also continually receives immigrants from neighboring countries such as Bolivia, Chile, Paraguay and Uruguay. Recently, Argentina has been receiving immigrants from Eastern European countries and to a lesser extent from Africa. Even

more recent is the immigration from more distant countries, such as Korea, China and Japan.

But Argentina is also a country with interesting emigration characteristics. These are different from those of other Latin American countries. Most Argentinean emigrants are individuals belonging to a “technical/professional” group. Migratory waves coincide with the political and economic crises that Argentina has suffered since 1930.<sup>3</sup>

\* The native populations identified in the Complementary Survey of Indigenous Towns (ECPI) 2004-2005, Supplement of the National Census of Population and Housing are: *ata-cama, ava guaraní, aymara, chané, charrúa, chorote, chulupí, comechingón, diaguita / diaguita calchaquí, guaraní, huarpe, kolla, lule, maimará, mapuche, mbyá guaraní, moco-ví, omaguaca, ona, pampa, pilagá, quechua, querandí, rankulche, sanavirón, tapiete, tehuelche, toba, tonicote, tupí guaraní and wichí.* Source: INDEC, Complementary Survey of Indigenous Towns (ECPI) 2004-2005, <http://www.indec.mecon.ar/>

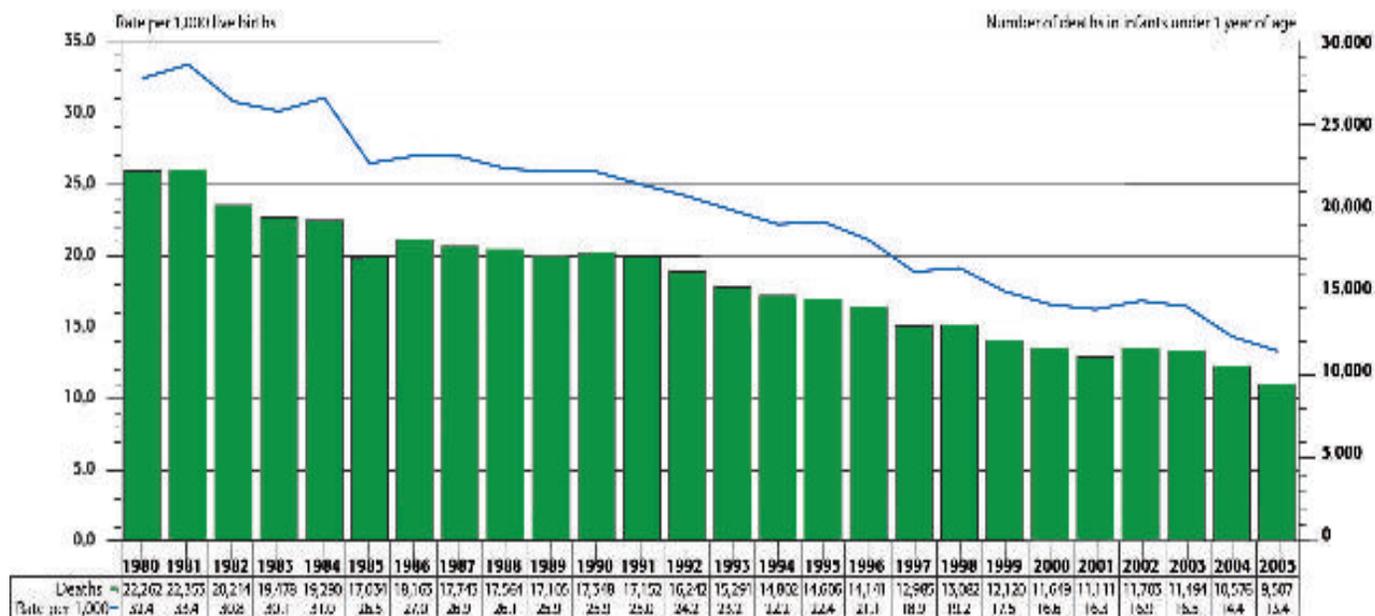
# Core child health indicators

## Infant mortality

The infant mortality rate is the number of deaths of infants under one year of age during a one year period per 1,000 registered live births during the same year. Infant mortality is a basic indicator of the well-being of a population and of the health status of children.

In 2005, the infant mortality rate in Argentina was 13.3 deaths per 1,000 registered live births. This rate has decreased since 1991.

TREND IN INFANT MORTALITY. NUMBER OF DEATHS AND RATE PER 1,000 LIVE BIRTHS  
ARGENTINA, 1980 TO 2005

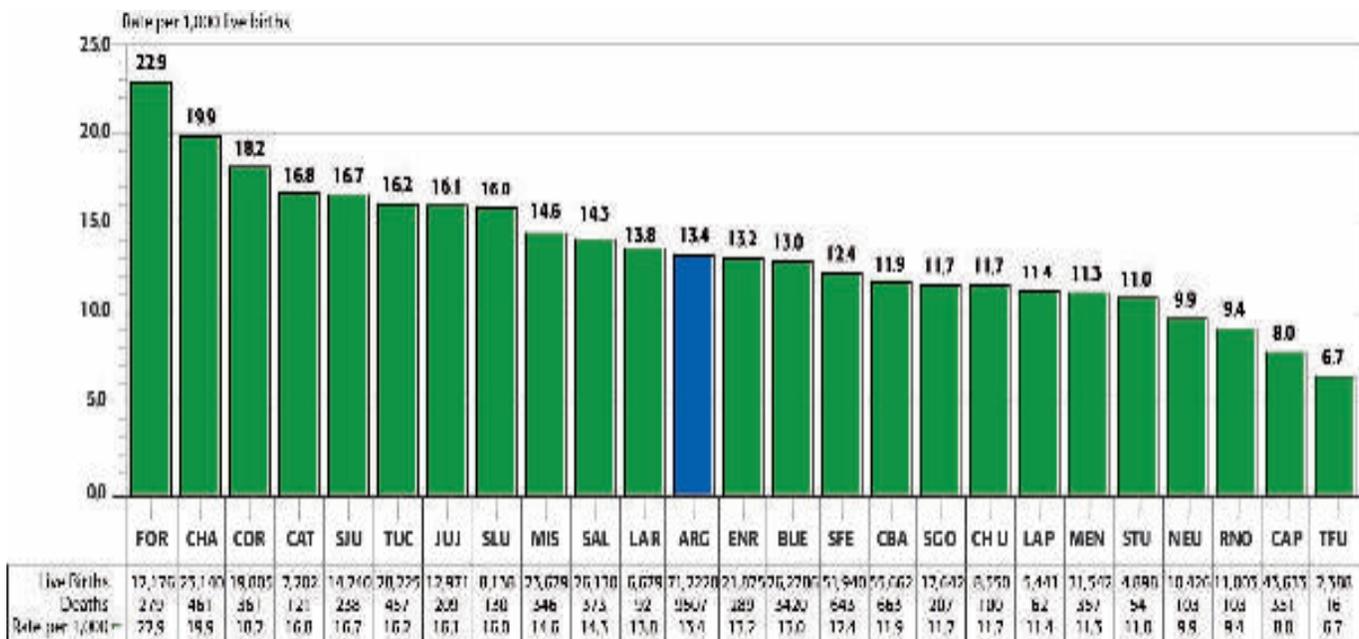


Source: Provincial Bureaus of Statistics according to the information provided by the National Bureau of Statistics and Health Information (DEIS), Ministry of Health of Argentina, May 2007.

There are discrepancies in the infant mortality rate among provinces. The highest rates are seen in the provinces of the Northeast region – Formosa, Chaco and Corrientes with 22.9, 19.9 and 18.2 per 1,000 live births respectively in 2005. The rates in the Province of Tierra del Fuego and the city of Buenos Aires were only 6.7 and 8.0 per 1,000 live births respectively in 2005.



INFANT MORTALITY BY JURISDICTION  
 NUMBER OF DEATHS AND MORTALITY RATE PER 1,000 LIVE BIRTHS  
 ARGENTINA, 2005



Source: Provincial Bureaus of Statistics according to the information provided by the National Bureau of Statistics and Health Information (DEIS), Ministry of Health of Argentina, May 2007.

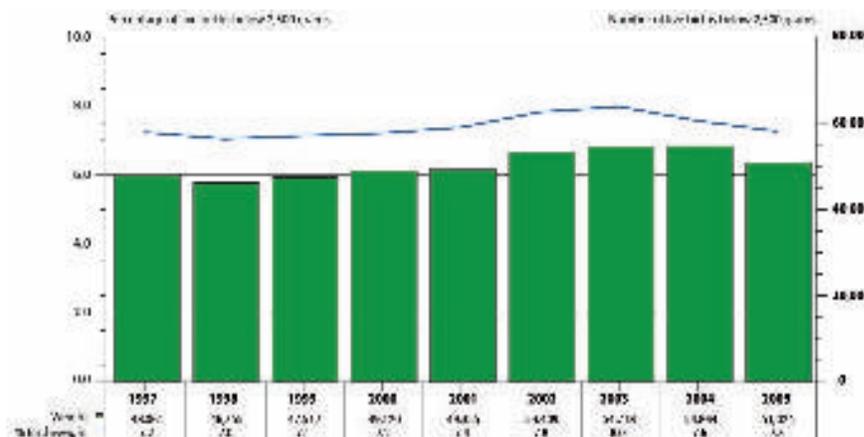
## Low birthweight

Low birthweight is a key determinant of infant survival, health and development. Babies born weighing less than 2,500 grams (about 5.5 pounds) have a high probability of having disabilities later in life and are more likely to die during their first year of life.

In Argentina in 2005, 7.3% of babies were born with low birthweight. This rate can be compared to Canada where the percentage of low birth weight was 6.1% in 2005–2006.

The rate of low birth weight increased between 2001 and 2003 as a consequence of the socio-economic crisis of 2001–2002. The rate began to recover in 2004.

TREND IN LOW BIRTHWEIGHT (< 2,500 GRAMS)  
NUMBER AND PERCENTAGE  
ARGENTINA, 1997 TO 2005

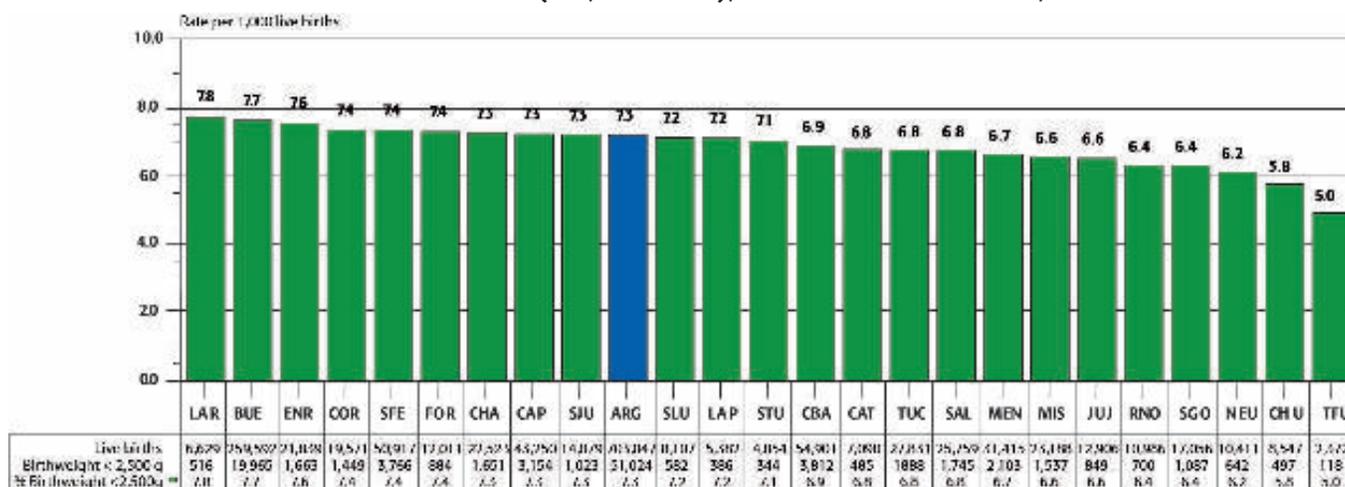


Source: Provincial Bureaus of Statistics according to the information provided by the National Bureau of Statistics and Health Information (DEIS), Ministry of Health of Argentina, May 2007.

The rate of low birthweight varies across the country. The provinces of La Rioja and Buenos Aires have the highest rates at 7.8% and 7.7% respectively, while Chubut and Tierra del Fuego have the lowest at 5.8% and 5.0%, respectively.

The differences in the low birth weight between the provinces are less pronounced than those of the infant mortality rate.

RATE OF LOW BIRTHWEIGHT (< 2,500 GRAMS), BY JURISDICTION ARGENTINA, 2005



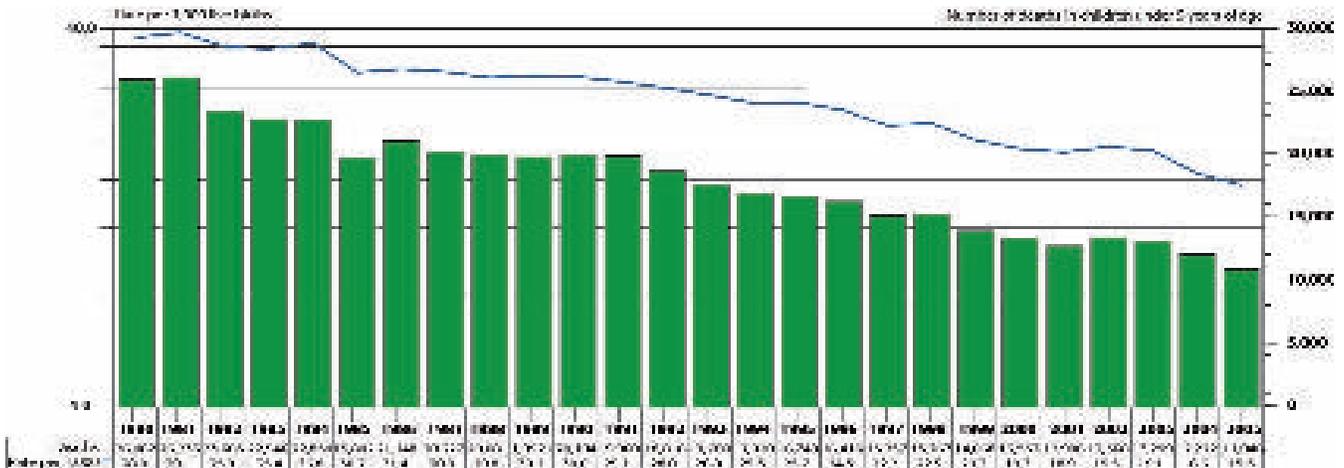
Source: Provincial Bureaus of Statistics according to the information provided by the National Bureau of Statistics and Health Information (DEIS), Ministry of Health of Argentina, May 2007.

## Deaths under 5 years of age

The death rate for children under 5 years of age is considered to be a leading indicator of the level of child health and the overall development of countries. It is also a Millennium Development Goal indicator. In 2005, the death rate in children under 5 years was 15.5 per 1,000 live

births in Argentina. This death rate had been gradually decreasing beginning in the 1990s, but increased as a result of the socio-economic crisis of 2001–2002. The rate has been once again recovering since 2003.

TREND IN MORTALITY – CHILDREN UNDER 5 YEARS OF AGE  
NUMBER OF DEATHS AND RATE PER 1,000 LIVE BIRTHS. ARGENTINA, 1980 TO 2005

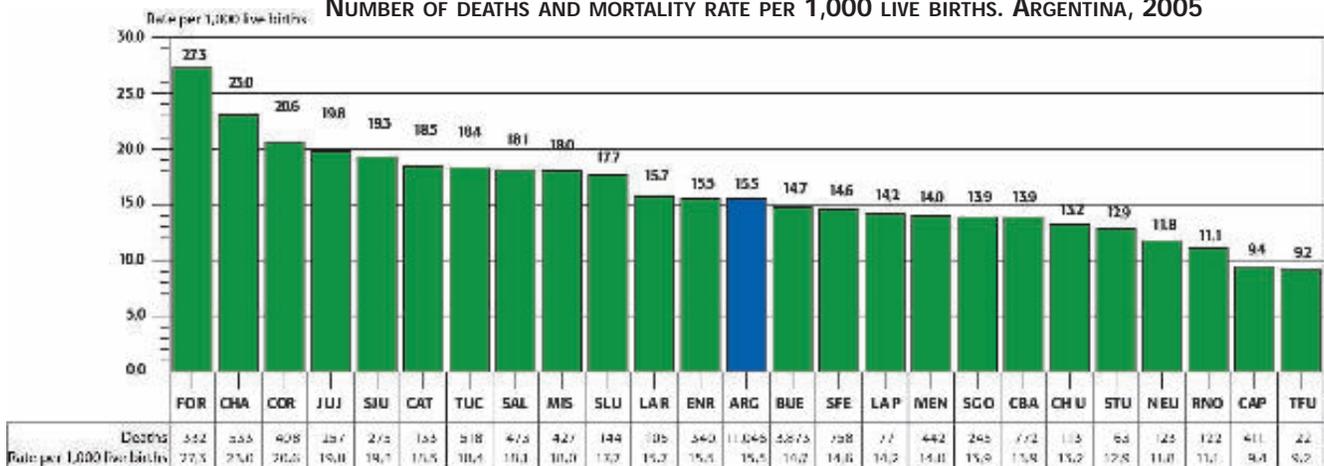


Source: Provincial Bureaus of Statistics according to the information provided by the National Bureau of Statistics and Health Information (DEIS), Ministry of Health of Argentina, May 2007.

The mortality rate in children und 5 years of age is very different among the provinces. In Formosa and Chaco it was 27.3% and 23.0% per 1,000 live births respectively in 2005

while in the City of Buenos Aires and Tierra del Fuego it was 9.4 % and 9.2% respectively.

MORTALITY – CHILDREN UNDER 5 YEARS OF AGE BY JURISDICTION  
NUMBER OF DEATHS AND MORTALITY RATE PER 1,000 LIVE BIRTHS. ARGENTINA, 2005



Source: Provincial Bureaus of Statistics according to the information provided by the National Bureau of Statistics and Health Information (DEIS), Ministry of Health of Argentina, May 2007.

## Nutrition

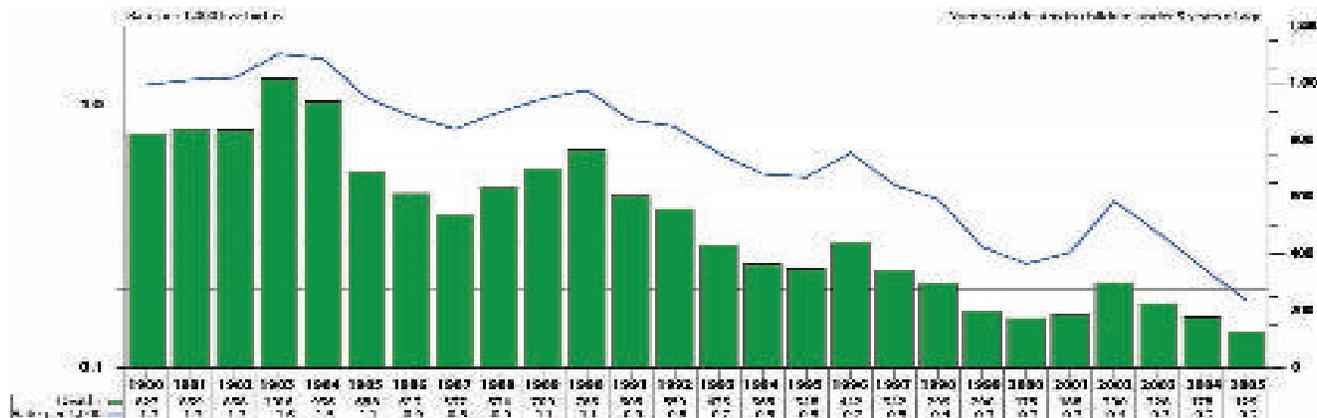
### Nutritional Status

The nutritional status of children is an important indicator of their well-being. As well, it affects their risk of developing other health problems. Two important indicators of nutritional status are malnutrition (including anaemia) and obesity. Malnutrition and obesity are influenced by the food that children consume, their health status and the physical environment that surrounds them. Malnutrition plays an important role in child deaths worldwide.

### Malnutrition

Malnourished children are more likely to suffer from episodes of severe diarrhea and they are more susceptible to infectious diseases such as respiratory and meningitis. Also, malnourished and anemic children are more vulnerable to environmental toxic exposures such as heavy metals, e.g., lead. In Argentina, the death rate among children under 5 years of age due to malnutrition has decreased overall in the last 20 years, with an increase in 2002/03 as a result of the economic and social crisis.

**TREND IN MORTALITY AMONG CHILDREN UNDER 5 YEARS OF AGE DUE TO MALNUTRITION  
NUMBER OF DEATHS AND RATE PER 1,000 LIVE BIRTHS. ARGENTINA, 1980 TO 2005**

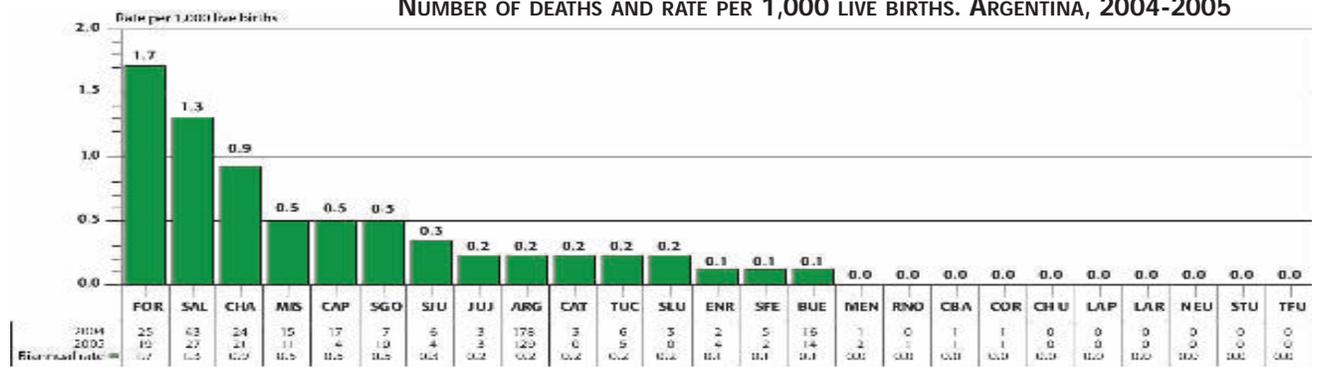


Source: Provincial Bureaus of Statistics according to the information provided by the National Bureau of Statistics and Health Information (DEIS), Ministry of Health of Argentina, May 2007.

The mortality rate among children under 5 years of age due to malnutrition differs between the provinces. In 2004–2005, six provinces (Tierra del Fuego, Santa Cruz, Chubut, Neuquén, La Pampa and La Rioja) did not register any

deaths due to malnutrition in children under 5 years. In contrast, the provinces of Formosa and Salta registered mortality rates due to malnutrition in children under 5 years of 1.7 and 1.3 per 1,000 live births, respectively.

**MORTALITY DUE TO MALNUTRITION FOR CHILDREN UNDER 5 YEARS OF AGE BY JURISDICTION  
NUMBER OF DEATHS AND RATE PER 1,000 LIVE BIRTHS. ARGENTINA, 2004-2005**



Source: Provincial Bureaus of Statistics according to the information provided by the National Bureau of Statistics and Health Information (DEIS), Ministry of Health of Argentina, May 2007.

### Obesity

During the last two years, the Ministry of Health has invested in studying how the Argentinean population fares in matters of nutrition. In successive stages the National Survey on Risk Factors (NSRF) and the National Survey of Nutrition and Health (NSNH) were developed.

The incidence of obesity that has been revealed is worrisome. More than half the population over 18 years of age are overweight – 34% are considered overweight and 14.6% are obese. Children are not excluded from this problem: 50% of children in the survey (36,000 children ranging from 6 months to 5 years of age) were overweight.

At a national level men were more likely than women to be overweight (42% vs. 27.2%), however, the prevalence of obesity was similar between men and women (15.4% vs. 13.9%). This was the case in most of provinces.

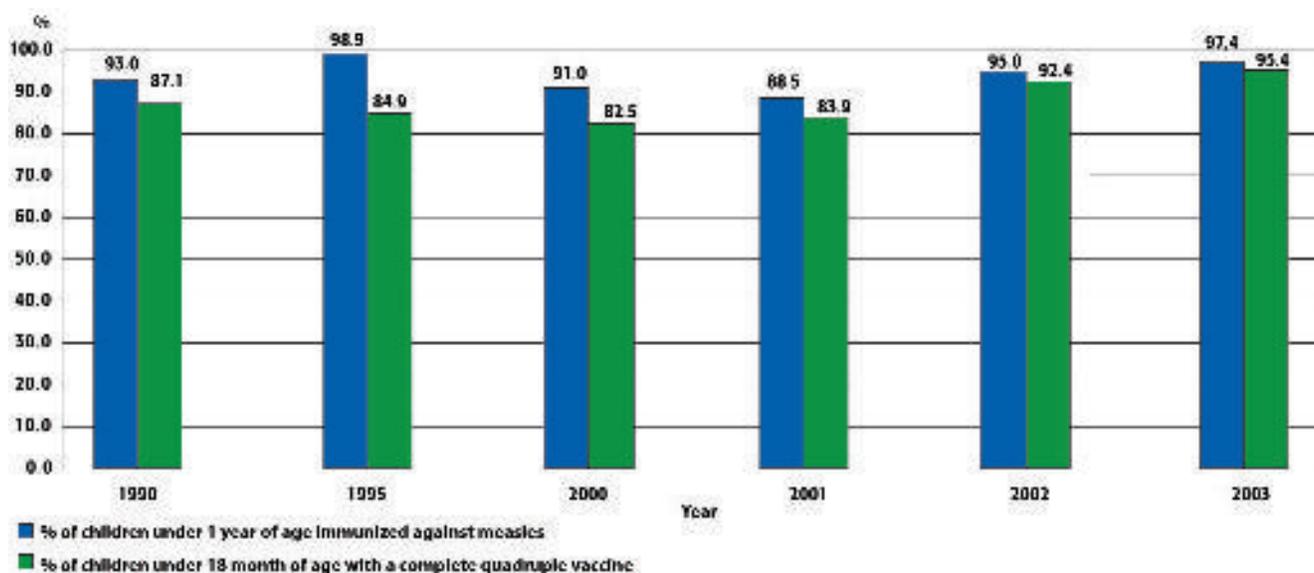
The prevalence of overweight and obesity increases with age. Among youth between 18 and 24 years of age, 17.9% are overweight and 3.9% obese. Among adults 60 to 64 years of age, 41.7% are overweight and 22.8% obese.<sup>4</sup>

### Immunization

Immunizations are one of most significant tools available to protect children from a wide range of diseases including tuberculosis, poliomyelitis, measles, mumps, rubella, tetanus, diphtheria, convulsive cough, hepatitis and meningitis. Without immunizations, a much larger number of children in Argentina would die each year or live with the chronic effects of these diseases. In addition, immunization coverage is an indicator of access to primary health care.

In Argentina, immunization coverage is very broad. Most children are immunized as a result of the Ministry of Health successfully implementing an immunization framework (recommended by the Argentine Society of Pediatrics) and by providing free access to all children.

PERCENTAGE OF CHILDREN IMMUNIZED. ARGENTINA, 1990-2003



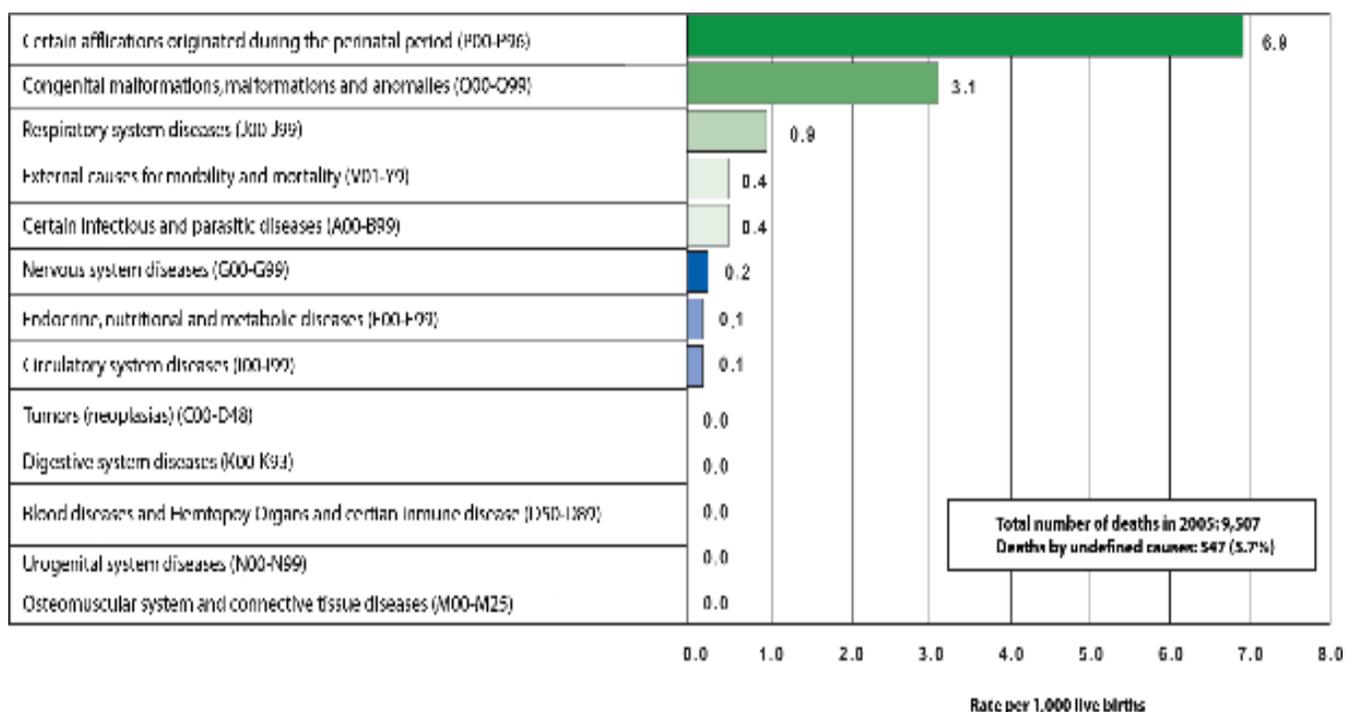
Source: Prepared from information provided by the Ministry of Health of Argentina. Health Statistics National Program, 2006. Pan American Health Organization. Basic Indicators, Argentina, 2006.

## Causes of death among children under one year of age

Perinatal conditions are the main cause of death in children under one year and were responsible for 55% of the total deaths in this age group in 2005. Congenital malformations were the next leading cause, resulting in about one half the number of deaths of perinatal conditions. Diseases of the respiratory system were third, causing approximately one

third of the number of deaths caused by congenital malformations. Infectious diseases as well as external causes (e.g., injuries and violence) are responsible for less than half the number of deaths in children under 1 year of age than those caused by respiratory diseases.

REGISTERED MORTALITY CAUSES OF CHILDREN UNDER 1 YEAR OF AGE  
RATE PER 1,000 LIVE BIRTHS. ARGENTINA, 2005



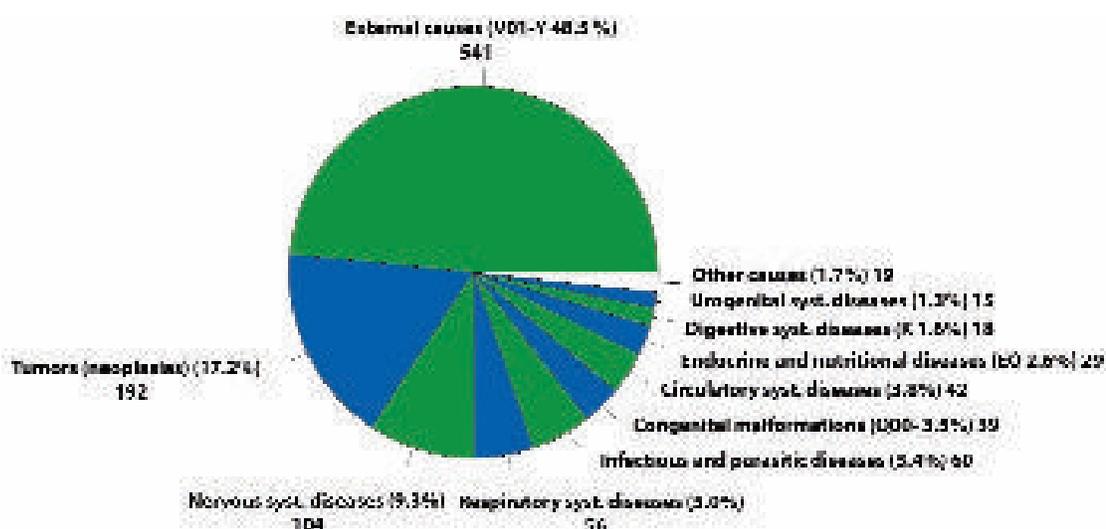
Source: National Institute for Respiratory Disease "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information (DEIS), Ministry of Health of Argentina, May 2007.

## Causes of death among children 5 to 14 years of age

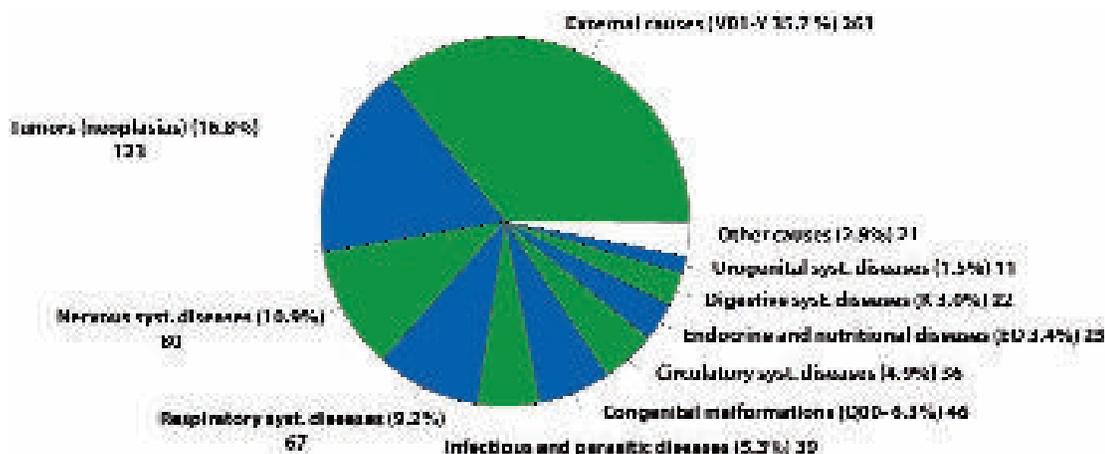
Non-intentional injuries, suicides and violence (or external causes) are the main causes of death among children 5 to 14 years. They are responsible for a larger proportion of

deaths in males than in females. Cancer is the second cause of deaths for both males and females, followed by nervous system and respiratory diseases.

LEADING CAUSE OF DEATH, MALES BETWEEN 5 AND 14 YEARS OF AGE, NUMBER AND PERCENT OF TOTAL DEATHS. ARGENTINA, 2005  
N = 1,115



LEADING CAUSE OF DEATH, FEMALES BETWEEN 5 AND 14 YEARS OF AGE  
NUMBER AND PERCENT OF TOTAL DEATHS. ARGENTINA, 2005  
N = 731



Source: Prepared from information provided by the Ministry of Health of Argentina. Health Statistics National Program, 2006. Pan American Health Organization. Basic Indicators, Argentina, 2006.

# Families and households

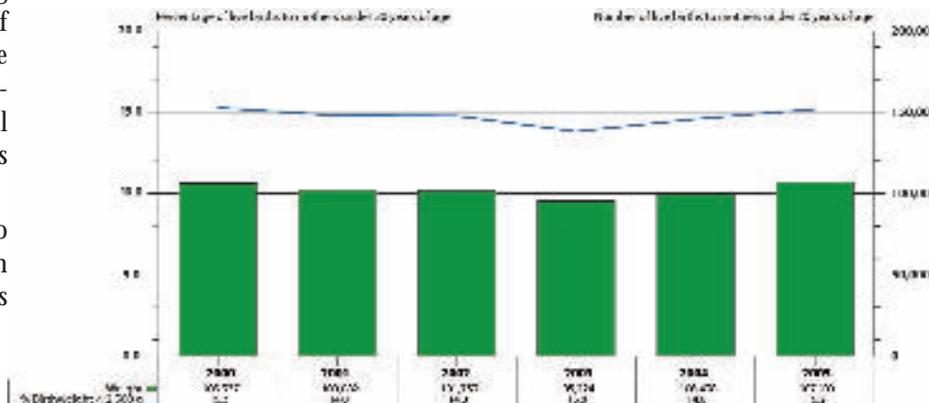
The family composition and the housing conditions of children and youth are important contributors to their well-being.

## Teenage mothers

Teenage pregnancy and childbearing can negatively impact the health of the mother and child, increasing the risk of low birthweight, malnutrition, slow physical and emotional development and lowering the access to health care coverage.

In 2005, 15.2% of live births were to mothers under 20 years of age in Argentina. This percentage has increased since 2003.

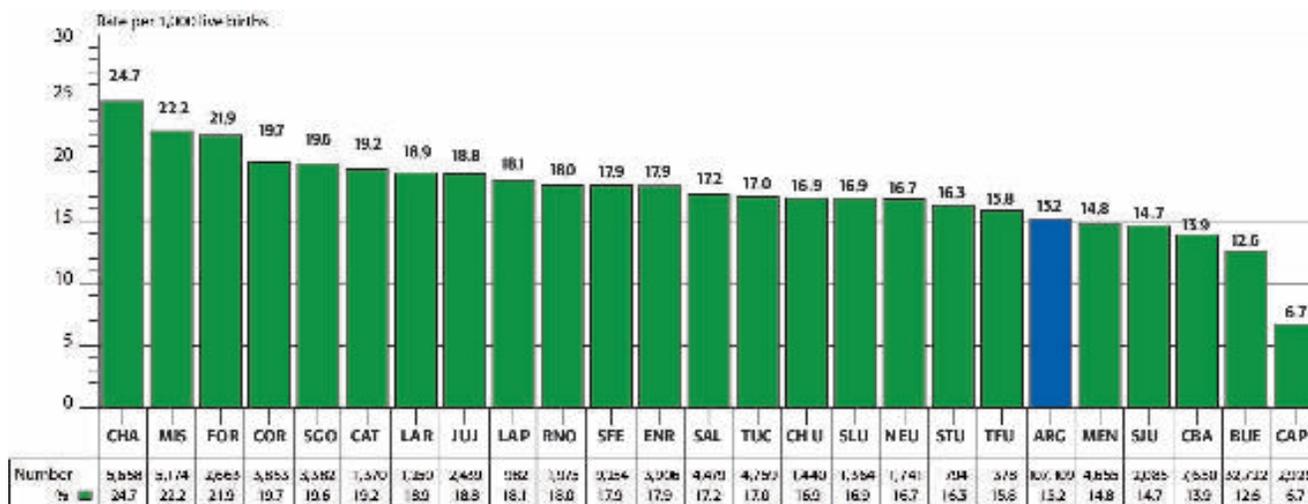
**LIVE BIRTHS TO MOTHERS UNDER 20 YEARS OF AGE  
NUMBER AND PERCENTAGE OF TOTAL LIVE BIRTHS  
ARGENTINA, 2000 TO 2005**



Source: Provincial Bureaus of Statistics according to the information provided by the National Bureau of Statistics and Health Information (DEIS), Ministry of Health of Argentina, May 2007.

There are important differences in the proportion of births that are to teenagers across the country from 6.7% in the City of Buenos Aires to 24.6% in the province of Chaco.

**LIVE BIRTHS TO MOTHERS UNDER 20 YEARS OF AGE BY JURISDICTION  
NUMBER OF LIVE BIRTHS AND TOTAL PERCENTAGE OF THE TOTAL LIVE BIRTHS SPECIFICALLY BY THE AGE OF THE MOTHER.  
ARGENTINA, 2005**

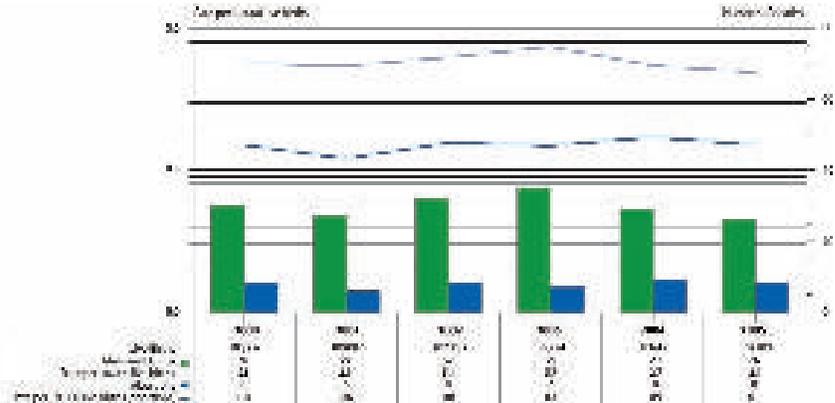


Source: Provincial Bureaus of Statistics according to the information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, May 2007.

## Maternal mortality for women under 20 years of age associated with pregnancy

Deaths among women under 20 years associated with pregnancy are also a problem. In 2005, 26 women under 20 years died as a result of causes related to pregnancy – in 8 of these the cause of death registered was “abortion”. The rate of maternal mortality in women under 20 years decreased from 2003 to 2005 after increasing between 2001 and 2003. However, the rate of maternal mortality due to abortion in this group of age has remained stable.

TOTAL MATERNAL DEATHS AND MATERNAL DEATHS BY ABORTION, WOMEN UNDER 20 YEARS OF AGE  
NUMBER OF LIVE BIRTHS, DEATHS AND RATES PER 1,000 LIVE BIRTHS  
ARGENTINA, 2000 TO 2005

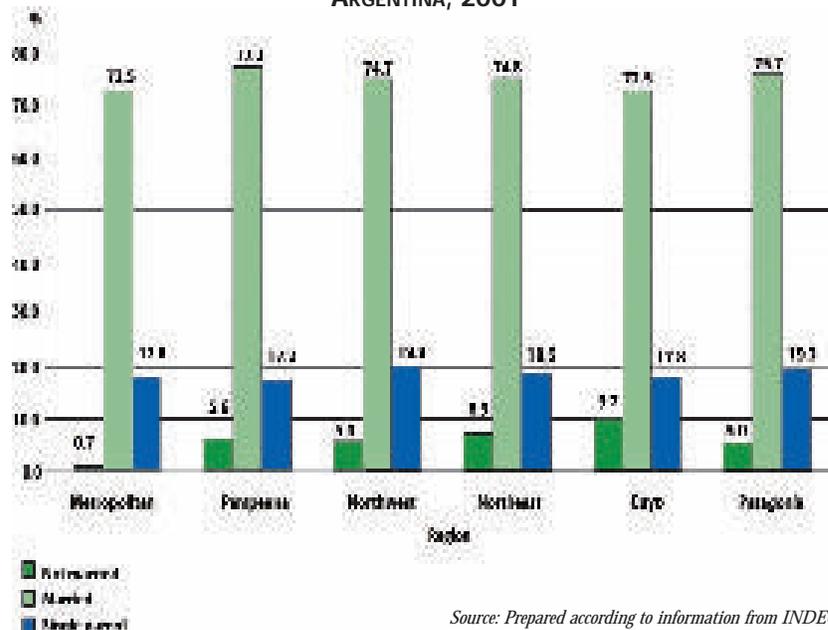


Source: Provincial Bureaus of Statistics according to the information provided by the National Bureau of Statistics and Health Information (DEIS), Ministry of Health of Argentina, May 2007.

## Household type according to the presence of the parents

In Argentina more than 70% of multiperson households are formed by married couples – that is where both spouses are present and are legally united\*. Nearly 20% of multi-person households are loneparent households, where a single parent lives with the family’s children. This proportion is similar across the regions.

MULTIPERSON HOUSEHOLDS BY FAMILY TYPE BY REGION  
ARGENTINA, 2001



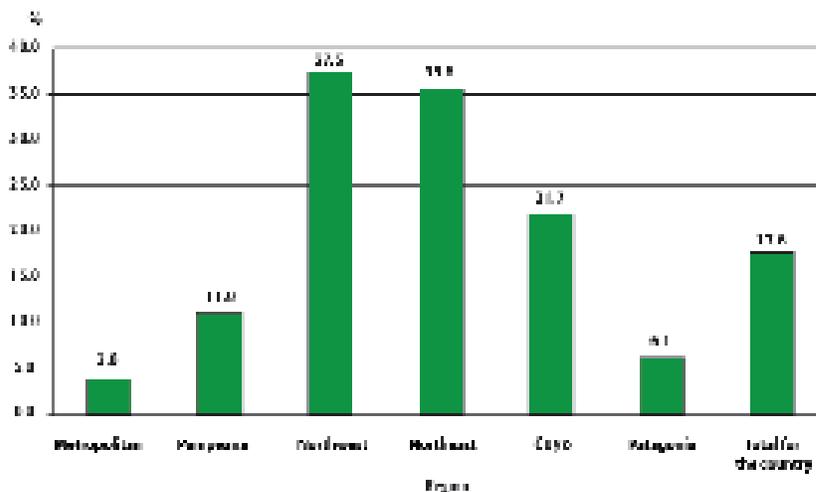
Source: Prepared according to information from INDEC. National Census of Population, Homes and Households, 2001.

\* Multi-person households are those formed by more than one person. Multi-person, common-law households are those formed by couples that are not married.

# Housing

Almost 18% of homes in Argentina (17.7%) have Unsatisfied Basic Necessities (UBN). Of these, 17.6% have dirt as the principal flooring material (one of the indicators used to describe precarious households). The NOA region has the largest percentage of “homes that have dirt as the principal flooring material” (37.5% of the total homes without basic necessities), while in the Metropolitan region the percentage is only 3.8%.

**HOMES THAT HAVE DIRT AS A PRINCIPAL FLOORING MATERIAL AS A PERCENTAGE OF THE TOTAL NUMBER OF HOMES WITH UNSATISFIED BASIC NECESSITIES. ARGENTINA, 2001**



Source: INDEC. THIS IS HOW IT'S COUNTED. Informative Census Magazine 2001. ISSN 0329-7586. Number 7. September 2003.



The social economic conditions within which children live are known to be one of the major contributors to their health and well-being. There are a number of measures of

these conditions – the economic context of the country, poverty, indigence, employment/unemployment, unsatisfied basic necessities, and income distribution.

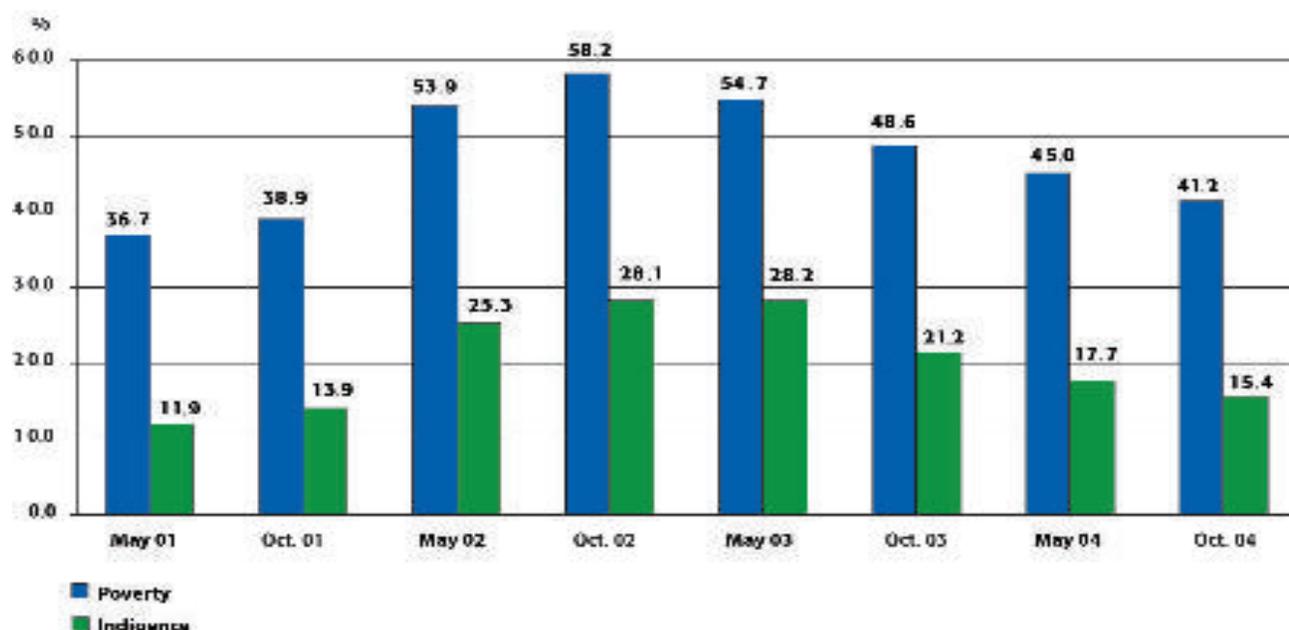
## Crisis and poverty

In 1998 the economy of Argentina began the decline into a deep depression and recession. A sharp political, institutional and socio-economic crisis without precedent in the history of Argentina emerged in the last months of 2001 and in the first part of 2002. Revenues registered an important fall, unemployment and poverty increased considerably. From October 1998 to October 2003 the poverty incidence among the population grew from 26% to 48%.<sup>3</sup>

Extreme poverty exceeded 28% in October 2002.<sup>3</sup>

Between October 2002 and the end of 2004, the recovery of the labor market gave place to a fall in the levels of poverty and indigence. The decrease in the number of poor Argentines was 5.4 million people while the number of indigent diminished by 4 million.

POVERTY AND INDIGENCE AS A PERCENTAGE OF THE TOTAL URBAN POPULATION  
ARGENTINA, 2001 TO 2004



Source: INDEC. Published by the Ministry of Economy and Production. ECONOMIC ANALYSIS N°4. Evolution of the Economy in Argentina and Perspectives of Sustainability: A comparative focus. September 2005.

\* Indigence is defined as a state of extreme poverty or destitution, impoverished hardship and deprivation.

Between 2003 and 2004 the proportion of homes below the poverty line decreased in general in all regions of the

country. Even with a decline, the rates were high in Northeast and Northwest regions.

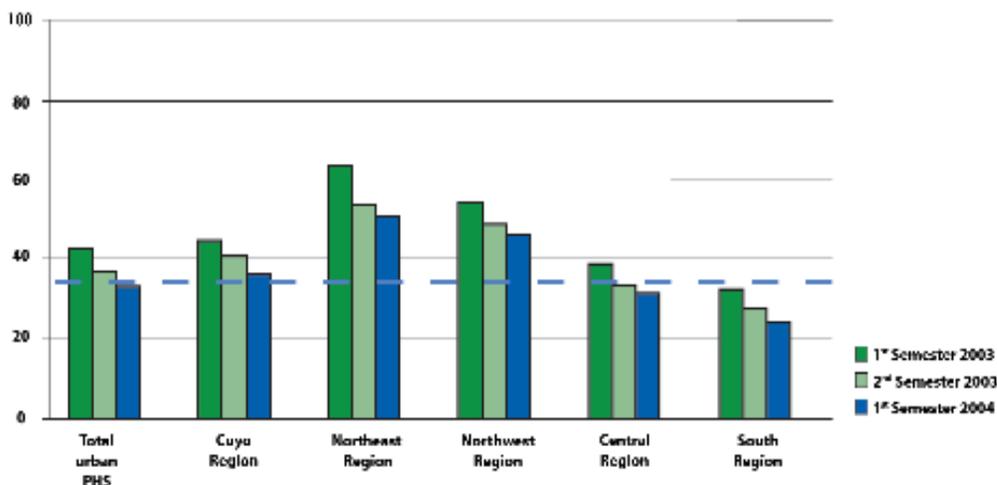


### Poverty Line

Between 2003 and 2004 the proportion of homes below the poverty line decreased in general in all regions of the country.

Even with a decline, the rates were high in NEA and NOA.

PROPORTION OF HOMES BELOW THE POVERTY LINE  
BY REGION (20 URBAN AGGLOMERATES)\*  
ARGENTINA, 2003 TO 2004



Source: Permanent Household Survey INDEC 2003-2004.

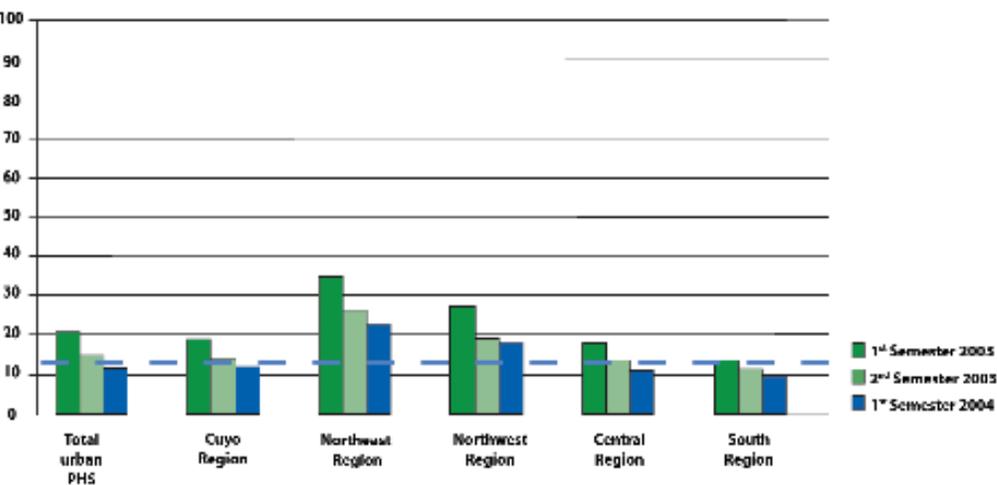


### Indigence Line

Between 2003 and 2004 the proportion of homes below the poverty line decreased in general in all regions of the country.

Even with a decline, the rates were high in NEA and NOA.

PROPORTION OF HOMES BELOW THE INDIGENCE LINE  
BY REGION (20 URBAN AGGLOMERATES)\*  
ARGENTINA, 2003 TO 2004



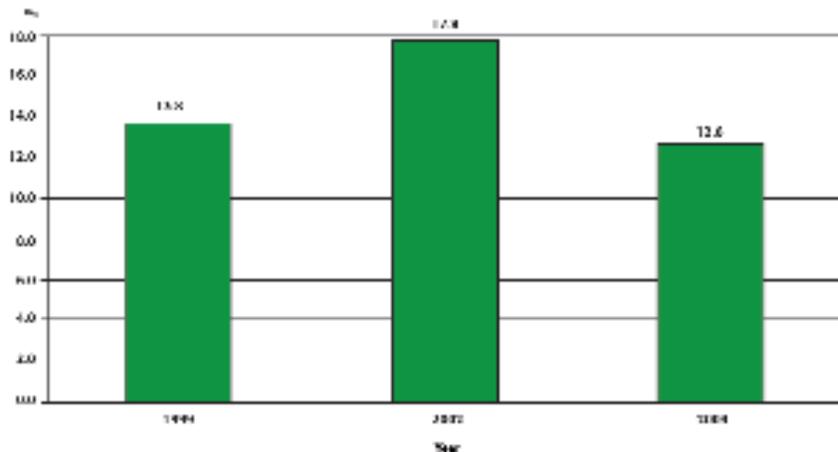
Source: Permanent Household Survey INDEC 2003-2004.

\* The Ministry of Health reports poverty data on only 20 urban agglomerates surveyed in INDEC's Permanent Household Survey 2003-2004.

## Unemployment

The political, institutional and socio-economic crisis in Argentina began at the end of 2001 and extended into most of 2002. Then, macroeconomic and social imbalance began to revert slowly but unquestionably. Measures taken from the beginning of 2002 until the end of 2004 began to pay off. A reduction of 5.2 percentage points in the unemployment rate resulted in a reduction in the number of unemployed individuals.<sup>5</sup>

UNEMPLOYMENT RATE AS A PERCENTAGE OF THE TOTAL POPULATION  
ARGENTINA, 1999-2004



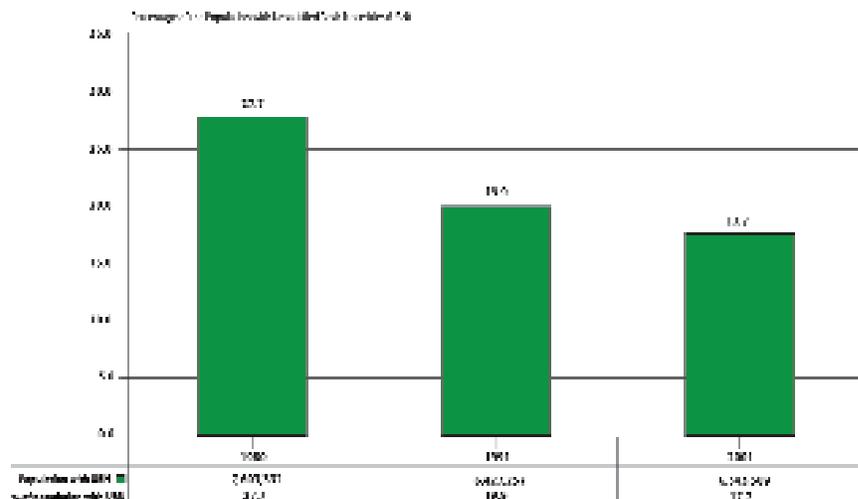
Source: Permanent Household Survey. INDEC. Basic Indicators for 2000, 2004 and 2006.

## Unsatisfied Basic Necessities (UBN)

According to the National Census of Population and Housing, households with unsatisfied basic necessities are those where at least one of the following deprivation indicators is present: households inhabited by more than three people per room; households that are in disrepair, of poor quality – that is, they are not suitable for living; households that do not have a toilet or have a toilet without water discharge; households that have children of school age that do not attend school; households that have four or more people supervised per occupied member and homes where the head has a low level of education (two years or less of the primary school education).<sup>6</sup>

In Argentina, 17.7% of the population was identified as having Unsatisfied Basic Necessities (UBN) in the last National Census of Population and Housing (2001). This represents a decline from 27.7% in 1980. The decline was greater during 1980 to 1991 (reduction of 28.2%) than during the period 1991 to 2001 (reduction of 11.1%).

POPULATION WITH UNSATISFIED BASIC NECESSITIES (UBN)  
NUMBER OF INHABITANTS IN HOMES WITH UBN AND PERCENTAGE OF THE  
POPULATION WITH UBN. ARGENTINA, 1980-2001.

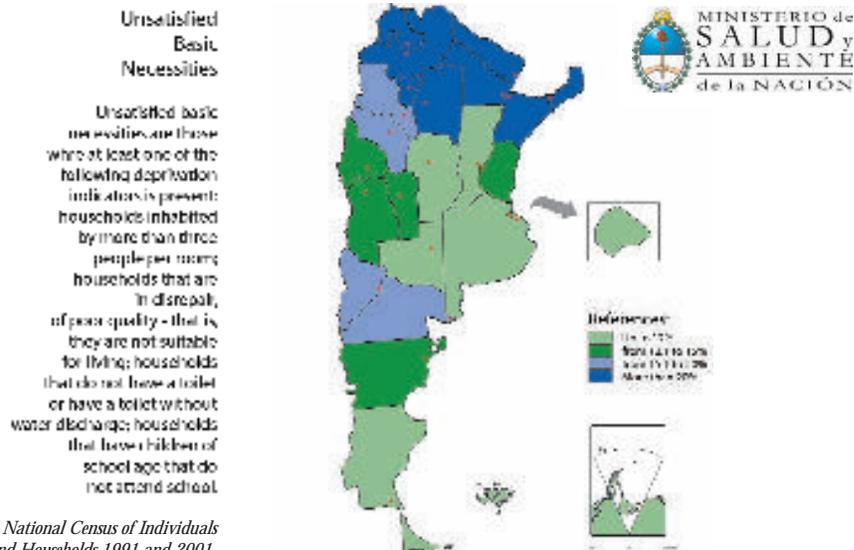


Source: Ministry of Economy. National Institute of Statistics and Census. Argentina, May 2007.

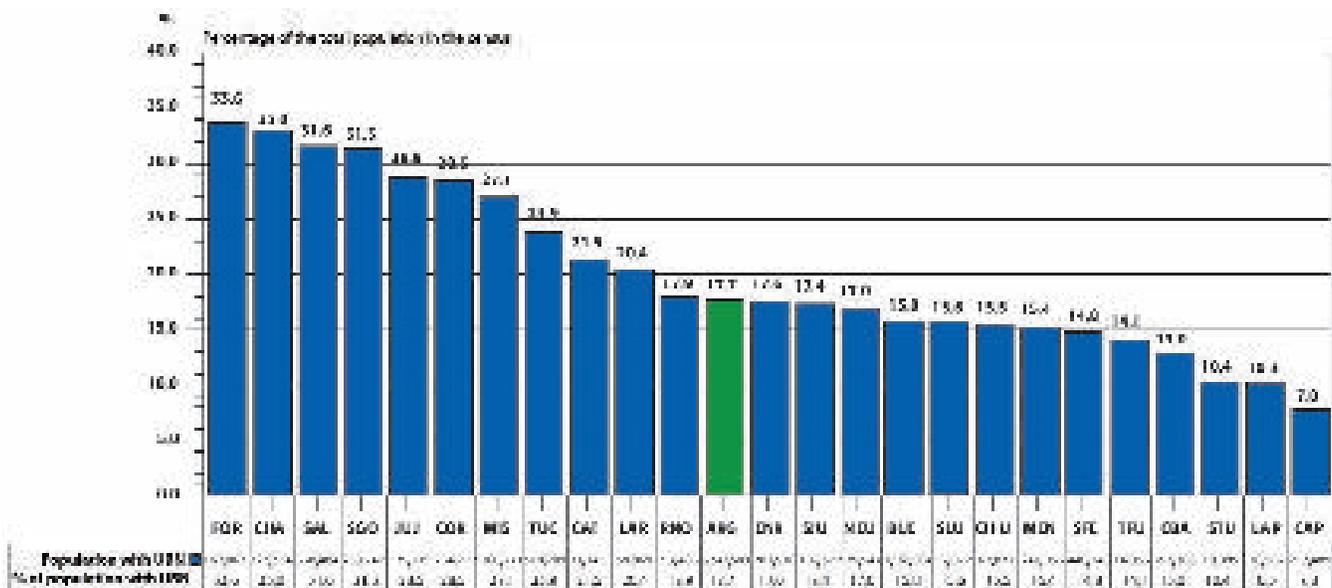
The proportion of households living with Unsatisfied Basic Needs varies considerably among the provinces. It was

33.6% in the province of Formosa and 7.8% in the City of Buenos Aires in 2001.

PERCENTAGE OF HOMES WITH UNSATISFIED BASIC NECESSITIES (UBN) BY PROVINCE ARGENTINA, 2001



POPULATION WITH UNSATISFIED BASIC NECESSITIES (UBN) BY JURISDICTION ARGENTINA, 2001



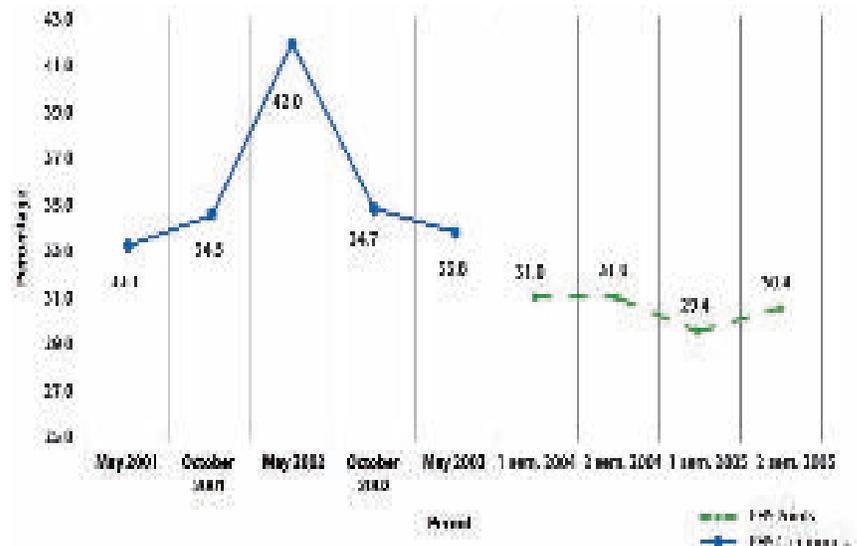
## Income distribution

Not all children and families in Argentina share equally in the nation's riches. One indicator that measures this inequality is the difference between the average family income per capita of 10% of the population with the highest incomes in relation to the average income per capita of 10% of the population with the lowest incomes.

In 2005, the 10% of Argentinean families with the lowest incomes earned on average 30% of what the 10% of Argentinean families with the highest incomes earned.

During the last four years, the gap between Argentinean families with the highest incomes and those with the lowest incomes declined. However, there has been some variation. The gap increased dramatically during the economic crisis, then declined until 2005 when it increased again.

RELATIONSHIP BETWEEN THE HIGHEST FAMILY INCOME EARNERS (10%) AND THE LOWEST FAMILY INCOME EARNERS (10%)



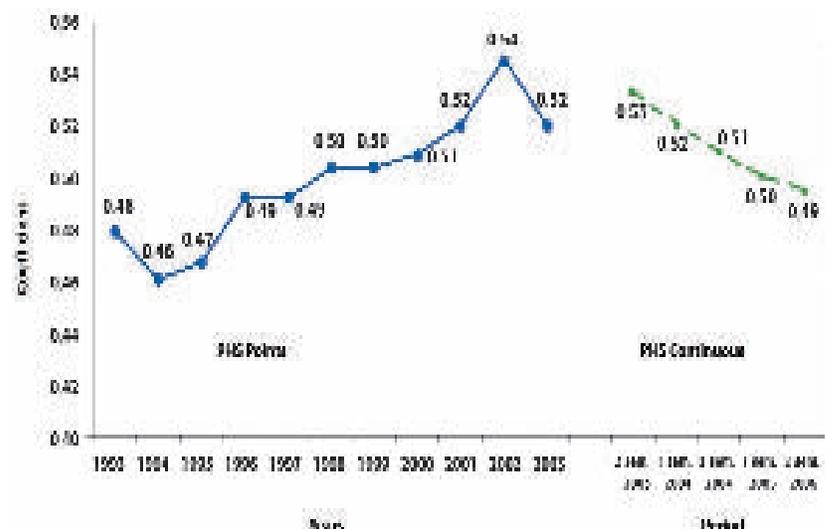
Source: Department of Technical Programming and Labour Studies. Ministry of Labour, Employment and Social Security. Based on data from the Permanent Household Survey. National Institute of Statistics and Census (INDEC).

### Gini coefficient

Another indicator of income inequality is the *Gini coefficient*. The Gini coefficient is based on the cumulative percentages of revenues and population. Zero corresponds to perfect income equality (i.e., everyone has the same income) and 1 corresponds to perfect income inequality (i.e., one person has all the income, while everyone else has zero income).

An analysis of the *Gini Coefficient* demonstrates that there was an increase in income inequality reaching a maximum level in 2002. In the last three years a notable improvement in the income distribution trend was seen. There was a decrease in inequality of 9% from the second semester of 2003 to the first semester of 2006. The income inequality decreased during the last three years approaching the inequality levels of 1997.

GINI COEFFICIENT: INCOME DISTRIBUTION ARGENTINA, 1995 TO 2004



Source: Department of Technical Programming and Labour Studies. Ministry of Labour, Employment and Social Security. Based on data from the Permanent Household Survey. National Institute of Statistics and Census (INDEC).

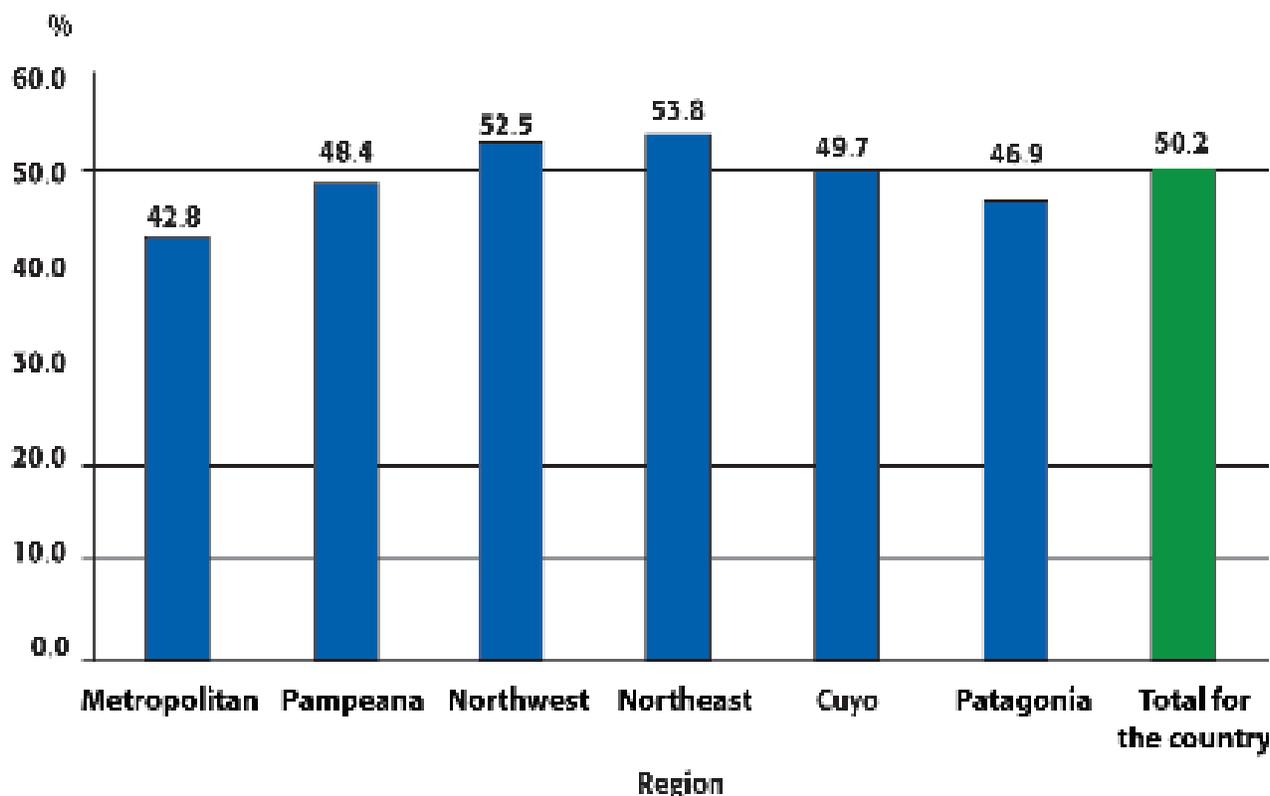
## Economic security of children

### *Children with Unsatisfied Basic Necessities (UBN)*

Children are affected by poverty in a special way. Insufficient family income puts children at increased risk of death, and affects their health and well-being, quality of life and cognitive, physical and social development. A home environment that cannot meet basic necessities disturbs the learning process and impedes children's inclusion in society – whose positive influences would enable them to become productive adults. In this way, a negative vicious cycle is perpetuated that can continue to have effects even after several generations.

The number of children living with UBN constitutes a clear indicator relating to children's well-being. The most recent data available are from 1991. According to the census of 1991 (INDEC), 50.2% of children and youth under 18 years of age lived with Unsatisfied Basic Necessities (UBN). The highest level of Unsatisfied Basic Necessities was found in the Northeast Region (NEA) (53.8%) and the lowest level was in the Metropolitan Region (42.8%).

CHILDREN AND YOUTH LIVING WITH UNSATISFIED BASIC NECESSITIES AS A PERCENTAGE OF THE TOTAL POPULATION BY REGION. ARGENTINA, 1991



*Source: INDEC. National Census of Individuals and Households 1991. Special processes of the Provincial Bureaus of Statistics. Published in: Status of children and youth in Argentina - 1990/2001, n° 2 of the Series on Social Analysis (INDEC-UNICEF), March 2003.*

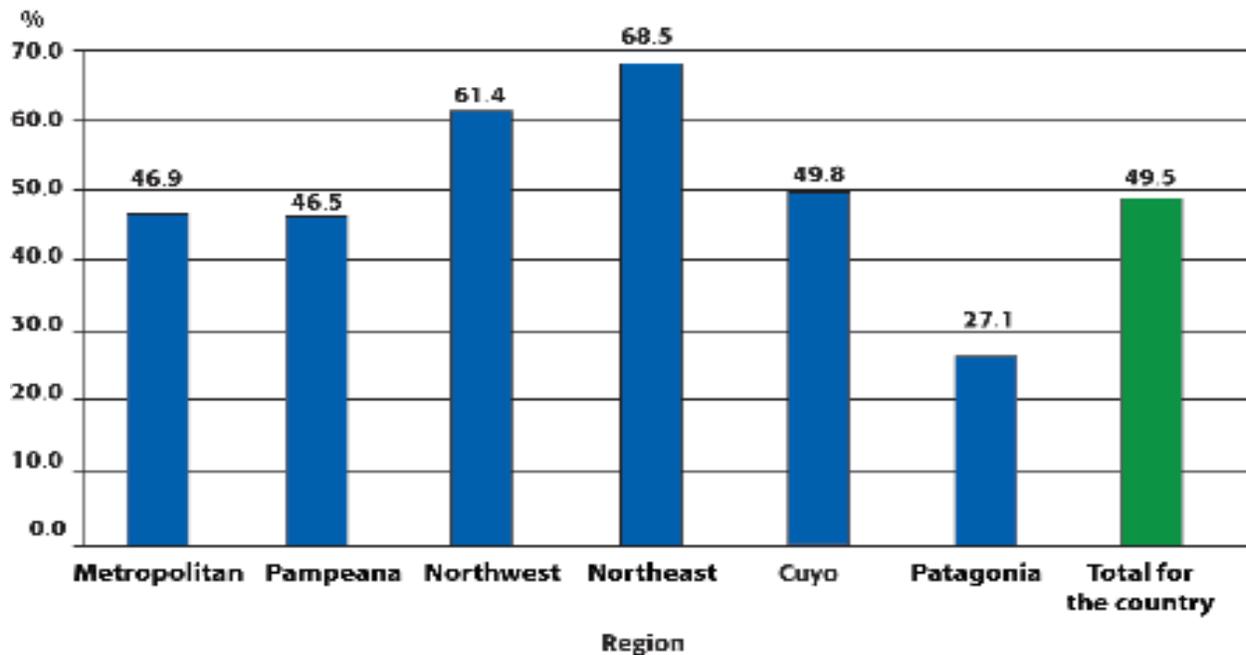
**Child poverty**

*To estimate the incidence of poverty the INDEC uses the following definition. An individual is considered poor if they do not have the capacity to satisfy, by means of income (through the purchase of goods or services) food necessities and non-foods that are considered essential. These are referred to as the Total Basic Basket and include clothing, transport, education, health, among other things. This income focus differentiates between the poor and the indigent.*

In 2005, almost half (49.5%) of children under 14 lived in conditions of poverty. The level of poverty that is monitored periodically through the Permanent Survey of Households varies by region, with 68.5% of children living in poverty in the Northeast region and 27.1% in Patagonia. Children who live in centres with less than 500,000 inhabitants tend to be poorer (57%) compared to children who live in urban centres with more than 500,000 inhabitants (47%).<sup>6</sup>



**CHILDREN UNDER 14 YEARS OF AGE LIVING IN CONDITIONS OF POVERTY  
ARGENTINA, SECOND SEMESTER OF 2005**



Source: INDEC, Permanent Survey of Households. 2006

# Education

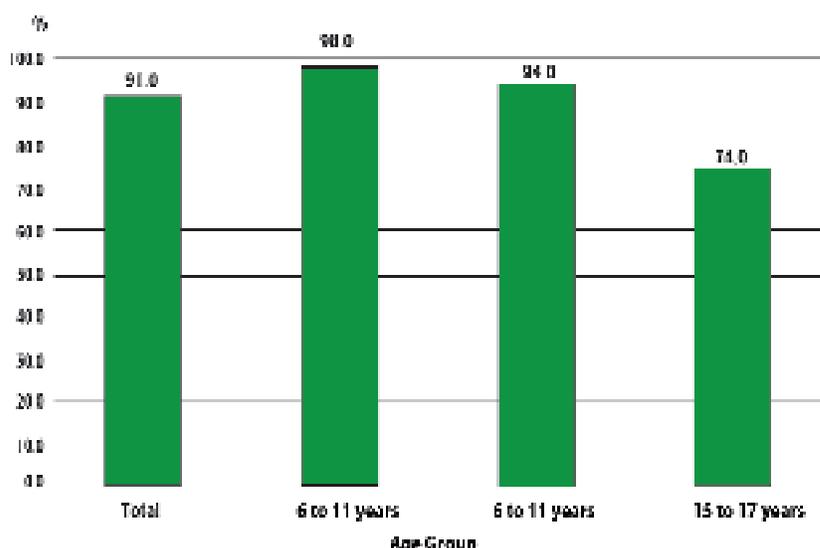
## School attendance

In Argentina, the national educational system is obligatory for children and youth until the age of seventeen (complete secondary education, National Education Law 26.206/06) and free at all levels (primary, secondary and post-secondary).

School attendance is almost universal in the primary levels. According to information provided by the 2001 census 98% of children between the ages of 6 and 11 attended school. However the percentage decreases as children get older. According to census data in 2001, 74% of all adolescents between 15 and 17 years of age attended school.

It is important to note that the National Law 22.248/1980 established the national system of agricultural work, prohibiting work activities for children under 14 years of age for any type of work, but enabling adolescents to join the labour force starting at 15 years – the age that coincides with a fall in school attendance.

ESTIMATED SCHOOL ATTENDANCE FOR CHILDREN AND YOUTH 6 TO 17 YEARS OF AGE BY AGE GROUP AS A PERCENTAGE OF THE TOTAL POPULATION ARGENTINA, 2001

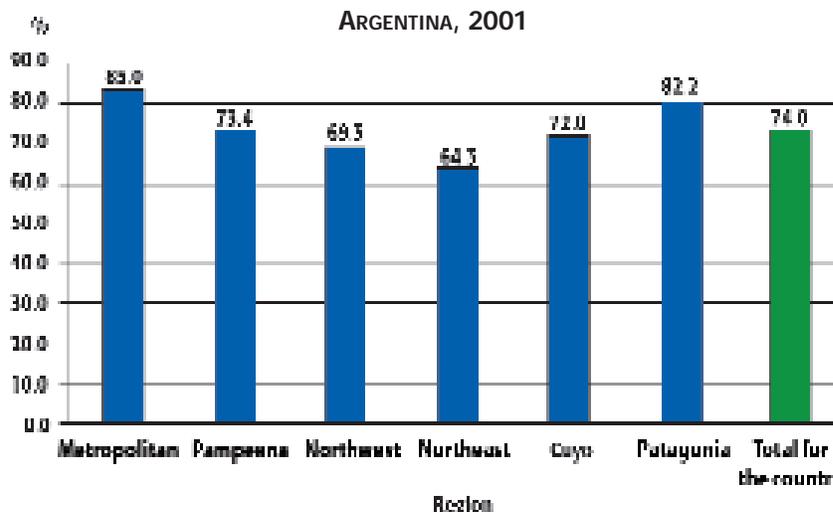


Source: INDEC. National Directorate of Social and Population Statistics. Sectoral Statistics Department based on special processes of the National Census, Population, Homes and Households. 2001.

## Regional differences

There are provincial differences in levels of school attendance. In Patagonia in 2001, the school attendance rate was 82.2% overall for 15 to 17 year olds. In certain parts of that region such as Tierra del Fuego, Antarctica and the Islands of the South Atlantic the rates are as high as 90% for this age group.

ESTIMATED SCHOOL ATTENDANCE RATE FOR THE POPULATION 15 TO 17 YEARS OF AGE ARGENTINA, 2001



Source: INDEC. National Directorate of Social and Population Statistics. Sectoral Statistics Department based on special processes of the National Census, Population, Homes and Households. 2001.

## Repeating a grade

*The 'repeatability rate' is the percentage of registered students in a grade/year of a given study at a particular level that enroll as students in the same grade/year of study at that level in the following year.*

In Argentina in 2001, 6.2% of all students in General Basic Education (GBE) 1 and 2\* repeated a grade. However, this varied greatly in different parts of the country. The proportion was approximately double the national average in Corrientes, Misiones, Formosa and Santiago del Este. In contrast, it was about half the national rate, or less, in Capital Federal, Jujuy and Tierra del Fuego.



\*General Basic Education Level (GBE) refers to the first nine years of education, starting at age 6. It is mandatory. It is organized in three cycles (GBE1, GBE2 and GBE3). The objectives are the acquisition of basic competencies and common knowledge that is essential for the entire population.

\*\*Ministry of Education, Science and Technology National Directorate of Information and Evaluation of Education Quality. Federal Network of Education Information.

\*\*\*For more information on the education levels in Argentina (EGB and others) see the Glossary.

\*\*\*\*Data from the Province of Corrientes corresponds to the Annual Report for 2000 and 2001; data from the Province of Santa Fe corresponds to the Annual Report for 1999 and 2000.

**"REPEATANCE RATE" FOR GBE 1 AND 2**  
 ACCORDING TO POLITICAL-TERRITORIAL DIVISION\*\*, \*\*\*  
 ARGENTINA, 2001

Political - Territorial Division	Total GBE 1 and 2
BUENOS AIRES	4.4
FEDERAL CAPITAL	2.4
CATAMARCA	7.9
CHACO	6.9
CHUBUT	6.4
CORDOBA	4.3
CORRIENTES	12.0
ENTRE RIOS	8.8
FORMOSA	10.8
JUJUY	3.4
LA PAMPA	4.9
LA RIOJA	5.8
MENDOZA	6.5
MISIONES	12.8
NEUQUEN	7.2
RIO NEGRO	6.1
SALTA	7.0
SAN JUAN	6.8
SAN LUIS	9.4
SANTA CRUZ	9.9
SANTA FE	6.6
SANTIAGO DEL ESTERO	11.7
TIERRA DEL FUEGO	2.0
TUCUMAN	6.5
TOTAL FOR THE COUNTRY	6.2

Source: Annual Report for 2001 and 2002. DiNIECE. MECyT \*\*\*\*

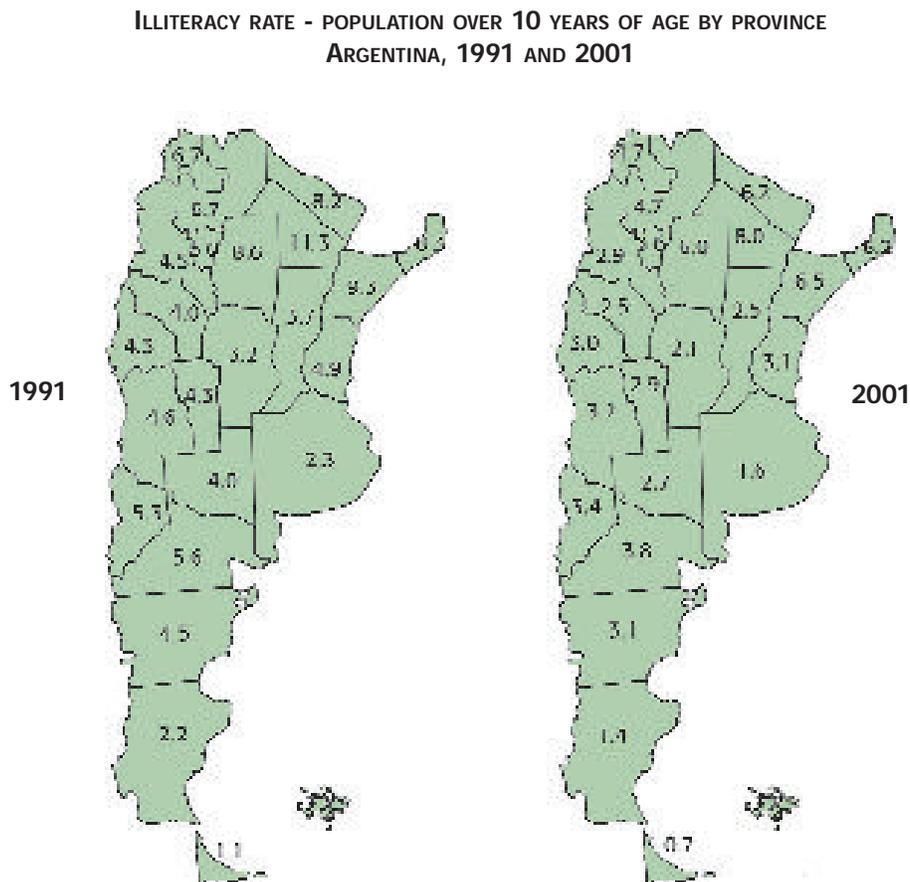
## Illiteracy

**The illiteracy rate is defined as the proportion of the total population 10 years and older that answers NO to the question of whether they know how to read or write.**

According to census data, in 2001 the national illiteracy rate in Argentina was 2.6% (INDEC, 2001). However, there are important differences among the provinces. In Chaco the illiteracy rate was 8.0%, in Corrientes it was 6.5%, in Misiones 6.2% and in Santiago del Estero and

Formosa 6%. In the City of Buenos Aires the illiteracy rate was 0.5% and it was 0.7% in Tierra del Fuego, Antarctica and South Atlantic Islands.

In 1991 the illiteracy rate was 3.7% – therefore, the rate has been decreasing over the last decade.



*Source: Cartography IGM based - SIG 250. INDEC. National Census of Population and Housing 1991 and 2001. Creation: National Educational Map - Agreement DiNIECE (MECyT) - UNLP Faculty of Humanities - Geography Department - Territory and Administration Team. Published in National Educational Maps from the Ministry of Education, Science and Technology, Argentina.*

*Child labour includes children between 5 and 14 years of age in rural or urban areas that work outside their homes or customarily help their relatives or neighbours, as workers for subsistence purposes.<sup>3</sup>*

It is generally accepted worldwide that child labour harms children significantly, prevents them from enjoying childhood, negatively impacts their physical and emotional development, affects their access to education, hinders their development to their full potential and affects the quality of their future life. It also negatively influences the family, the community and society perpetuating the vicious cycle of poverty.

The incorporation of youth into the work force, starting at 14 years of age, can cause irreversible damage to children and families with limited resources. It causes many youth to abandon their studies. In Argentina, secondary education is mandatory until 17 years of age – but many youth who are working will drop out.

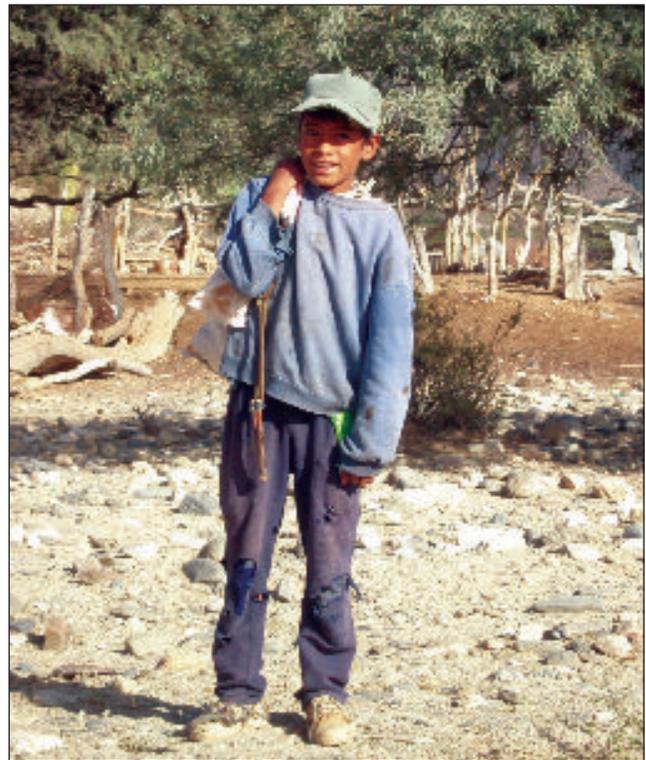
The early initiation of children to farming tasks places them at risk of chronic exposure and non-intentional acute exposures to low dose toxins, and to handling of animals of greater weight and strength than their own. In addition, children are often required to operate machinery or perform tasks in awkward or uncomfortable positions for long periods of time, work without the proper protection, without the required rest.

There is a general lack of information and education for families regarding the developmental, physical capacity and maturity of children of different age groups – and their special vulnerability. Thus, children are assigned to household tasks inside and outside the home that can have significant lifelong consequences. The problems acquired during childhood affect their health and quality of life, decreasing individual and family productivity and that of the community. This in turn affects the economy of the country.

### How many children and youth are at work?

In 2005, the International Labour Organization (ILO) reported in the framework of the International Program for the Elimination of Child Labour, IPEC, that more than 28 million children between the ages of 5 and 17 years were involved in some sort of work activity in Latin America. This represented 1 out of 5 children.

In Argentina, in 2004, almost 1,900,000 children and youth were involved in some sort of labour activity according to a report published by the Research Commission for the Eradication of Rural Child Labour.<sup>7</sup>

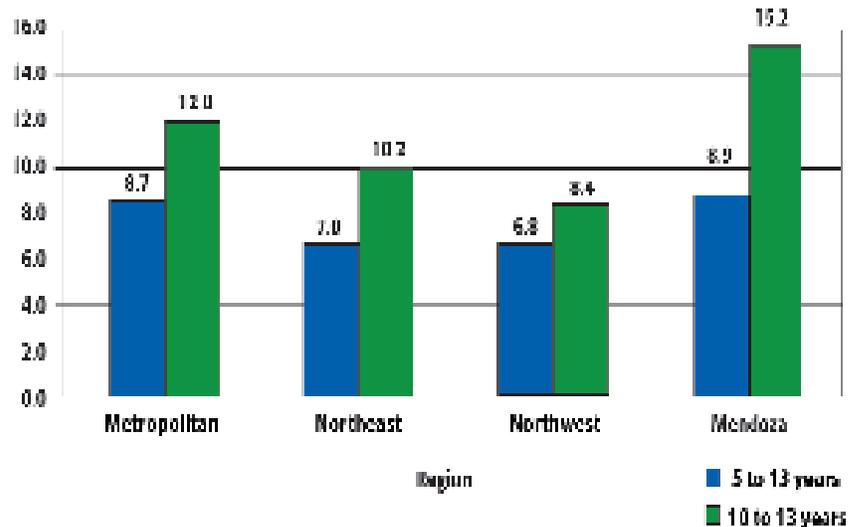


## Child labour by region

According to the Survey on Children and Youth Activities (EANNA), implemented by the Ministry of Labour and Social Security, developed in conjunction with INDEC, between 6.8% and 8.9% of children between 5 to 13 years of age were working in the last quarter of 2004.\*

The survey investigated poor workplace conditions such as strong odours, dust, low light conditions, noise and/or others perceived by children. The findings varied in different regions of the country. There were more complaints in the Northeast and Northwest regions (41% and 45% respectively) as compared to only 15% in the Greater Buenos Aires region.\*\* The most common form of child labour was related to help parents or family members in their respective work activities, reported at 67% and 54% in the Northeast and the Great Buenos Aires regions, respectively. It is important to note that there is a high proportion of children that declare themselves self-employed in the Greater Buenos Aires Region (2.4% of the total number of children). These self-employed children perform a variety of types of work – messengers, traveling salespersons, landscaping, collecting cartons and paper from the trash, among others activities.

CHILDREN 5 TO 13 YEARS OF AGE WORKING A WEEK PRIOR TO THE SURVEY  
ARGENTINA, 2004



Source: Ministry of Labour, Employment, and Social Security of Argentina (2004).  
Child and youth activities Survey (EANNA).

\* Children that were working the week prior to the survey.  
\*\* The First Survey on Children and Youth Activities (EANNA), (MTEySS and INDEC, "Survey and Observations on Child Labour" Program, Argentinean Government and the International Program for the Eradication of Child Labour, IPEC/OIT), (Sept-Dec 2004) that includes the Greater Buenos Aires (GBA), Mendoza and two Sub-regions (NOA: Jujuy, Salta and Tucumán and Northeast: Formosa and Chaco), interviewed urban, rural children and youth population between the ages of 5 to 17 years.



## Children working in rural communities

A report published by the Ministry of Labour and Social Security in 2005, indicates that in 2002 about 20% of all working children between the ages of 5 to 14 in Argentina lived in rural areas.<sup>7, 8</sup>

EMPLOYMENT RATE OF CHILDREN AND YOUTH (5 TO 14 YEARS)  
ARGENTINA, 2002

Definition	Urban		Rural		Total	
	Children	Rate	Children	Rate	Children	Rate
Definition 2: Children and youth that work away from home, receive tips or help family members in their respective jobs.	395,780	6.7	87,022	10.4	482,803	7.1
Definition 3: Children and youth that work away from home, receive tips or help family members in their respective jobs or carry out household work when parents are away.	1,232,852	20.8	271,074	32.4	1,503,925	22.2

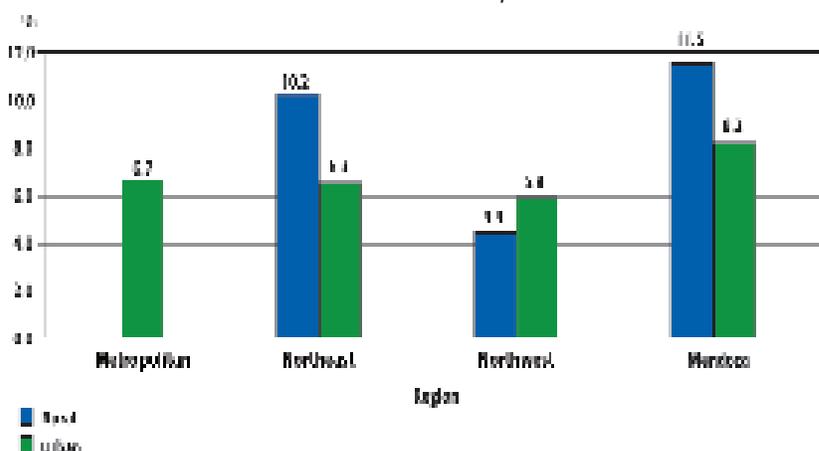
Source: Department of Social Security, National Directorate of Social Security Policy, Ministry of Labour, Employment and Social Security of Argentina. 2002.

According to the Survey on Children and Youth Activities (EANNA, 2004) children are more likely to be involved in rural work situations in the Northeast Subregions and Mendoza.

The most frequent reason reported for child labour in these areas is to provide family support. A fourth of the children in rural areas work to acquire products for household consumption.<sup>9</sup>

It would appear that the most frequent reason why children are involved in child labour in every region is to support the family income.<sup>9</sup>

CHILDREN 5 TO 13 YEARS OF AGE WORKING IN RURAL AND URBAN AREAS  
BY REGION. ARGENTINA, 2004



Source: Ministry of Labour, Employment, Social Security of Argentina (2004). Child and youth activities Survey (EANNA).

# Public health system

## Public health system coverage

The Argentinean Health System is divided into three sub-sectors: Public, Social Security and Private, each one with a different budget. At the end of 2003, the Consolidated Public Health Budget was 4.3% of the Gross Domestic Product (GDP), according to the National Ministry of Economy and Public Services. In theory, the Public Sub-Sector assures free access to health services to all Argentines. In practice, the Public Sub-Sector covers health services for those people who do not have access to Social Security or Private coverage.

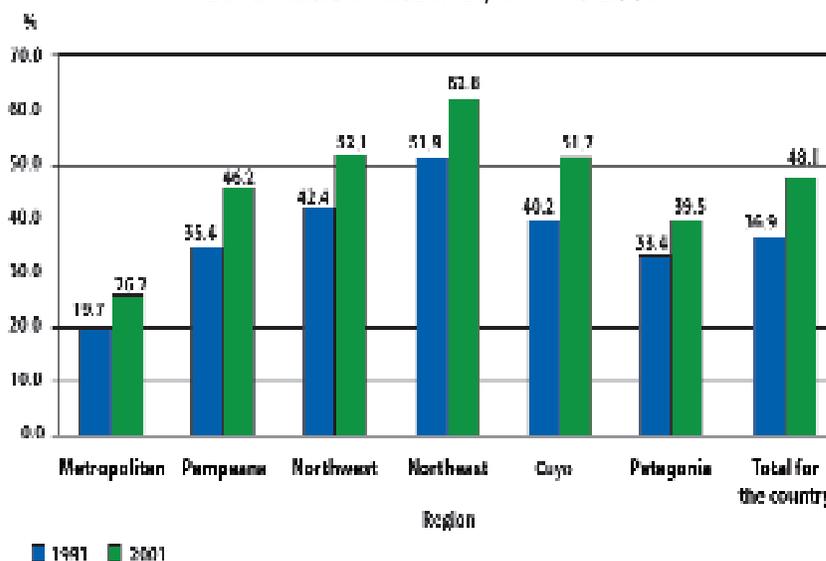
According to INDEC, (National Population and Household Census, 1991 and 2001) in 2001 almost half of the population in Argentina, (48.1%) did not have social security or private coverage.

This number was 62.8% in the Northeast Region and 26.2% in the Metropolitan Region. Between 1991 and 2001 the proportion of the population without coverage increased by 11 percentage points nationally.

## Healthcare professionals

Physicians constitute the predominant category among healthcare professionals representing almost 40%. They are followed by psychologists, (15%) and dentists (12%) None of the remaining categories exceed 7%, and nurses represent only about 4%.<sup>10</sup>

PERCENTAGE OF THE POPULATION WITHOUT SOCIAL SECURITY, MEDICAL PLAN BY REGION. ARGENTINA, 1991 TO 2001



Source: INDEC. National Census of Homes and Households. 1991 and 2001

PROFESSION BY SELECTED CATEGORIES  
ARGENTINA, 2001

Profession	Number	%
Medicine	121,076	39.9
Psychology	46,931	15.4
Odontology	35,944	11.9
Pharmacology	21,177	7.0
Biochemistry	19,774	6.5
Veterinary	17,103	5.6
Nursing	12,614	4.2
Kinesiology	11,908	3.9
Language Therapy	7,924	2.6
Nutrition	4,654	1.5
Obstetrics	3,986	1.3
<b>Total</b>	<b>303,091</b>	<b>100.0</b>

Source: National Census of Homes and Households, INDEC. 2001

## Medical professionals

In 2004, there were 32 medical professionals for every 10,000 Argentinian. There has been a steady increase since 1992.



Source: Ministry of Health. National Health Statistics Program (2006). PAHO. BASIC INDICATORS. Argentina 2006.

## Pediatricians

The majority of Argentine medical doctors, among them pediatricians, work within the three sub-sectors system. Historically, pediatricians have been specially recognized for their work in the area of prevention. Important examples are the strong commitment that they have shown to the promotion of breastfeeding, the National Immunization Plan and the systematic improvement of growth and development standards in the child population of the country.

Most of the pediatricians in Argentina work at “Primary Health Care Centers”, in direct contact with children and their families. The National Ministry of Health recognizes pediatricians as “general practitioners” of the life stage from birth through 19 years of age.<sup>11</sup>

In 2007, the Argentine Society of Paediatrics (SAP) had 14,384 members. The table on the following page shows the actual distribution of pediatricians in Argentina.



**NUMBER OF PEDIATRICIANS WHO ARE MEMBERS OF THE ARGENTINE SOCIETY OF PAEDIATRICS (SAP)  
BY REGION. ARGENTINA, 2007**

Region	Entity	Entity Total	Total for the Region
1 - Metropolitan Region		6,430	
			6,430
2 - North Pampeana Region	F. la Plata	555	
	F. Reg North Buenos Aires	66	
	F. Reg West Buenos Aires	125	
	D. Pergamino	37	
			738
3 - South Pampeana Region	F. Regional Centro	89	
	F. Mar Del Plata	369	
	D. Tandí	37	
	F. Necochea	51	
	F. La Pampa	81	
	F. Bahía Blanca	220	
F. Atlántica	54		
			901
4 - Litoral Region	F. Santa Fe	214	
	F. Rosario	771	
	F. Rafaela	44	
	F. Río Paraná	194	
	F. Reconquista	52	
	F. Río Uruguay	77	
	F. Concordia	87	
	D. Sur Santa Fe	23	
			1,462
5 - Central Cuyo Region	F. Córdoba	796	
	D. Río Tercero	13	
	D. Villa María	42	
	D. Belle Ville	28	
	F. Río Cuarto	146	
	F. San Juan	281	
	F. Mendoza	421	
	F. San Rafael	80	
	D. San Martín	29	
	D. Valle de Uco	31	
	F. San Luis	88	
	F. San Francisco	43	
	F. Villa Mercedes	45	
	F. La Rioja	120	
			2,163
6 - Northwest Region	F. Salta	377	
	F. Jujuy	191	
	F. Catamarca	93	
	F. Santiago del Estero	192	
	F. Tucumán	416	
			1,269
7 - Patagonica Andes Region	F. Alto Valle R. Negro y Neuquén	284	
	F. Lagos del Sur	48	
	F. Esquel	23	
			355
8 - Patagónica Atlántic Region	F. Santa Cruz	49	
	F. Tierra del Fuego	43	
	F. Valle del Chubut	63	
	F. Golfo San Jorge	85	
	D. Ushuaia	20	
			260
9 - Northeast Region	F. Corrientes	250	
	F. Misiones	158	
	F. Chaco	266	
	F. Formosa	87	
			761
<b>Total for the country</b>		<b>14,384</b>	<b>14,384</b>

Source: SAP, 2007.

## Nurses

The Census data greatly underestimate the number of nurses in Argentina. The Census counts 12,614 nurses – or 3.8 nurses per 10,000 population<sup>12</sup>. These, however, are only nurses who have completed University studies.

Because the majority of nurses do not complete university, PAHO, WHO and the Argentinean government offer training programs to help increase their capacity to provide care.<sup>13</sup>

## Argentinean Toxicology Network

The Argentinean Toxicology Network (REDARTOX) gathers information from the Toxicological Information, Advising and Assistance Centers (CIAATs) and the Laboratories of Toxicological Clinical Analysis (LACTs) of Argentina.

There are 23 Centers of Toxicological Information, Advice and Assistance (CIAATs) in nine provinces of Argentina. These centers have specialized personnel to advise on the treatment and prevention of poisonings and to give out information on medications, pesticides, poisonous plants and animals, consumer products and chemical substances used at work.

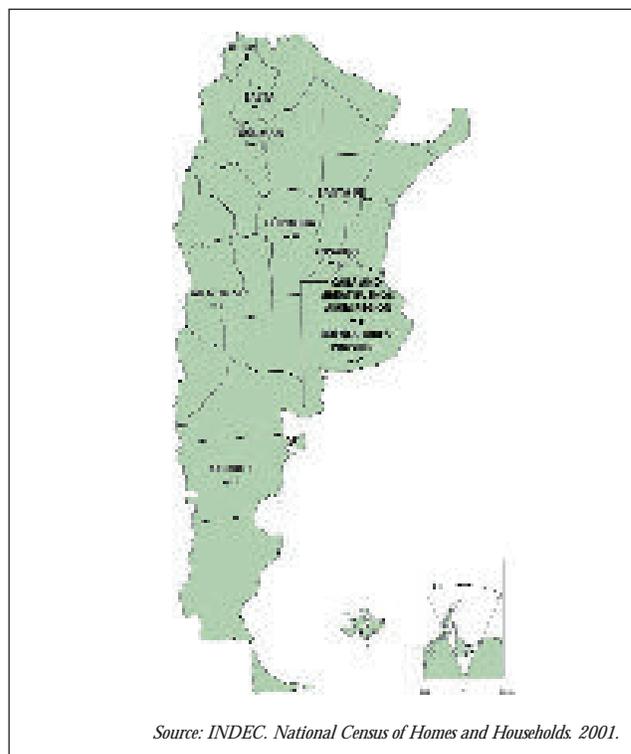
The CIAATs and LACTs operate inside hospitals, universities and/or municipal, provincial or national public health services. Most are sustained by public funds, although some operate privately. The objectives of REDARTOX are to:

- improve the exchange of information,
- to harmonize data collection, clinical history taking and data analysis;
- improve the notification of poisonings to optimize toxic-surveillance,
- standardize CIAATs and LACTs activities,
- promote the expansion of the network to jurisdictions where centers and specialized laboratories do not exist,
- develop multi-centre research, training and prevention activities and analytic quality control programs,
- create virtual banks of poison medication and laboratory standards, to improve the handling of risk derived from contact with poisons of natural or antropogenic origin, as well as the treatment of affected people.

REDARTOX is part of a network including the National Poison Prevention and Control Program of the Directorate

of Health Promotion and Protection of the Ministry of Health of Argentina and the Argentinean Toxicology Network. This Network is a non-governmental and scientific entity that gathers toxicologists from all disciplines – including doctors, biochemists, pharmacists, biologists, chemists and veterinarians among other professionals.

LOCATION OF THE INFORMATION AND TOXICOLOGY ASSISTANCE CENTERS (CIAAT)  
TOTAL = 23. ARGENTINA, 2007



Source: INDEC. National Census of Homes and Households. 2001.

## NOTES

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## CHAPTER 2

# Children's Health and the Environment



***This chapter provides data relating to the following topics: diarrhea; intestinal parasitic diseases; respiratory disease, asthma and tuberculosis; hemolytic uremic syndrome; vector-transmitted diseases; external causes of morbidity and mortality; intentional injuries; pregnancy loss and infant death; congenital malformations; cancer; malnutrition; neurodevelopment disorders and drug use.***

There are a number of childhood illnesses for which there is reason to believe that environmental exposures play an important role. This chapter presents data that reflect trends in these key childhood illnesses, the frequency or severity of which may be related to exposure to environmental contaminants.

Children are exposed to environmental toxins in a variety of places – in their homes, schools, outdoor and indoor play areas, work places, and all public spaces that they explore.

Children's vulnerability extends to the time before they are born – they are exposed and affected in-utero, through the environmental exposures of their mothers and fathers. Chronic exposure to low doses of environmental toxins put the fetus, infants, child and youth at great risk.

The health impact resulting from exposure to a contaminant may have an effect for decades to come, and affect the ability of that child to build a good quality of life for him/herself, and to contribute to the ongoing development of his/her society.

The World Health Organization (WHO) document – *Preventing disease through healthy environments: Towards an estimate of the environmental burden of disease* – has provided important background information for this chapter.<sup>1</sup> The content of this report has served as a base to guide the analysis and with which to compare information. Furthermore, the information presented by WHO has been translated into Spanish and is referenced in each section, therefore increasing the reach and offering an excellent context for the interpretation of the local situation in Argentina.



## The environmental burden of disease

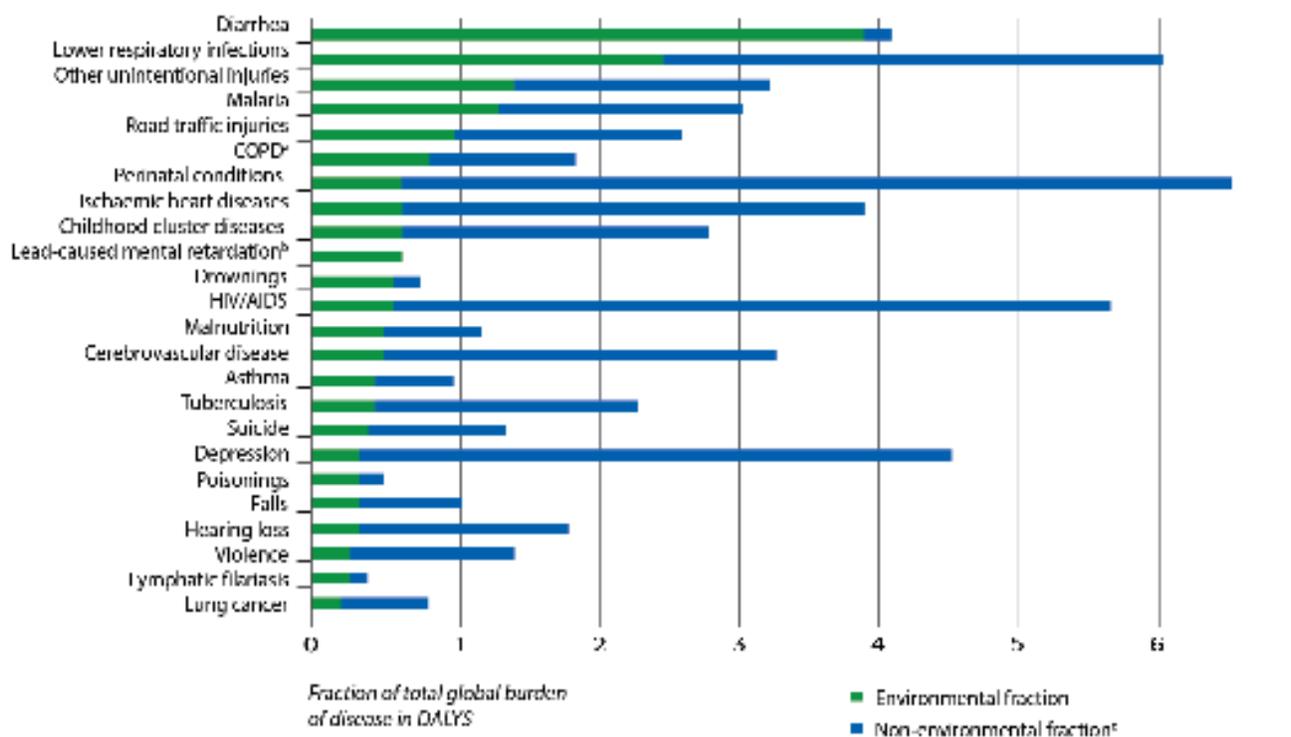
According to WHO, almost a fourth of the world's morbidity burden and more than a third of the world's child morbidity burden are attributable to environmental factors that could be modified.<sup>1</sup> In addition, WHO reports that environmental risk factors contribute to the morbidity burden in 85 out of the 102 major illnesses, groups of illnesses and trauma that face the world today and are described in the World Health Organization (WHO), World Health Report, 2004.

According to WHO, the diseases attributable to environ-

mental factors that place the greatest burden on the population of the world are: diarrhea, respiratory infections, "other" non-intentional injuries and malaria.<sup>1</sup>

The environmental burden of disease is disproportionately high for developing countries. These differences are due to variations in exposure to environmental risks and access to primary health care. For example approximately 20% of lower respiratory tract infections are attributable to environmental factors in developed countries; in developing countries that percentage is 42%.

**DISEASES WITH THE LARGEST ENVIRONMENTAL CONTRIBUTION**



Source: Prüss-Ustün A., Corvalán C. (2006) Preventing disease through healthy environments. Towards an estimate of the environmental burden of disease. World Health Organization.

## The environmental contribution to children's health and disease

According to WHO, the percentage of deaths attributed to the environment is 24%. Among children aged 0 to 14, 36% of all childhood deaths can be attributed to environmental factors with children bearing a disproportionately large share of the total environmental burden of disease. The number of healthy life years lost by a person due to environmental risk factors is nearly 5 times higher among children 0 to 5 years of age than it is among adults. This number jumps to 7 times for major illnesses such as diarrhea, respiratory disease, malaria and malnutrition. In addition, in developing countries the environmental burden of disease can be further multiplied by eight.<sup>1</sup> These statistics are alarming, taking into consideration that they refer to avoidable situations of harm. According to WHO, in developing countries, the percentage of diarrhea, respiratory disease and malaria represent an average of 26% of all

infant deaths (under 5 years). Perinatal afflictions, malnutrition and non-intentional injuries (other main constituents of child disease) also have an important environmental component in these countries.<sup>1</sup>

The reduction of the environmental burden of disease will contribute to the achievement of the United Nation's Millennium Development Goals. All of the Millennium Development Goals relate to environmental health – but some Millennium Goals bear particular mention – as will be seen throughout this chapter. These are: to reduce mortality of under five year olds by two-thirds (Objective 4); halve and reverse the spread of malaria (Objective 6); halve the proportion of the population without drinking water and sanitation (Objective 7); and improve the lives of slum-dwellers (Objective 7) by 2020\*.



*\*The eight Objectives of the Millennium Development Goals range from the reduction of extreme poverty to ending the propagation of AIDS and the attainment of universal primary education by 2015, constitute a plan drafted by all nations and most important development institutions of the world. The objectives have galvanized efforts without precedent to help the poor around the world.*

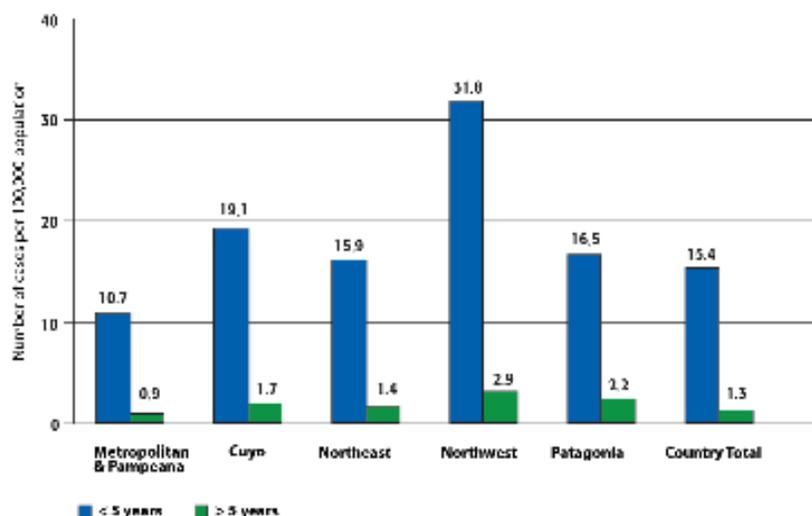
# Gastrointestinal diseases

## Gastrointestinal diseases

The WHO estimated in 2002 that 88% of all of the world's cases of diarrhea were attributable to unsafe water and food contamination, lack of appropriate sanitary infrastructure and poor hygiene.<sup>1</sup>

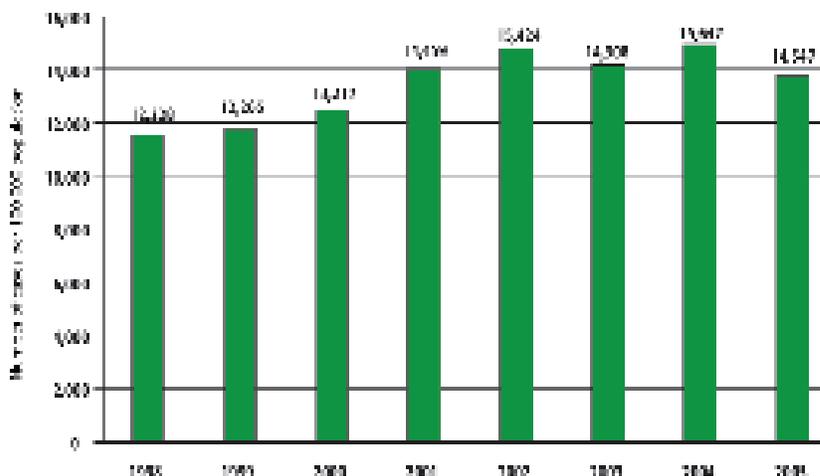
In 2002 in Argentina, the rate of acute diarrhea among children under 5 was 15.4 per 100,000 population. However, the rates varied considerably across the country. The rate was highest in NOA – where it was 34.8 per 100,000 – or twice the national rate.

**RATE OF ACUTE CASES OF DIARRHEA IN CHILDREN UNDER AND OVER 5 YEARS OF AGE. RATE PER 100,000 POPULATION. ARGENTINA, 2002.**



Source: National Ministry of Health and Environment. EPINOTICIAS Bulletin. No. 527, Year IV. 2004.

**DIARRHEA CASES REGISTERED IN PUBLIC AND PRIVATE CLINICS FOR CHILDREN UNDER 5 YEARS OF AGE. RATE PER 100,000 POPULATION. ARGENTINA, 1998 TO 2005.**



Source: Health Analysis and Monitoring Unit (UNAMOS). National Bureau of Epidemiology, Ministry of Health of Argentina. 2006. Extract from Sustainable Development Indicators System, Argentina, Ministry of Environment and Sustainable Development, Chief of Cabinet of the Presidency of Argentina, December 2006.

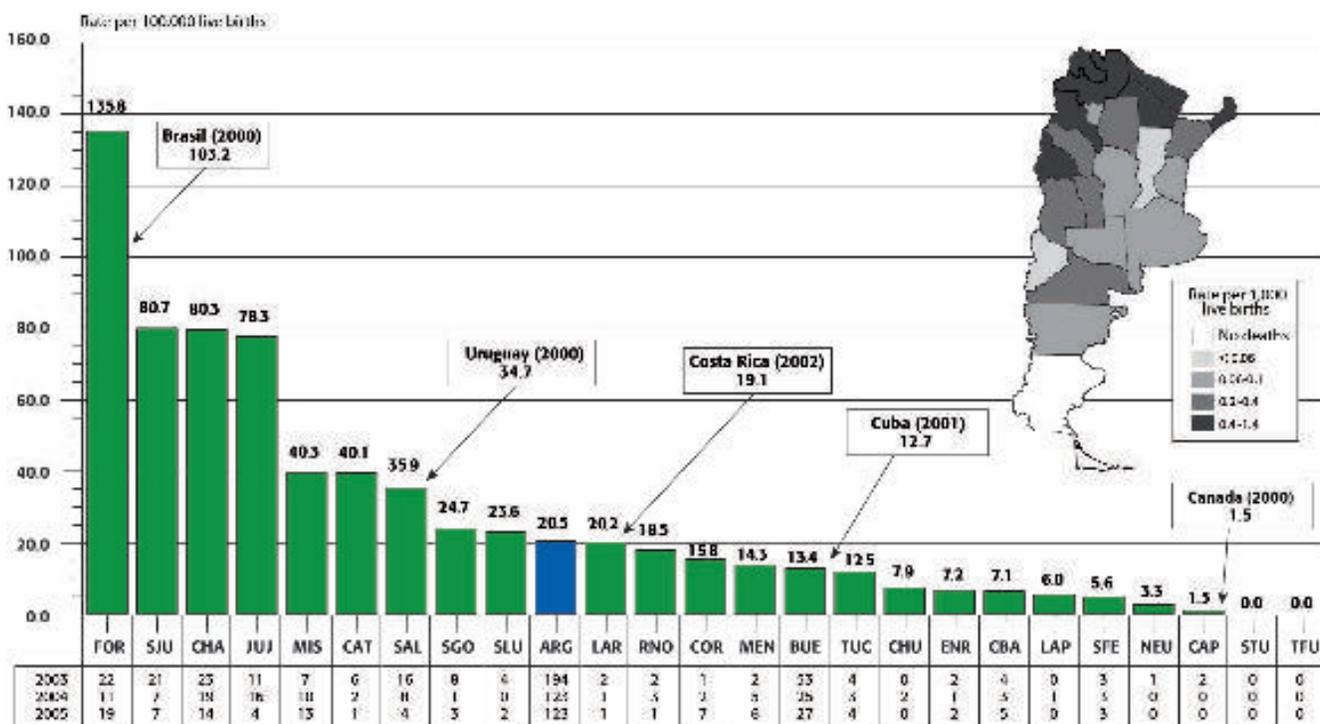
Between 1998 and 2005 the rate of acute diarrhea registered by public and private health services in Argentina increased by 17.3%.

Extract from the Sustainable Development Indicators System, Argentina, Ministry of Environment and Sustainable Development, Chief Minister's Cabinet, December 2006. During 2003–2005 the mortality rate for intestinal infectious diseases in children under 5 years was on average 20.5 per 100,000 live births – accounting for 1.3% of all deaths in this age group. However, this rate var-

ied among the 24 jurisdictions. The Province of Formosa saw the highest rate at 135.8 per 100,000 while no deaths were registered in Tierra del Fuego and Santa Cruz.

Thus, parts of Argentina have experiences similar to those observed in other countries of the American continent, with one province having a higher rate than that of Brazil and two with similar or lower rates to those in Canada.

**MORTALITY RATE DUE TO INFECTIOUS INTESTINAL DISEASES (\*) IN CHILDREN UNDER 5 YEARS OF AGE BY JURISDICTION. NUMBER AND TRI-ANNUAL RATES. COMPARISON WITH SOME COUNTRIES OF THE AMERICAN CONTINENT (\*\*)**  
**ARGENTINA 2003 TO 2005**



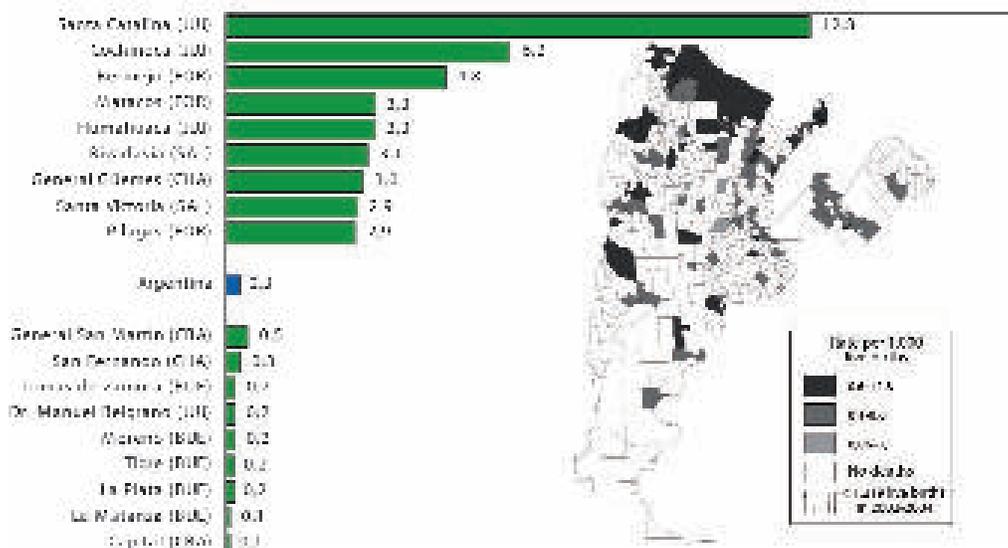
(\*) Includes codes A01 to A09 from the International Disease Classification Tenth Edition.  
(\*\*) Mortality rates by jurisdiction in Argentina correspond to 2003–2005. Rates for other countries correspond to the years indicated in each case.

Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, May 2007.

The contrast is even more marked when examining the situation in the specific departments within each jurisdiction. For example, in some departments of the provinces of

Chaco, Formosa, Jujuy and Salta the mortality rate for infectious intestinal illnesses is more than 10 times greater than the national average.

**MORTALITY RATE DUE TO INFECTIOUS INTESTINAL DISEASES IN CHILDREN UNDER 5 YEARS OF AGE BY PROVINCIAL DEPARTMENT. RATE PER 1,000 LIVE BIRTHS. ARGENTINA, 2002 TO 2004**

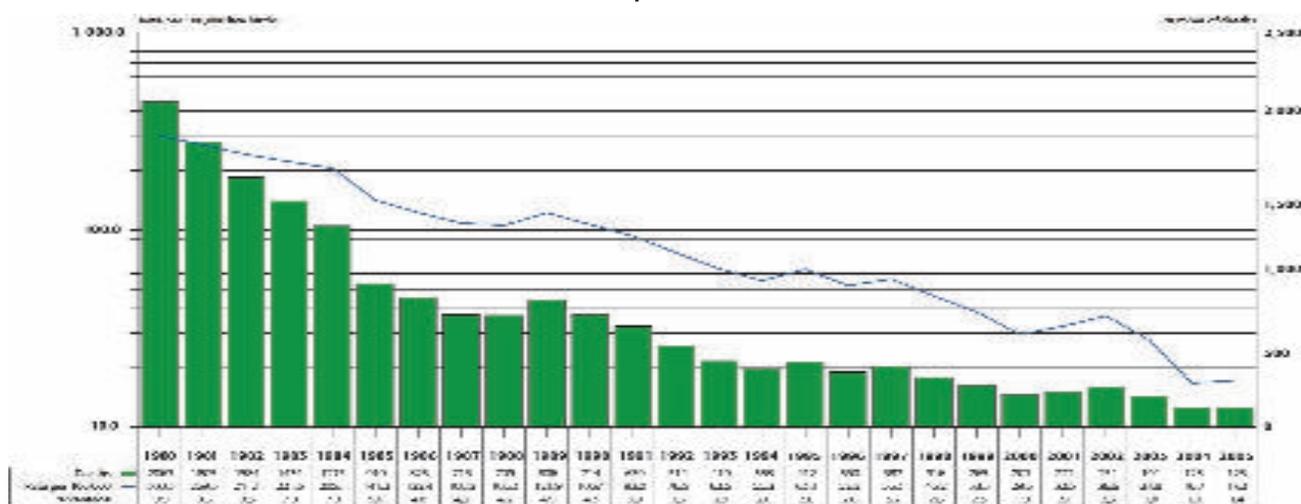


Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, March 2006.

Although infectious intestinal illnesses still persist as a cause of mortality in children under 5 years of age in Argentina,

the trend has been decreasing in recent decades – the number of deaths has decreased 94.2% between 1980 and 2005.

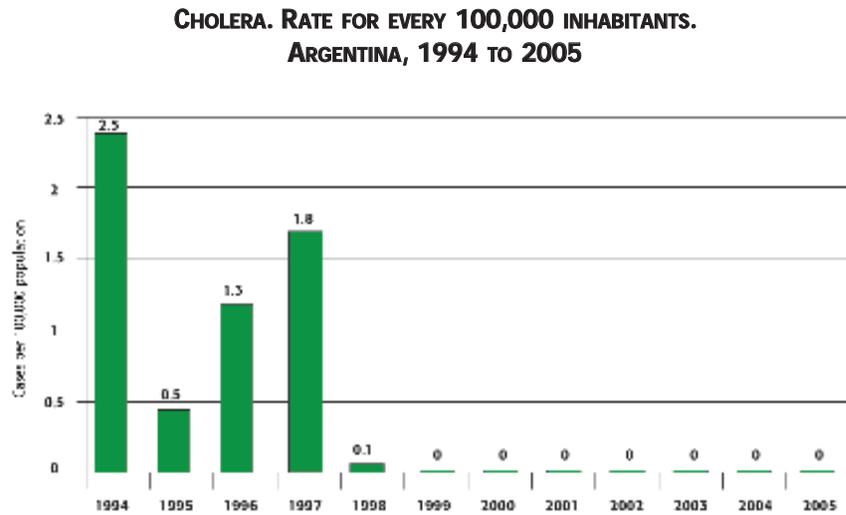
**TREND IN MORTALITY DUE TO DIARRHEA IN CHILDREN UNDER 5 YEARS OF AGE. NUMBER AND RATE PER 100,000 LIVE BIRTHS AND PERCENTAGE OVER THE TOTAL NUMBER OF DEATHS BY DEFINED CAUSES. ARGENTINA, 1980 TO 2005**



Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, May 2007

## Cholera

No cases of cholera have been reported in Argentina since 1999.



Source: Health Analysis and Monitoring Unit (UNAMOS). National Bureau of Epidemiology. Ministry of Health of Argentina. 2006.

## Intestinal parasitic infections

Studies published by the Argentine Society of Pediatrics (SAP), have concluded that 100% of the burden of parasitic intestinal infections are attributable to the environment and are a result of the lack of appropriate sanitation and suitable hygiene practices. Parasitic intestinal infections are contracted in homes, schools or recreation areas with inadequate sanitary infrastructure and soil contaminated with feces.<sup>1</sup>

In Argentina, the average prevalence of infections caused by intestinal parasites – both protozoa and geohelminths – is approximately 30%. In the case of protozoa, the prevalence of *Giardia lamblia* can reach figures that are double the national average in communities supplied with underground water sources treated with chlorine only or not treated at all.<sup>2</sup>

In addition, communities with Unsatisfied Basic Needs (for example, unpaved roads, no toilets or sewage systems, and restricted access to drinking water, education and work), have a prevalence of protozoa and geohelminths (*Ascaris lumbricoides* and *Trichuris trichiura*, *Strongyloides stercoralis* and others) as high as 90%.<sup>3,4</sup> The prevalence in the country varies by region and climate.



## Hepatitis

In 2000, 1,116 people were admitted to public hospitals for hepatitis in Argentina. One hundred and twenty-one were children under 5 years, 205 were 5 to 9 years and 89 were 10 to 14 years of age. Of all hospitalizations due to hepatitis, 37.2% involved children under the age of 15.<sup>5</sup>

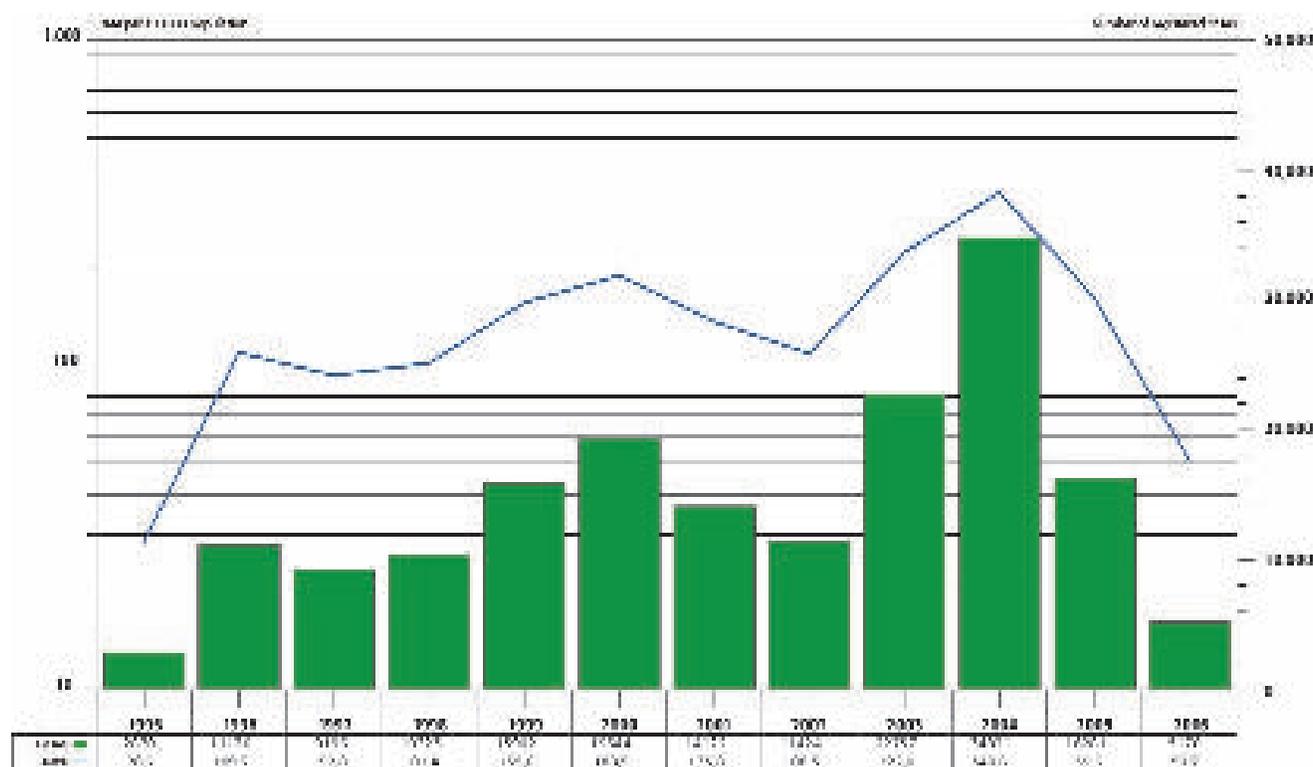
Across the country in 2005, the rate of reported hepatitis cases was 155.9 per 100,000 population. Although this rate represents the reporting of all hepatitis cases, most were hepatitis A.<sup>6</sup>

## Hepatitis A

In 2006, there were more than 5,000 cases of Hepatitis A among children and youth under 15 years of age. This is

half the number of cases reported in 2005 and less than one-sixth the number of cases reported in 2004.\*

**NUMBER OF HEPATITIS A CASES REPORTED BY PUBLIC HEALTH SERVICES IN CHILDREN AND YOUTH UNDER 15 YEARS OF AGE. ARGENTINA, 1995 TO 2006**

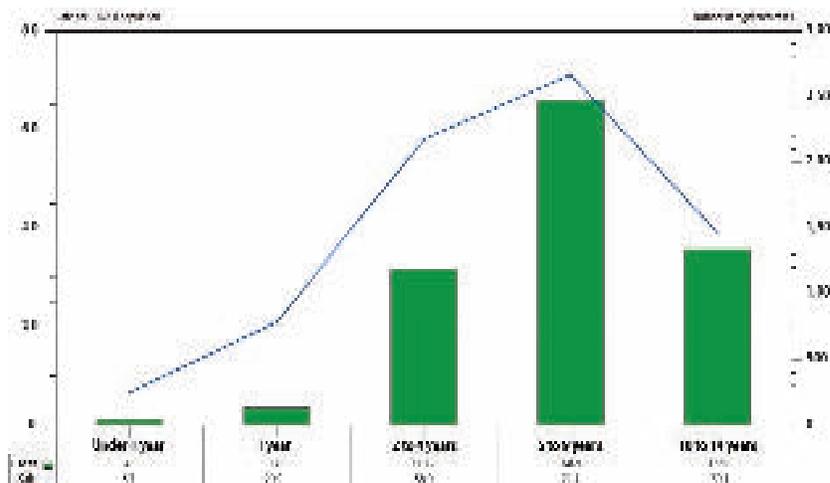


Source: SINAVE. National Bureau of Epidemiology, Ministry of Health of Argentina, August 2007.

\* Information on Hepatitis A cases in Argentina is reported through the Nacional Epidemiological Surveillance System (SINAVE) by public health services in all jurisdictions.

Most of the Hepatitis A cases reported (47.8% in 2006) were in children between 5 and 9 years of age, with a reporting rate of 71.1 for every 100,000 population in that age group. The number of Hepatitis A cases reported for infants less than one year of age was the lowest, the reported rate being approximately one-tenth that of children between 2 to 14 years of age.

**NUMBER OF HEPATITIS A CASES REPORTED BY PUBLIC HEALTH SERVICES IN CHILDREN AND YOUTH UNDER 15 YEARS BY AGE GROUP. ARGENTINA, 1995 TO 2006**

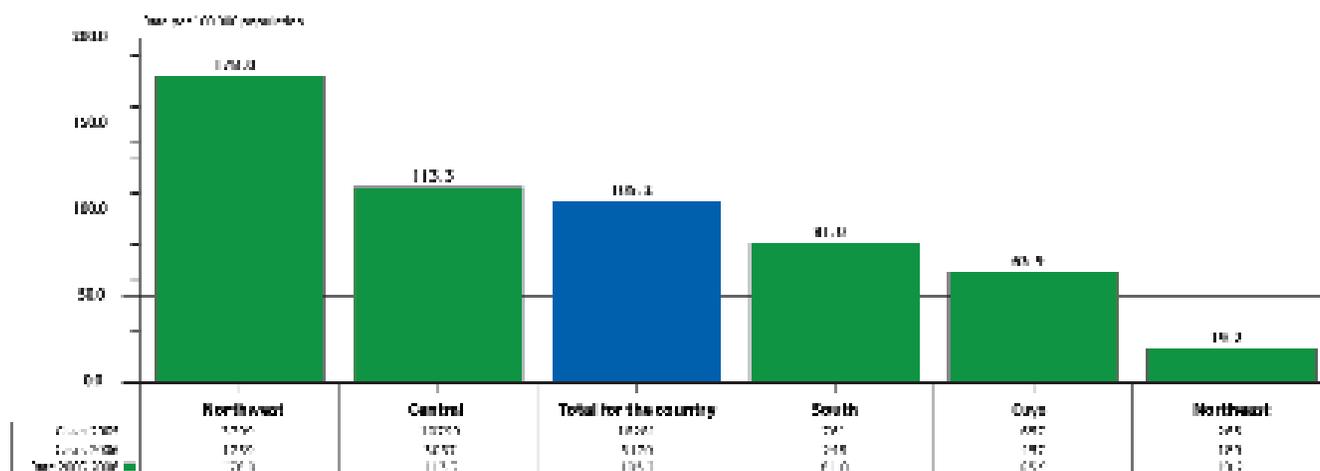


Source: SINAVE. National Bureau of Epidemiology, Ministry of Health of Argentina, August 2007.

The reported cases of Hepatitis A among children under 15 years of age were not distributed evenly across the country. More cases were reported in the Northwest Region (NOA) – the reported rate for 2005–2006 was 70% higher

than the national average. The Northeast Region (NEA) had the lowest number of reported cases: 81% lower than the national average and 89% lower than that in the NOA Region.

**NUMBER OF HEPATITIS A CASES REPORTED BY PUBLIC HEALTH SERVICES IN CHILDREN AND YOUTH UNDER 15 YEARS BY REGION. ARGENTINA, 2005 TO 2006**



Source: SINAVE. National Bureau of Epidemiology, Ministry of Health of Argentina, August 2007.

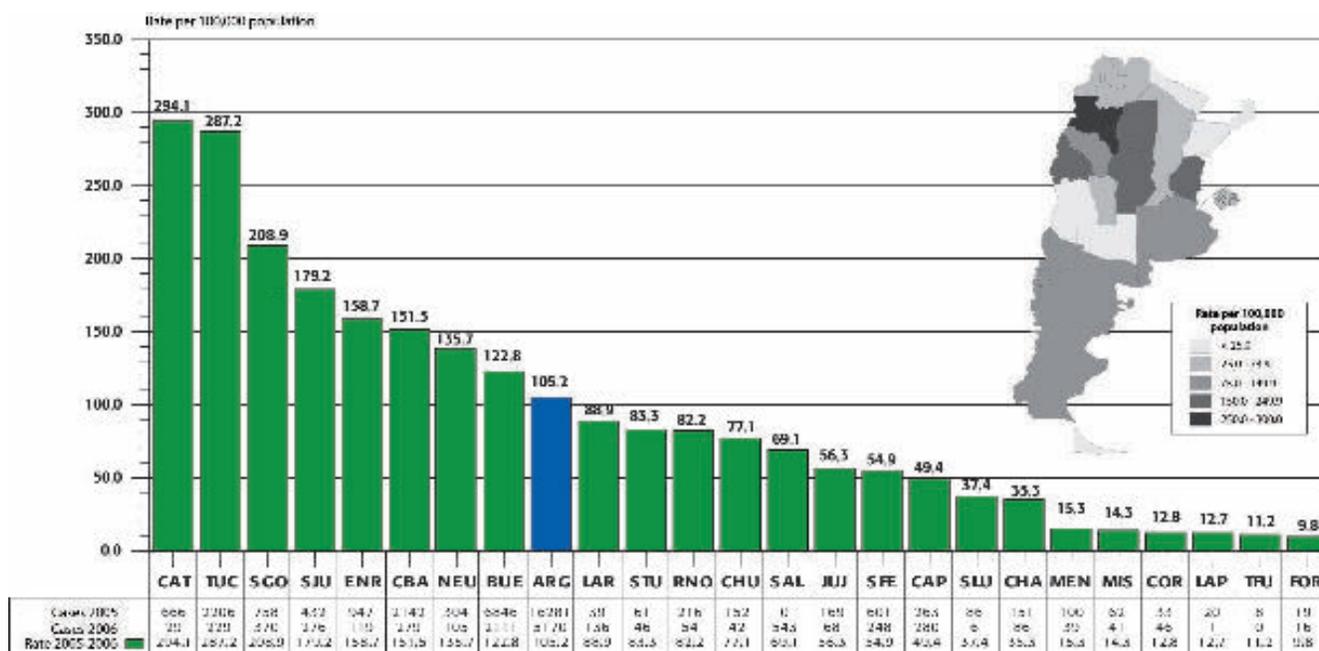
If the information on Hepatitis A is analyzed by jurisdiction it can be observed that the higher reporting rate registered in the Northwest Region (NOA) reflects the fact that the Provinces of Catamarca and Tucumán have the highest rates in the country.

In the Provinces of Jujuy and Salta, also part of the Northwest Region (NOA), the rates of Hepatitis A in chil-

dren and youth under 15 are lower than the average national rate.

The jurisdictions with the lowest number of reported cases of Hepatitis A are in three regions of Argentina: Mendoza (Cuyo Region); La Pampa, Tierra del Fuego (South Region); and Corrientes, Formosa and Misiones (Northeast Region).

**NUMBER OF HEPATITIS A CASES REPORTED BY PUBLIC HEALTH SERVICES IN CHILDREN AND YOUTH UNDER 15 YEARS BY PROVINCE. ARGENTINA, 2005 TO 2006**



Source: SINAPE. National Bureau of Epidemiology. Ministry of Health of Argentina, August 2007.

# Respiratory illness attributable to environmental factors

## Respiratory illness attributable to environmental factors

According to the World Health Organization, each year more than 1,500,000 of the world's deaths (all ages) are due to respiratory infections attributable to environmental factors.

Adding the effects of both indoor and outdoor air pollutants, at least 42% of lower respiratory tract infections are attributable to environmental factors in developing countries, the proportion being 20% for developed countries. According to WHO estimates, 36% of the world's disease burden of lower respiratory tract infections is attributable to the burning of solid fossil fuels used for cooking and heating of homes. In developed countries there is a higher

exposure to tobacco smoke and solid fossil fuel consumption is lower.

In developing countries, nearly 24% (6–45%) of upper respiratory tract infections and otitis are attributable to environmental risk factors such as indoor and outdoor air pollution, tobacco smoke and housing conditions (humidity, mold, mites [acari], and others).

The quality of indoor and outdoor air in and near houses is directly related to acute respiratory disease. Tobacco smoke, burning of solid fossil fuels, housing conditions and hygiene contribute strongly to the burden of disease.<sup>1</sup>

## Child deaths due to respiratory disease

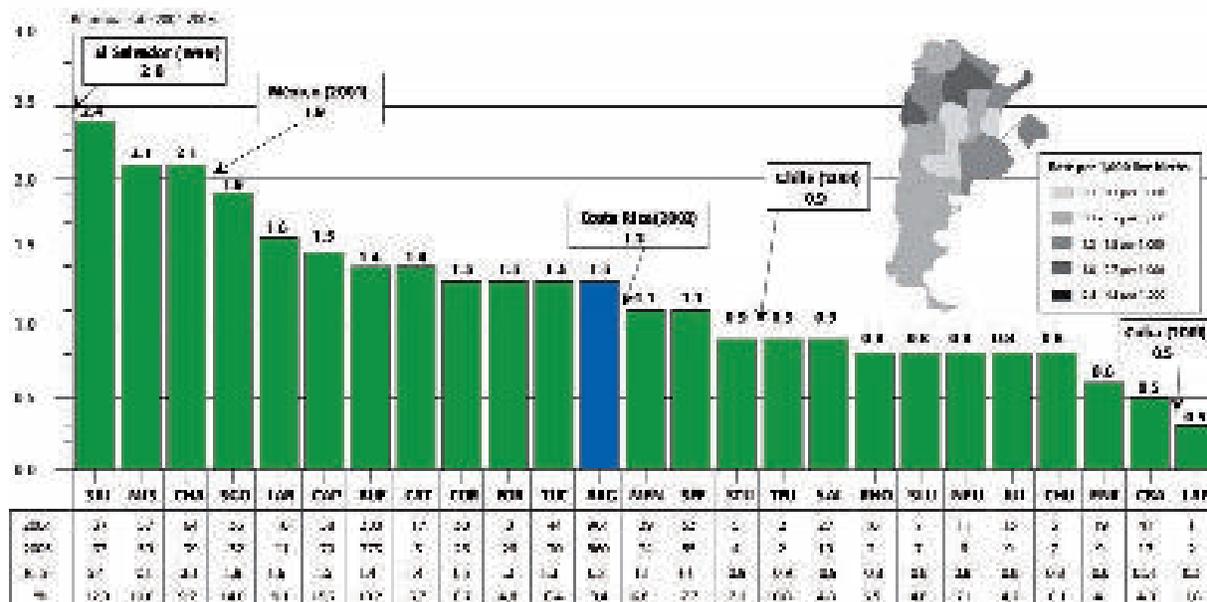
*Every year approximately 1,000 children (978 in 2004) die in Argentina before reaching the age of 5 because of respiratory disease. Most of them don't reach the age of one: 765 of these children, 78.2%, died before their first birthday. Half of these children died between the first and fourth month of life due to respiratory illness, representing 48% of the deaths under one year. The main cause of childhood respiratory disease mortality is pneumonia (397 deaths, 40.6%), followed by lung disease because of external causes (202 deaths, 20.7%,*

*almost all registered as pneumonitis). Still, a high percentage of illnesses causing death (189, 19.3%) are not registered by specific cause of respiratory disease. The deaths attributed to respiratory diseases in children under 5 years occur mainly between the months of May and August (55.3%). The number of deaths each month triples during that time of year for children under 1 year and doubles for children between 1 to 4 years of age.<sup>7</sup>*

Respiratory system infections (CIE codes J00-J99, 10<sup>th</sup> edition) are the third cause of death in children under 5 years and cause between 800 and 900 deaths annually in this age

group, a rate of 1.27 per 1,000 live births overall in Argentina. The rate varies between jurisdictions.

**MORTALITY RATE DUE TO RESPIRATORY DISEASE IN CHILDREN UNDER 5 YEARS OF AGE.  
NUMBER OF ANNUAL DEATHS AND RATE PER 1,000 LIVE BIRTHS BY JURISDICTION  
ARGENTINA, 2004 TO 2005**

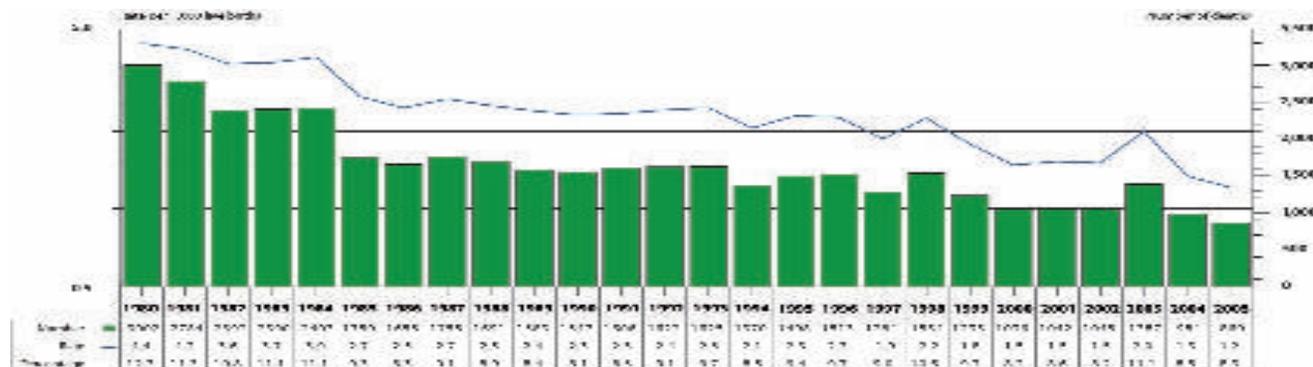


Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, March 2007.

The mortality rate from respiratory disease in children under 5 years is more than ten times greater than the national average in some provincial departments. While still a considerable problem, the death rate because

of respiratory disease among children has decreased in recent decades. Both the annual number of deaths and the mortality rate have decreased more than 70% between 1980 and 2005.

**MORTALITY DUE TO RESPIRATORY DISEASE IN CHILDREN UNDER 5 YEARS OF AGE.  
NUMBER AND RATE PER 1,000 LIVE BIRTHS. ARGENTINA, 1980 TO 2005**



Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, December 2007.

## Asthma

The World Health Organization estimates that 44% (26–53%) of the world's asthma is attributable to environmental exposure. This estimate does not include exposure to pollen, as it is a factor that can not be controlled. Occupational exposures are responsible for 11% of the total burden of disease for asthma. Environmental factors can exacerbate asthma by acting as the trigger. Tobacco smoke

and solid fossil fuel burning inside the home are significant triggers while humidity, mold and dust mites contribute to 20% of the prevalence of asthma.

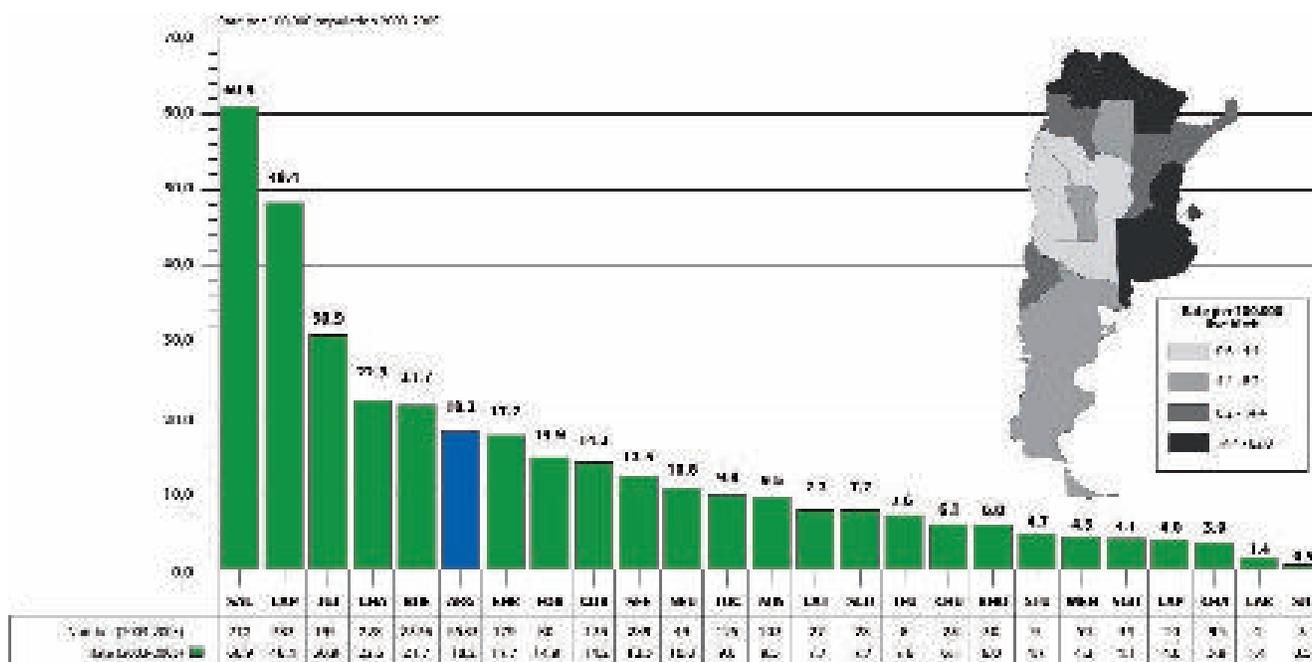
In Argentina in 2000, one-third (7,312 cases, 35.8%) of all 20,649 public hospital admissions due to asthma were among children under 15 years.

## Tuberculosis

Tuberculosis can have an important environmental component (an estimated disease burden of about 19%) and controlling environmental factors can be instrumental in reducing the burden of disease. The environmental factors that contribute to tuberculosis include exposure to smoke from burning solid fuels indoors, tobacco smoke, asbestos, malnutrition, and overcrowding.

Approximately 12,000 cases of tuberculosis are reported annually in Argentina, of which more than 1,500 are children under 15 years – approximately 14% of all cases. The reported rate of tuberculosis cases for this age group is on average 18.2 for every 100,000 population, but it is more than three times greater than this in the province of Salta.

**REPORTED CASES OF TUBERCULOSIS IN CHILDREN UNDER 15 YEARS OF AGE. NUMBER AND RATE PER 100,000 LIVE BIRTHS. ARGENTINA, 2003 TO 2005.**



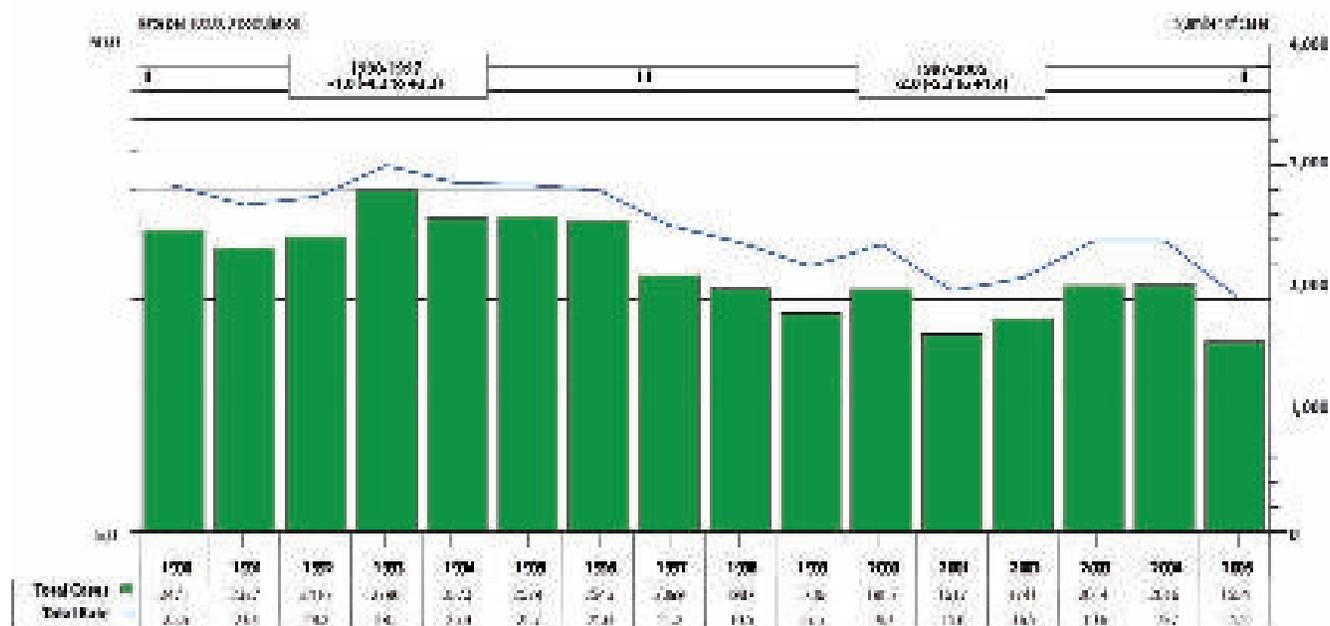
Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the Tuberculosis Control Program from 24 jurisdictions in Argentina. Ministry of Health of Argentina, November 2006.

## Chapter 2 | Children's health and the environment

Although the reported cases of tuberculosis in children under 15 years of age has decreased in recent years, the average annual reduction was low at 2%. This decline was even

less if the cases of localized lung tuberculosis confirmed by bacteriological examination were considered.

**TREND IN REPORTED CASES OF TUBERCULOSIS IN CHILDREN UNDER 15 YEARS OF AGE AND PERCENTAGE OF THE ANNUAL AVERAGE VARIANCE (MEDIAN AND 95% CONFIDENCE INTERVAL) ARGENTINA, 1990 TO 1997 AND 1997 TO 2005**



Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the Tuberculosis Control Program from 24 jurisdictions in Argentina. Ministry of Health of Argentina, November 2006.



## Hemolytic uremic syndrome

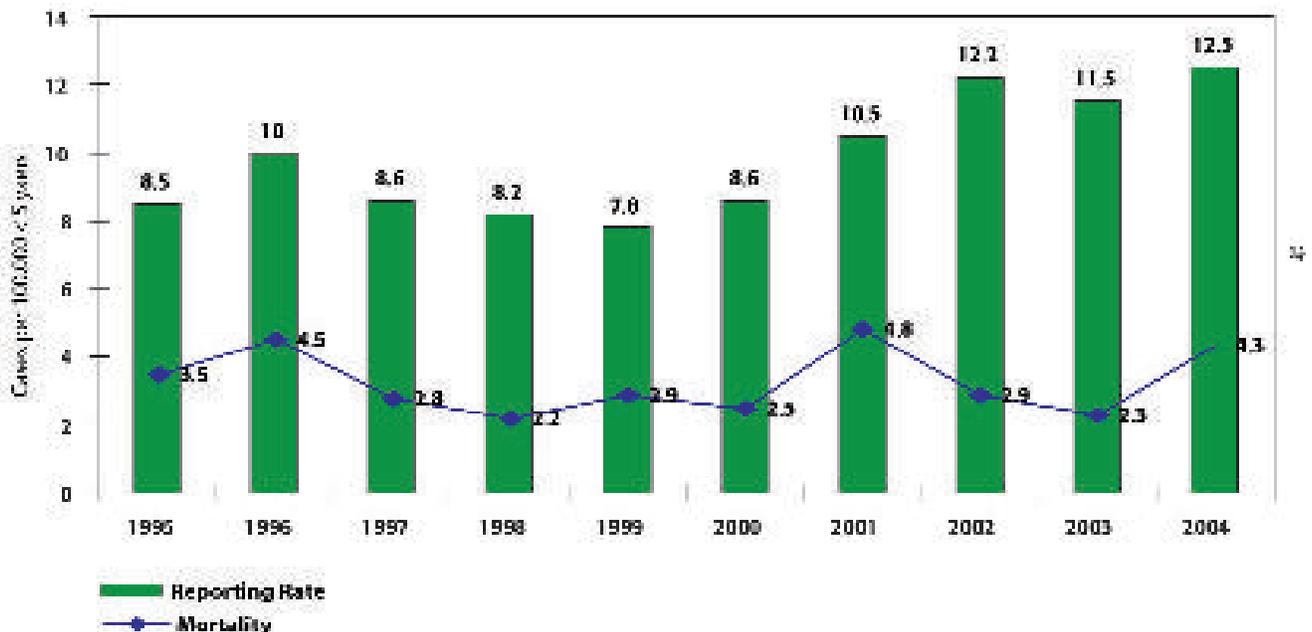
**Hemolytic-uremic syndrome (HUS) is a very serious childhood illness that can lead to renal failure. It is caused by micro-organisms present in food products that are contaminated with bovine fecal matter (in meat, non-pasteurized milk, raw vegetables, water, others) that have not been thoroughly cooked. The most common cause is Escherichia coli 0157H7. Clinically, children with HUS have microangiopathic hemolytic anemia, a low platelet count (thrombocytopenia) and acute renal failure.**

**In Argentina it is mandatory to report individual cases of this disease weekly. HUS is highest between November and April. The incidence of HUS is increasing by 300-400 cases per year and is the leading cause of Acute Renal Failure and the second cause of Chronic Renal Failure among children. It contributes to 20% of all kidney transplants.**

In 2004 Argentina reported 419 cases of HUS among children under 5 with an average age of 29.3 months. The incidence was highest among children between 13 and 24 months. The reported rate was 12.5 cases for every 100,000 children under 5 years, with a mortality rate of 4.5%.<sup>8</sup>

The reported rate of HUS is seven times greater in Argentina than in other countries that have experienced recent episodes such as Canada, the United Kingdom, Japan, the USA, Chile and South Africa.

**MORTALITY DUE TO HEMOLYTIC UREMIC SYNDROME (HUS).  
PERCENTAGE AND RATE PER 100,000 CHILDREN UNDER 5 YEARS OF AGE. ARGENTINA, 1995 TO 2004**

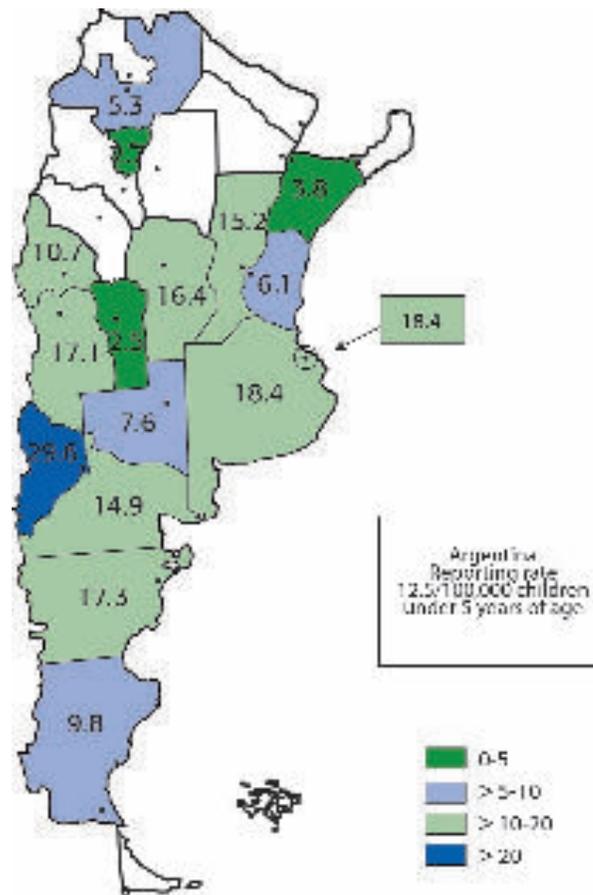


Source: Physiopathogenic Service INEI-ANLIS "Dr. Carlos Malbrán". Department of Policy, Regulation and Sanitation. Ministry of Health and Environment of Argentina. Health Research Forum in Argentina. 2006. The graph has two Y axes: the left Y axis corresponds to the hospital admissions reporting rate expressed by case per 100,000 children under 5 years (blue line) and the right Y axis corresponds to the mortality rate expressed as a percentage (green bars).

The reported rate of hospitalization because of HUS is higher in some regions of the country than in others. The

reported rate among children under 5 is 29.6 in Neuquen and 2.5 in San Luis.

**HOSPITAL ADMISSIONS FOR HEMOLYTIC UREMIC SYNDROME IN CHILDREN UNDER 5 YEARS OF AGE. ARGENTINA, 2004**



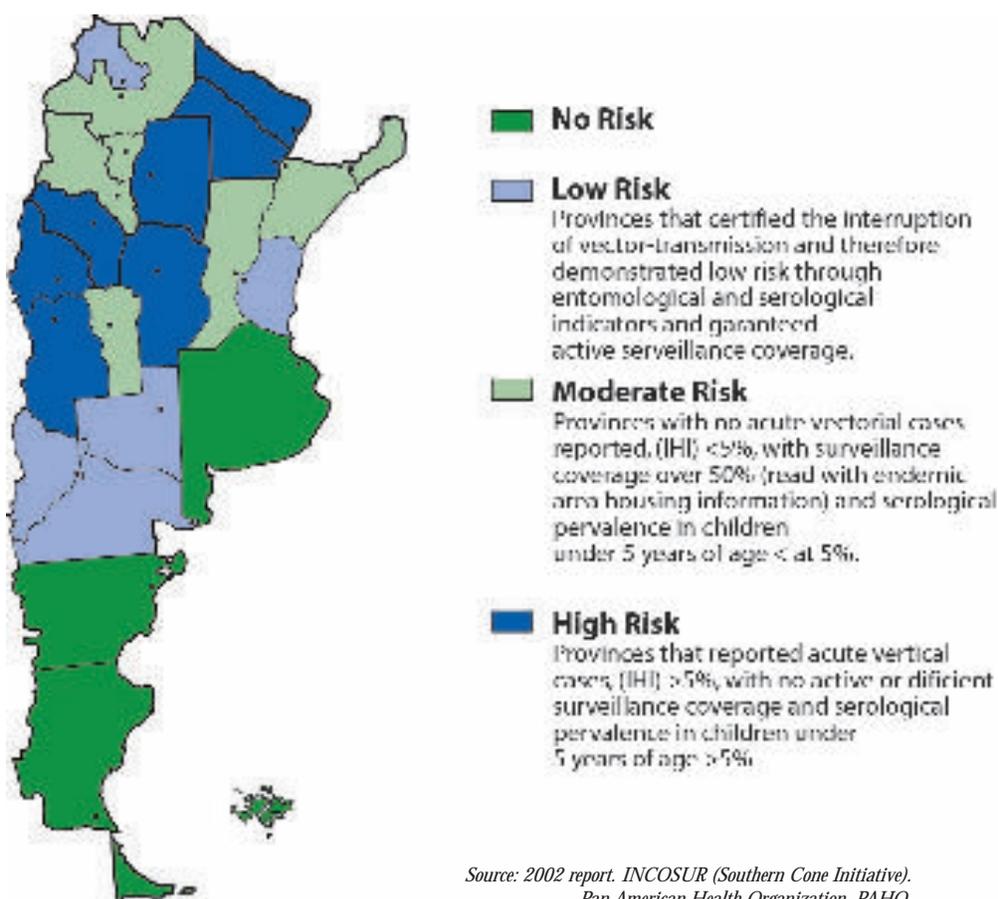
Source: Nephrology Committee from the Argentine Society of Pediatrics. Physiopathogenic Service INEI-ANLIS "Dr. Carlos Malbrán".

## Vector-transmitted diseases

Vector-transmitted diseases are those that are transmitted directly by insects or other vectors from an infected individual to another. In Argentina, the population of some

regions of the country is at greater risk of exposure to vector-transmitted diseases – such as Chagas disease, dengue and malaria.

### EPIDEMIOLOGY. RISK OF DISEASE BY VECTOR-TRANSMISSION. ARGENTINA, 2002

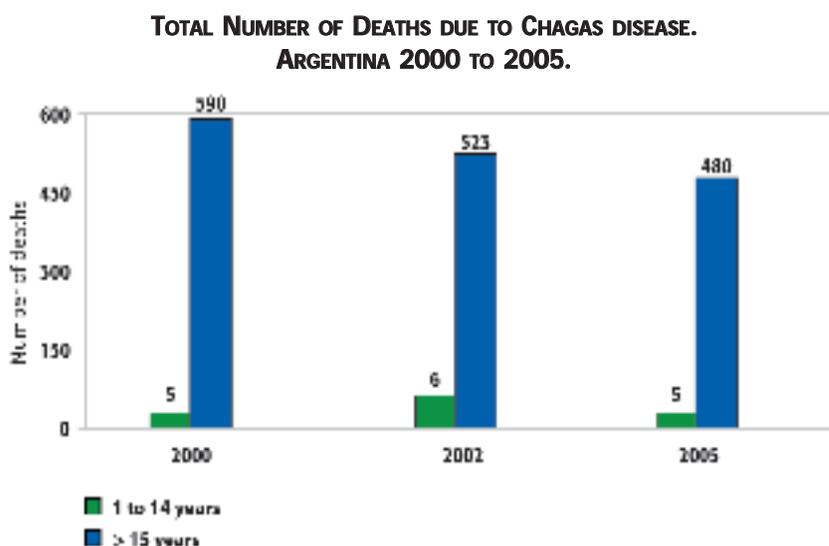


## Chagas

*Chagas disease is caused by infection from the parasite **Trypanosoma cruzi**. This parasite is transmitted to animals and people by insect vectors (**Triatoma infestans**)*

*commonly known in Argentina as “vinchuca” or “chinche gaucha”. These insects breed near to or in people’s homes.*

It is estimated that approximately 56% (31% to 80%) of Chagas disease can be attributed to environmental causes.<sup>1</sup> The chart shows the deaths resulting from Chagas disease in Argentina in 2000, 2002 and 2005 – by groups aged 1–14 years and 15 years and above. In 2005, five children between the ages of 1 and 14 years died due to Chagas disease. Four hundred and eighty adolescents and adults 15 and over died as a result of this disease in 2005.

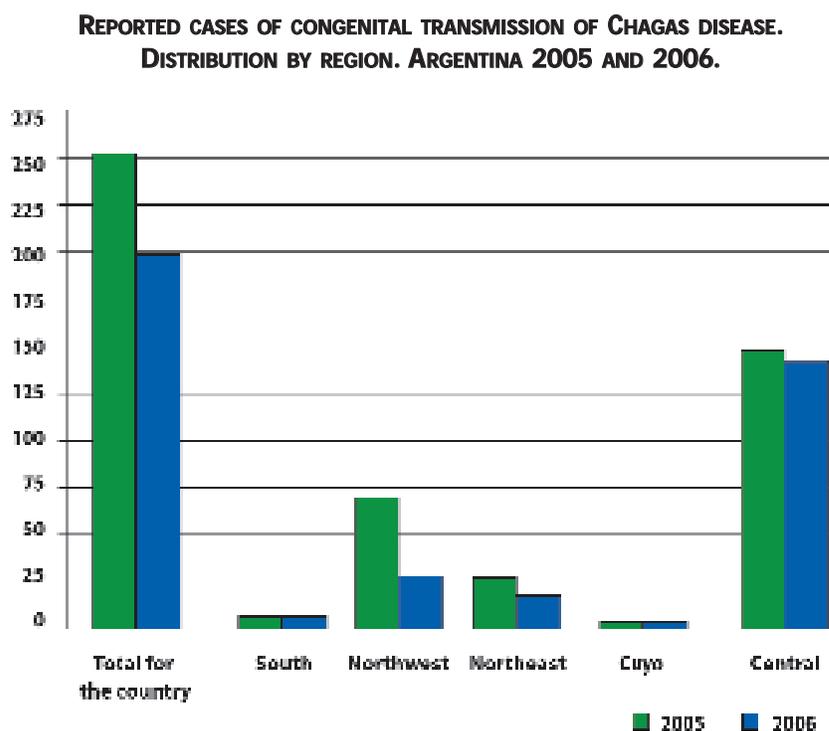


*Source: National Bureau of Statistics and Health Information. Ministry of Health of Argentina. Annals 2000, 2002 and 2005. Vital Statistics.*

In Argentina, the Ministry of Health's National Blood Program routinely screens 100% of blood donations for Chagas disease. The seroprevalence declined from 9.2% in 1987 to 4.5% in 2001.<sup>9</sup>

Since 1991, Argentina, Bolivia, Brazil, Chile, Paraguay and Uruguay have participated in a cooperative initiative known as INCOSUR/Chagas, with the principal objective of eliminating vector/blood transmission of Chagas disease. INCO-SUR/Chagas proposed a strategy based on the development and implementation of a subregional plan of action to eliminate the *Triatoma infestans* vector that is most common in the region, and to eliminate the transmission of *Tripanozoma cruzi* by blood transfusion.

Children are at risk of acquiring Chagas disease through congenital transmission. In 2006 approximately 200 cases of Chagas disease in Argentina were reported as transmitted congenitally – this was down from about 250 in 2005.



*Source: National Bureau of Epidemiology, Ministry of Health of Argentina.*

## Malaria

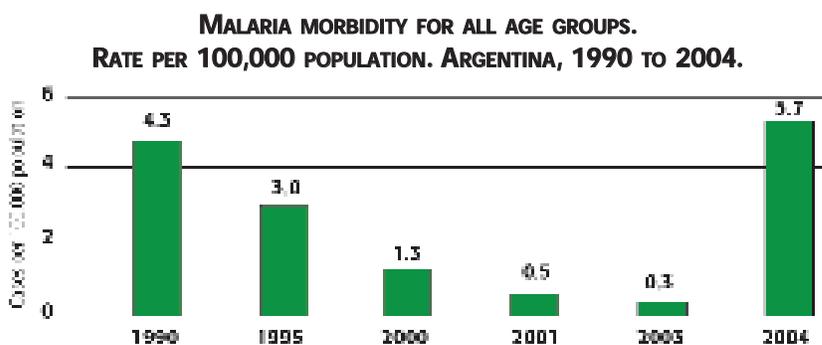
***Malaria is caused by a parasite (Plasmodium) and is transmitted by the sting of an infected female mosquito (Anopheles).***

WHO estimates that the global burden of malaria attributed to environmental factors is 42% (30–53%). This figure translates into 500,000 annual deaths that could be prevented globally through appropriate environmental management plans that would reduce human – vector contact. For the Region of the Americas the burden is estimated at 64% (51–77%).

In Argentina, malaria is endemic in the northern part of the county in the Province of Salta, Northwest Region (NOA).

In Jujuy, Misiones and Corrientes there are sporadic local cases of infection from bordering countries. The “imported” cases represent 50% to 70% of those reported, and are related to populations migrating from Bolivia and Paraguay. Occasionally, there have been epidemics reported in the NOA – in 1996, 2000 (438 cases), 2002 (92 cases) and 2003 (92 cases). The agent isolated as the cause was *Plasmodium vivax*.<sup>9</sup>

The death rate due to malaria was almost 6 per 100,000 population in 2004. It is important to note the fluctuations in rates since 1990.



Source: National Coordination of Vector Control, published by: World Health Organization. Basic Indicators, Ministry of Health of Argentina, 2006.

## Dengue fever

***Dengue is a contagious disease with a sudden onset. It is caused by a virus that is only transmitted through the sting of the Aedes Aegypti mosquito.***

It is estimated that the burden of dengue fever attributable to environmental causes is 95% (90–99%) globally.<sup>1</sup> Dengue fever and dengue haemorrhagic fever can be entirely prevented by controlling the breeding grounds of the main vector, the mosquito *Aedes aegypti*, near housing. In 1998, dengue fever re-emerged in the Province of Salta (Northwest Region) with an epidemic due to the DEN-2

serotype. In 2002, between March and April, there was an epidemic due to the DEN-1 serotype in four cities in the same region. In 2003, between March and April in the Province of Salta, there were 79 registered cases due to both serotypes. In the same year the presence of *Aedes aegypti* was confirmed in 17 of the 24 regions of Argentina.<sup>9</sup>

# External causes of morbidity and mortality - unintentional injuries

External causes of morbidity are injuries resulting from traffic collisions, falls, burns, drownings, poisonings, and other non-intentional injuries that can occur in a variety of

circumstances and surroundings. Many are related to the environment.

## Injuries caused by traffic collisions

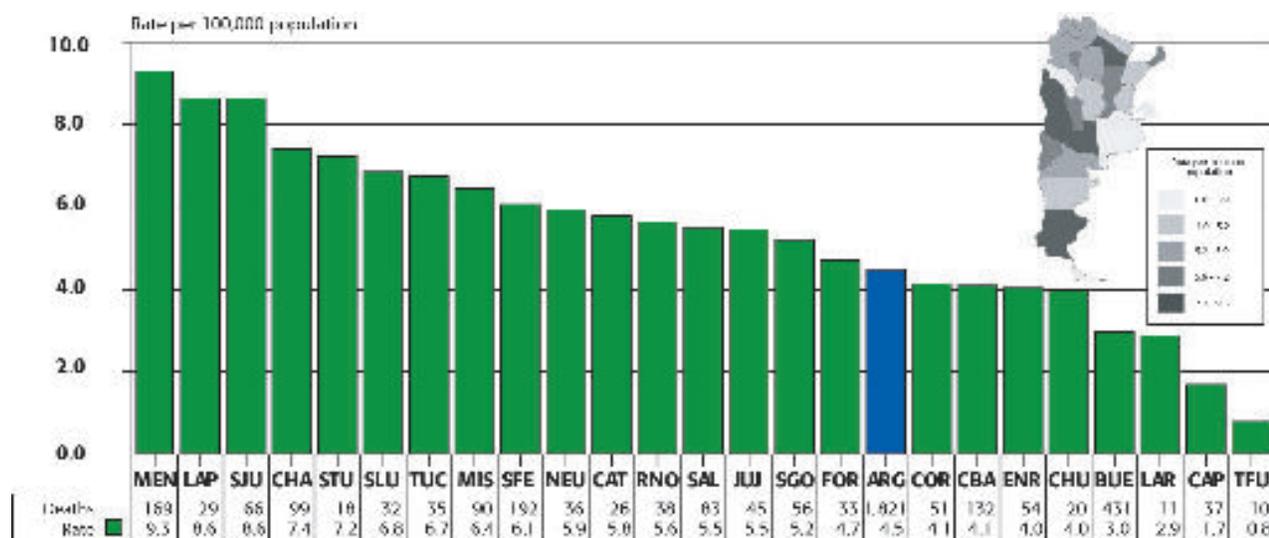
WHO estimates that in developing countries the environmental burden of traffic collisions is 42% (26–60%). The global burden is 40%.

Children are especially vulnerable to the threat of traffic crashes since road infrastructure is designed for adults and often does not take into consideration the special characteristics of children (height, maturity and velocity). Children and youth are at risk of death and injury through traffic collisions in a variety of ways. They can be passengers in automobiles – or drivers as they mature. They can be injured while crossing the street as pedestrians or while riding their bicycles, while skateboarding or inline skating on roadways. Therefore, a variety of essential and expanding measures

need to be considered to protect children and youth – for example, protecting pedestrian paths, expanding and improving the design of bicycle paths, designing and enforcing safe traffic zones and increasing access to appropriate public transport. Not only should standards of vehicles be regulated; unsafe driving practices must also be closely controlled.

In Argentina during the time period 2003–2005, more than 600 children and youth under 20 years of age were killed as a result of traffic collisions – representing a rate of 4.5 per 100,000. This rate varied among jurisdictions – it was more than double the national rate in the province of Mendoza and six times lower in the province of Tierra del Fuego.

**FATAL INJURIES IN CHILDREN AND YOUTH UNDER 20 YEARS OF AGE DUE TO TRANSPORT CRASHES (V010-V99Z) BY JURISDICTION. RATE PER 100,000 POPULATION. ARGENTINA, 2003 TO 2005**



Source: National Bureau of Statistics and Health Information. Ministry of Health of Argentina. ANNALS 2000, 2002 and 2005. VITAL STATISTICS.

The number of deaths resulting from traffic collisions has increased in Argentina since 2004. At the same time, there has been an increase in vehicular flow rates and highway use – including both an increase in the number of vehicles owned per population and the number of vehicles actually used in the streets.

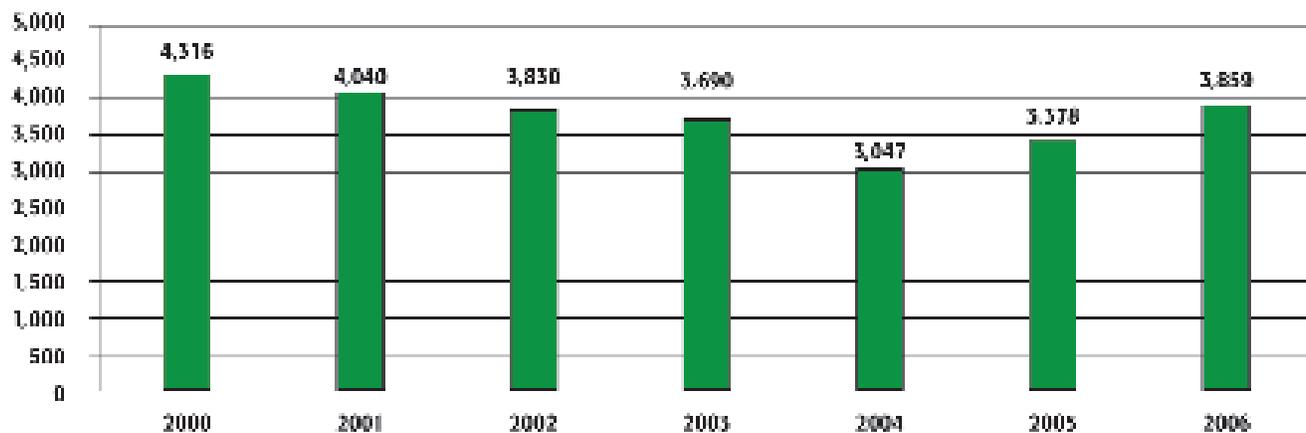
The frequency of traffic collisions is related to population density, road design, lighting, signage, lane width, driving practices, and the enforcement of speed limits.

In Argentina, it is estimated that 37% of traffic collisions involving men are attributable to alcohol consumption –

producing a loss of 331,802 disability adjusted life years. Over 10.1% of the population over 18 years drink alcohol in excess episodically (particularly on weekends) and this rate is higher in young men.

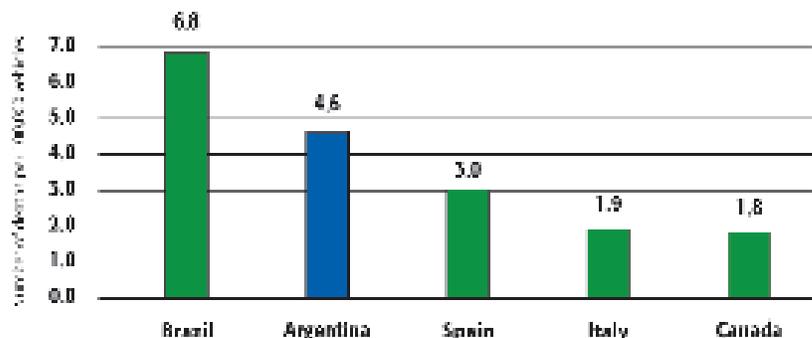
Using protective equipment – such as seat belts, bicycle and motorcycle helmets can reduce the potential for injury and death due to traffic collisions. Less than half – or 48% – of people over 18 years of age are reported to always use a seat belt and fewer than one in ten – 8.7% – use a helmet when riding a bicycle.<sup>10</sup>

**NUMBER OF FATAL INJURIES DUE TO TRAFFIC COLLISIONS FOR ALL AGE GROUPS. ARGENTINA, 2000 TO 2006**



Source: National Registry of Traffic Accidents. Ministry of Transport. Ministry of Federal Planning, Public Investment and Services. 2006.

**MORTALITY RATE DUE TO MOTOR VEHICLE COLLISIONS. ARGENTINA, BRAZIL, SPAIN, ITALY AND CANADA, 2003**



Source: WHO, FITAC and IRTAD. 2003. Cited in the National Road Security Plan 2006-2009. Ministry of Transport. Government of Argentina.

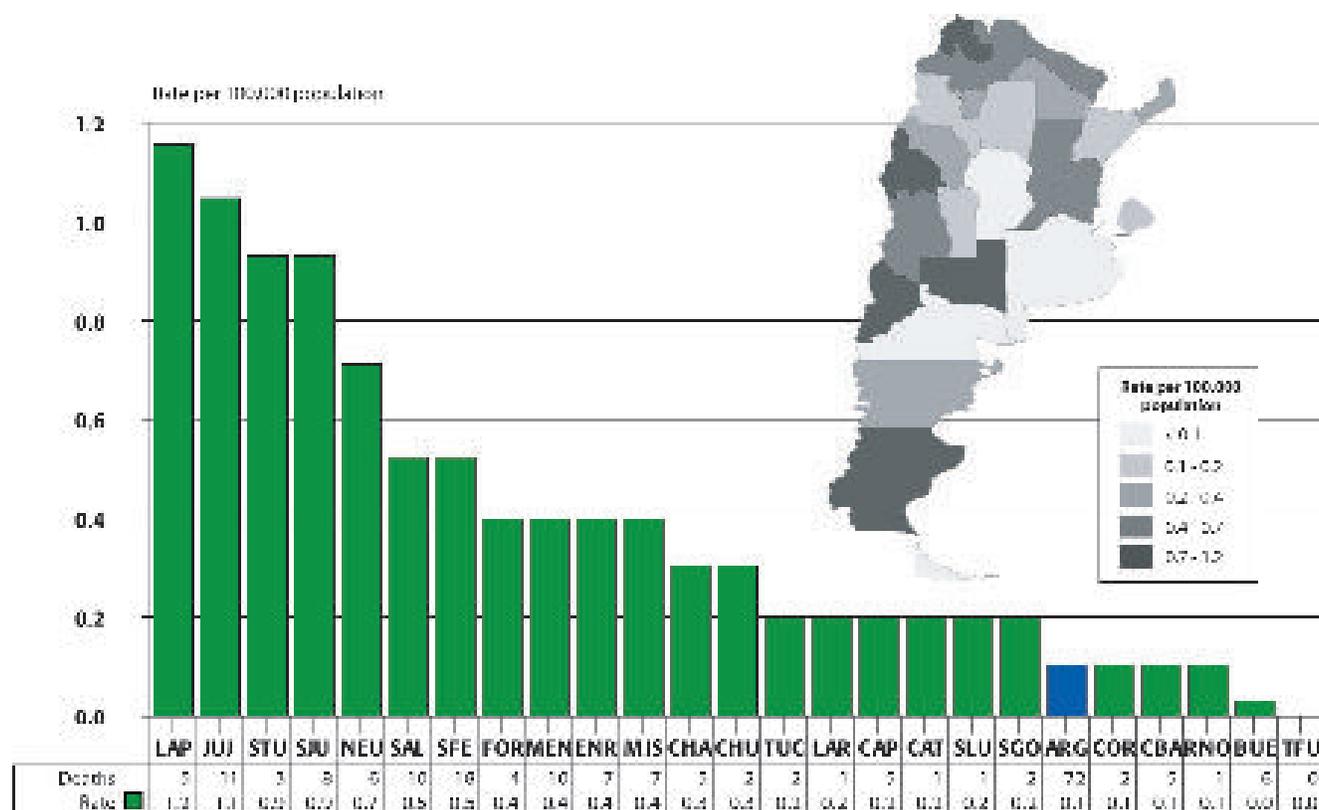
Argentina has a relatively high rate of mortality due to traffic collisions when compared to other countries such as Spain, Italy and Canada, but a lower rate than Brazil.

## Falls

WHO estimates that the environmental burden of disease, due to falls is 31% in developing countries (17–60%). It is 26% in developed countries. In Argentina there are 0.1 deaths due to falls among children and youth under

15 years per 100,000 population (average rate for the five year period 2001–2005). There is great variation in this rate across the country.

**DEATHS DUE TO FALLS (W000-W19Z) IN CHILDREN AND YOUTH UNDER 15 YEARS OF AGE BY JURISDICTION. RATE PER 100,000 POPULATION. ARGENTINA, 2001 TO 2005**



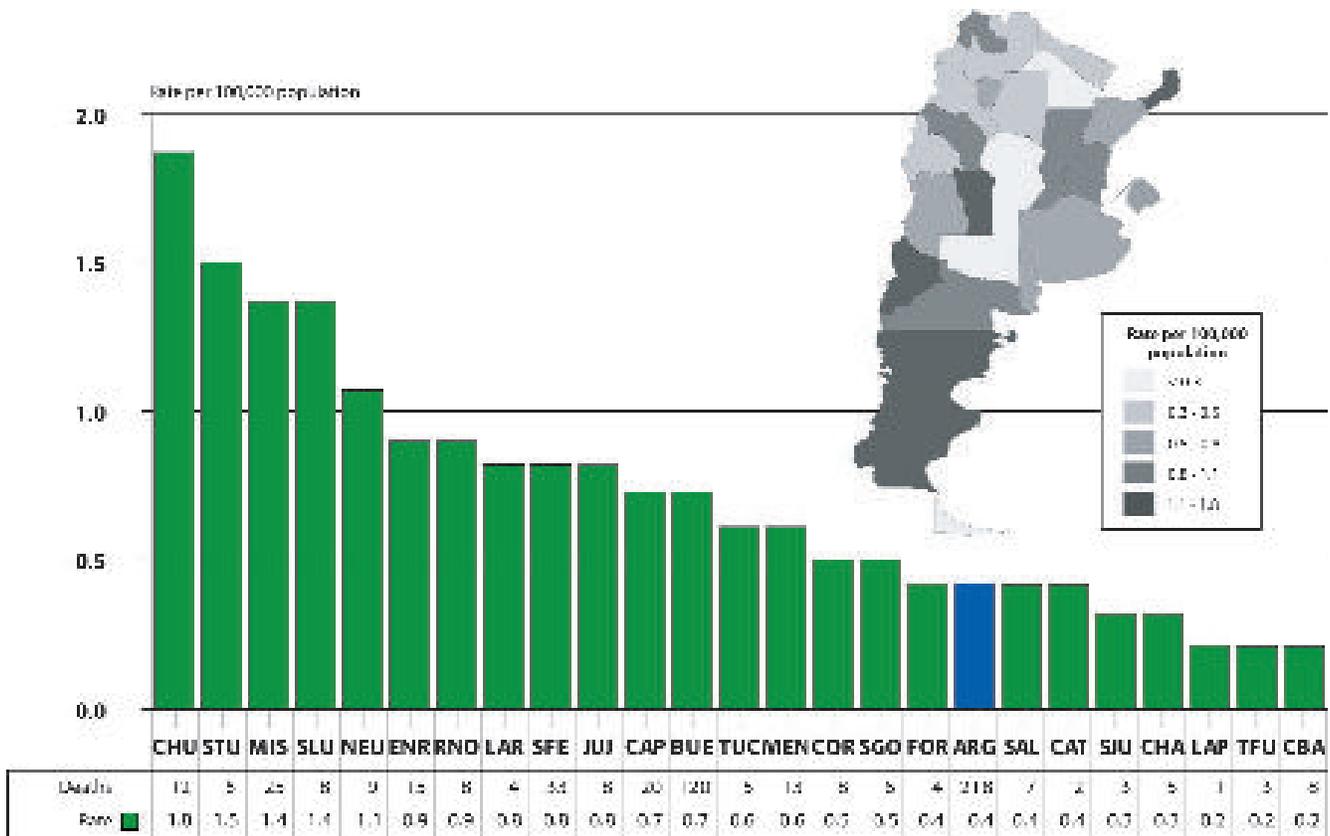
Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, April 2007.

## Burns

In Argentina burns cause seven times the number of deaths in children and youth under 15 years of age than do falls. Burns are responsible for 0.4 deaths per 100,000 children and youth in that age group (average for the five year period 2001–2005). Large variations are also observed across the country. For example, the province of Córdoba has half the national rate and the province of Chubut has a rate four

times the national average. The risk of burns is increased by the materials used in construction and housing – often poorly regulated. In developing countries, it is common to use kerosene stoves, heaters or candles to cook, heat and light the home, increasing risks of fire.

**DEATHS DUE TO BURNS (X000-X09Z) IN CHILDREN AND YOUTH UNDER 15 YEARS OF AGE BY JURISDICTION. RATE PER 100,000 POPULATION. ARGENTINA, 2001 TO 2005**



Source: National Bureau of Statistics and Health Information, Ministry of Health of Argentina. ANNALS 2000, 2002 and 2005. VITAL STATISTICS.

## Drowning

WHO estimates that 74% (48–92%) of drownings are attributable to environmental or occupational causes in developing countries. This is compared to 54% (30–76%) in developed countries.

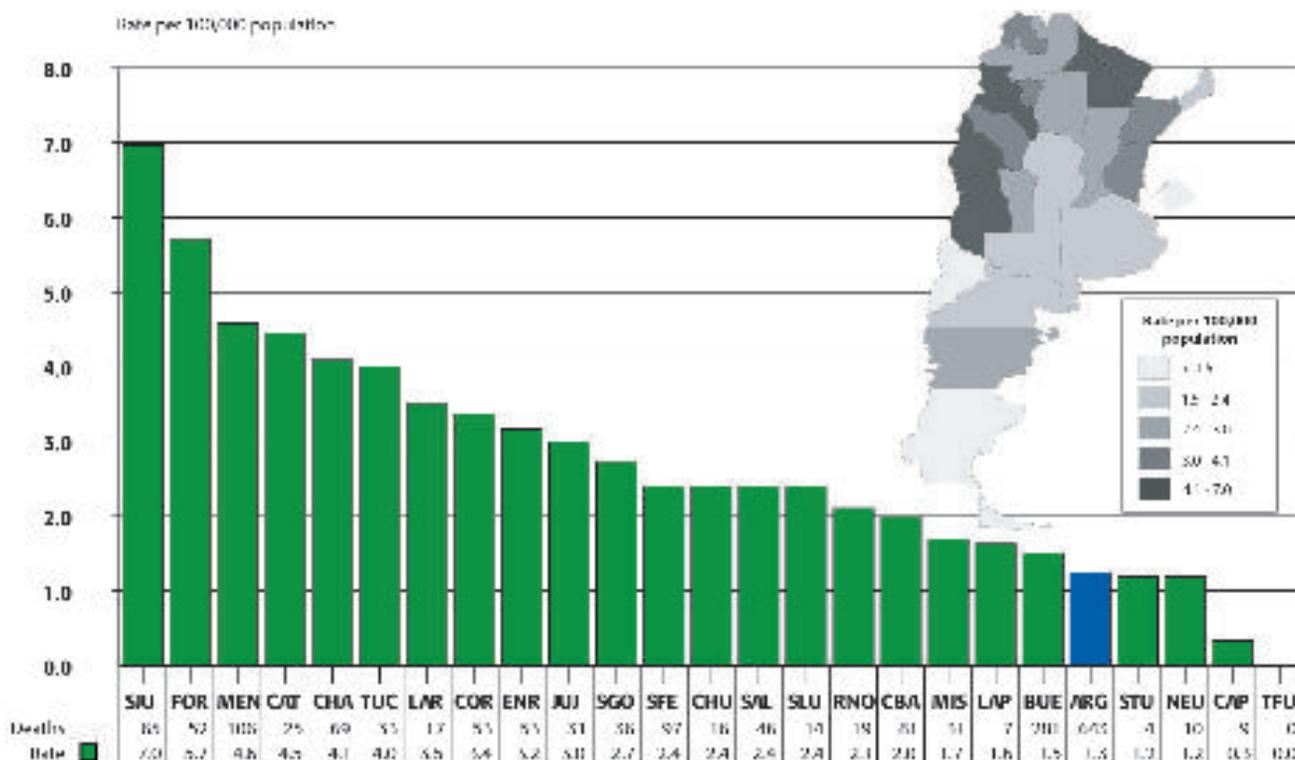
The mortality rate from drowning among children and youth under 15 years was 1.3 per 100,000 population (five year average 2001–2005) – three times greater than the death rate resulting from burns. Once again great variations are observed among provinces: in the Province of Tierra del Fuego no, including a province that did not register any deaths due to drowning among children and youth under 15 years during the last five years, and another where the

rate was more than five times greater than the national average.

Between 2001 and 2005, children and youth under 15 years of age accounted for 35% of drowning casualties in Argentina.

Drownings in children can be prevented by implementing simple intervention measures such as supervising children in recreation areas (rivers, beaches, lakes, pools) or when they are in bathtubs, plastic garden pools (even though they are small and contain little water). Improvements should be made to aquatic recreational environments and every opportunity taken to teach all children how to swim.

**DEATHS DUE TO DROWNING (W650-W74Z) IN CHILDREN AND YOUTH UNDER 15 YEARS OF AGE BY JURISDICTION. RATE PER 100,000 POPULATION. ARGENTINA, 2001 TO 2005**



Source: National Bureau of Statistics and Health Information, Ministry of Health of Argentina. ANNALS 2000, 2002 and 2005. VITAL STATISTICS.

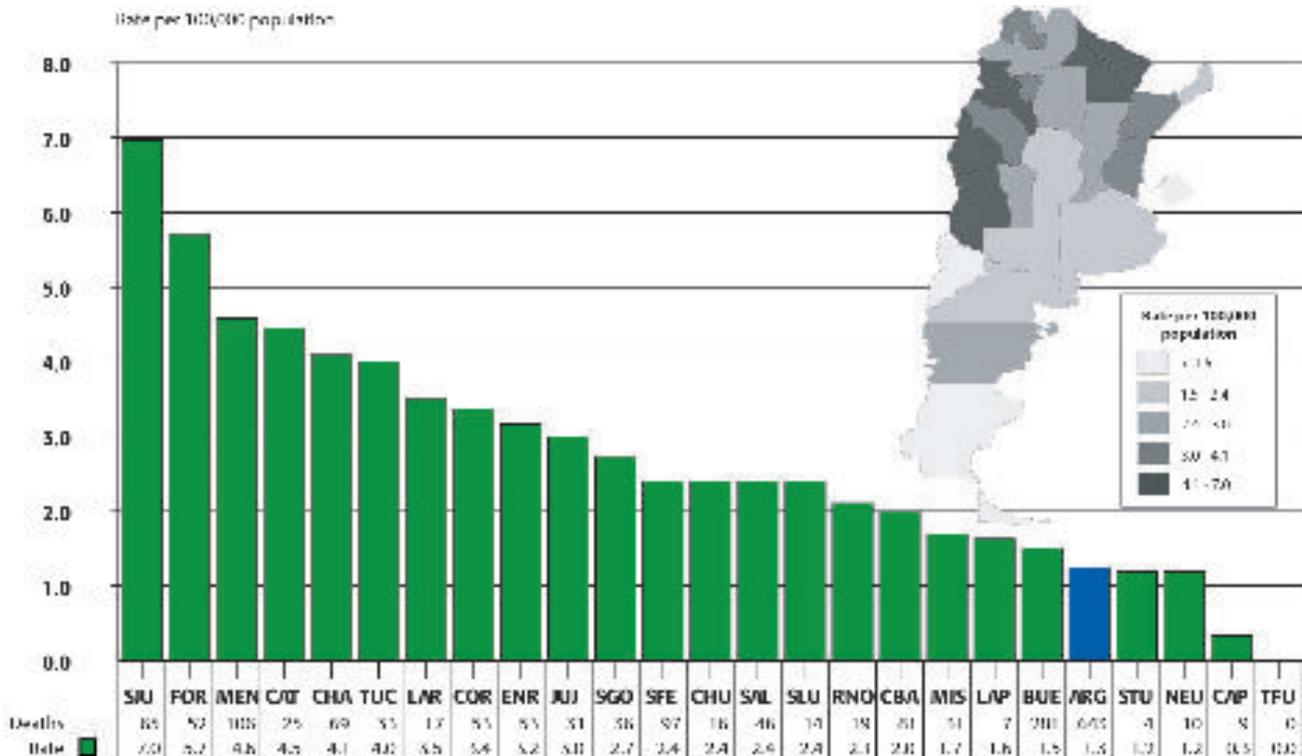
## Non-intentional acute poisonings

Non-intentional acute poisonings are those caused by ingestion of or contact with chemicals, medications and other poisonous substances.

WHO estimates that 85% (60–98%) of acute poisonings in children can be attributed to environmental or occupational causes (68% in adults and 71% combined). Children are particularly vulnerable to toxic environmental exposures due to their developmental attributes (from conception) and their special behaviours such as exploration and curiosity.

During the five year period from 2001 to 2005 175 deaths were reported due to poisoning in children and youth under 15 years in Argentina, representing a rate of 0.34 per 100,000 population. Again, there are wide variations across the country. During this five year period no deaths were reported for this age group due to poisoning in the province of Tierra del Fuego, while the mortality rate almost reached a figure seven times the national average in the province of Chaco.

**DEATHS DUE TO POISONING (X400-X49Z) IN CHILDREN AND YOUTH UNDER 15 YEARS OF AGE BY JURISDICTION. RATE BY 100,000 POPULATION. ARGENTINA, 2001 TO 2005**



Source: National Bureau of Statistics and Health Information, Ministry of Health of Argentina. ANNALS 2000, 2002 and 2005. VITAL STATISTICS.

## Acute poisonings due to pesticides

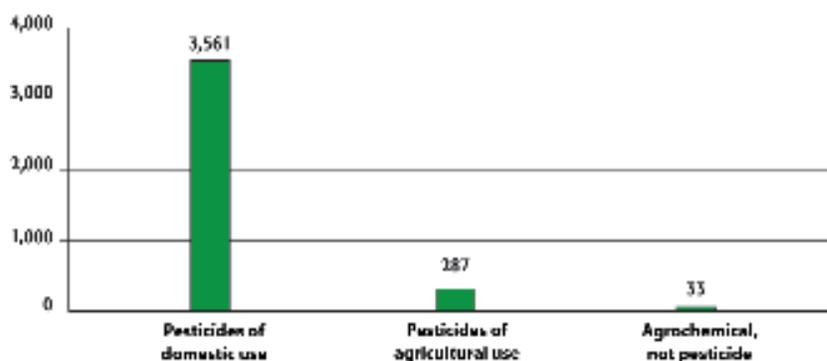
It is recognized that acute poisonings from exposure to pesticides are under-diagnosed, under-registered and under-reported in Argentina.

*Recent work carried out by the INQA Group of the Engineering Faculty of the National University of Jujuy in a tobacco producing town of the province of Jujuy estimated that 50% of all cases of poisonings due to pesticides do not result in medical consultation. Furthermore, the information obtained from these*

*investigations is not comparable and reproducible due to an absence of protocols and defined indicators. The researchers concluded that it is critical for information systems of protocols and indicators be established in order to measure the under-registry of morbidity and mortality cases due to pesticide poisonings.<sup>11</sup>*

The Centers of Information, Advice and Toxicological Assistance (CIAATs) gather information regarding what kinds of agents cause poisonings that are reported to them. In 2001, 91.7% of the reported exposures and poisonings from pesticides were caused by domestic use of pesticides.

**CAUSAL AGENT OF POISONINGS FROM EXPOSURE TO PESTICIDES BY TYPE OF PESTICIDE FOR ALL AGE GROUPS. ARGENTINA, 2001.**

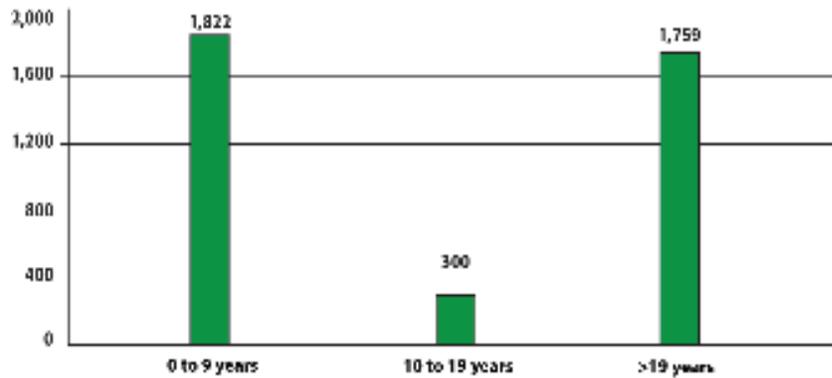


Source: CIAATs. Published in Department of Sanitation Programs, Ministry of Health of Argentina (2003). Regional workshop on poisonings due to pesticides and harmonized collection of information. Buenos Aires



In 2001, the CIAATs registered 3,881 cases of exposure and poisonings from pesticides – of which almost half, or 46.9% occurred in children between 0 and 9 years.<sup>9</sup>

**EXPOSURE AND POISONINGS DUE TO PESTICIDES BY AGE GROUP. ARGENTINA, 2001.**



Source: CIAATs. Published in Department of Sanitation Programs, Ministry of Health of Argentina (2003). Regional workshop on poisonings due to pesticides and harmonized collection of information. Buenos Aires.

## Other non-intentional injuries

WHO estimates that the burden of disease related to other non-intentional injuries attributable to the environment in developing countries is 45% (22–76%). These include:

- machinery injuries (agricultural and sports machinery/equipment);
- poisoning by contact or animal bites;
- exposure to electric currents or non-ionizing radiation;
- suffocation; and
- exposure to natural events (floods, storms, extreme heat or cold and earthquakes).



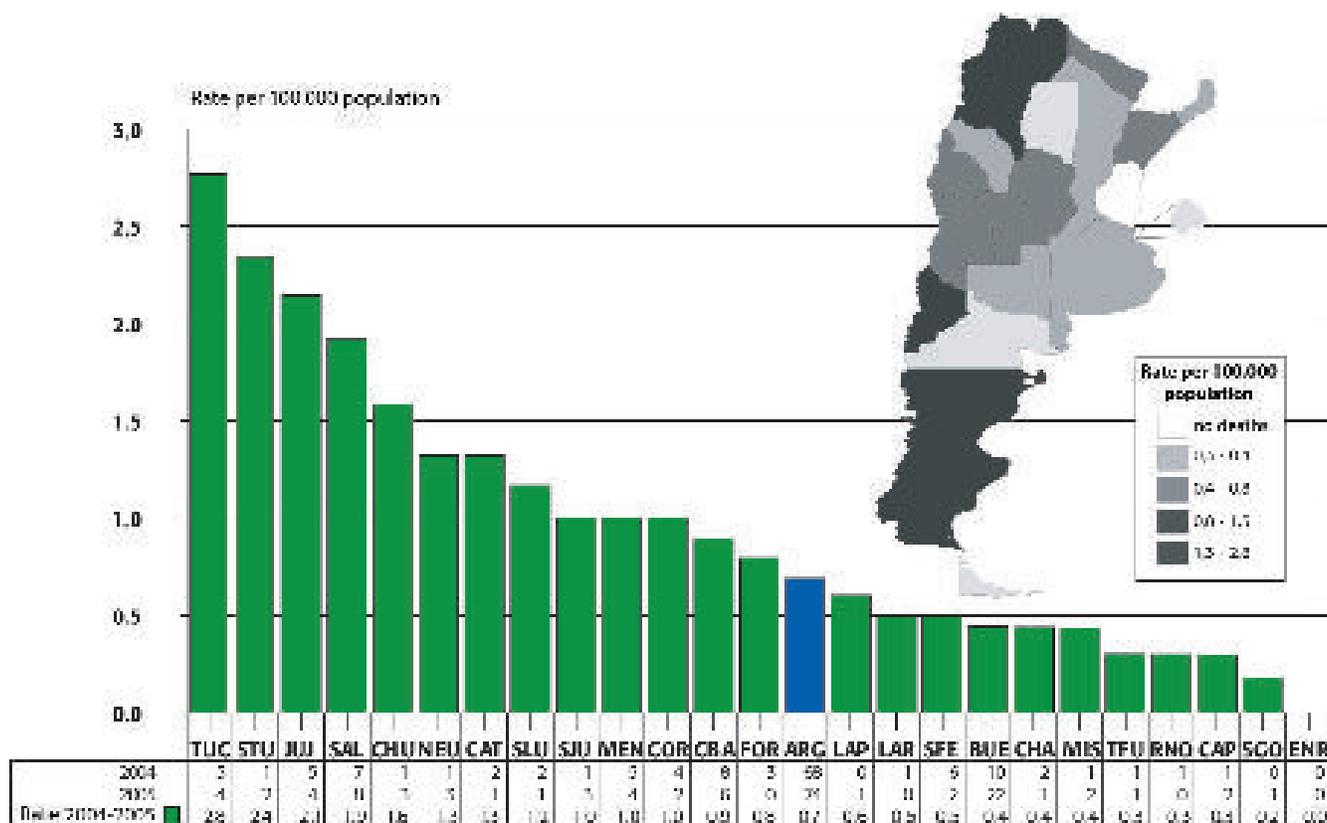
# Intentional injuries

## Suicide

According to WHO, 30% (22–37%) of all suicides globally are attributable to environmental factors, reaching 18% (15–20%) in Latin America. Environmental factors that give access to chemicals (e.g., pesticides), medications and weapons may facilitate suicides. Suicides can also be associated with poor occupational conditions and degraded built environments. There were more than 50 registered deaths due to self-inflicted injuries among children under 15 years

of age during 2004–2005 in Argentina, representing a rate of 0.7 deaths per 100,000 population. There were important differences among jurisdictions – the rate was three to four times greater than the national rate in the provinces of Jujuy, Santa Cruz and Tucumán, and no deaths were registered in the province of Entre Ríos. The City of Buenos Aires and the province of Santiago del Estero had a mortality rate less than half the national average.

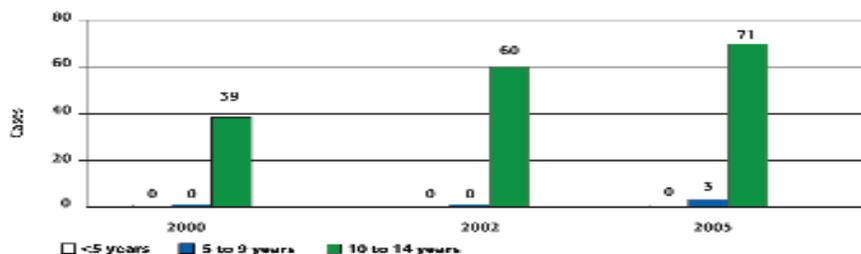
**DEATHS DUE TO SELF-INFLICTED INJURIES (X60-X84) IN CHILDREN UNDER 15 YEARS OF AGE BY JURISDICTION. RATE PER 100,000 POPULATION. ARGENTINA, 2004 TO 2005**



Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, April 2007.

Between 2000 and 2005 there has been an increase in suicides among 10–14 year olds in Argentina. It is important to note that in 2005, 3 cases of suicide among children 5 to 9 years of age were registered. The suicide trend in children and youth under 15 years of age is increasing.

**NUMBER OF SUICIDE DEATHS AMONG CHILDREN AND YOUTH UNDER 15 YEARS OF AGE. ARGENTINA, 2000 TO 2005**



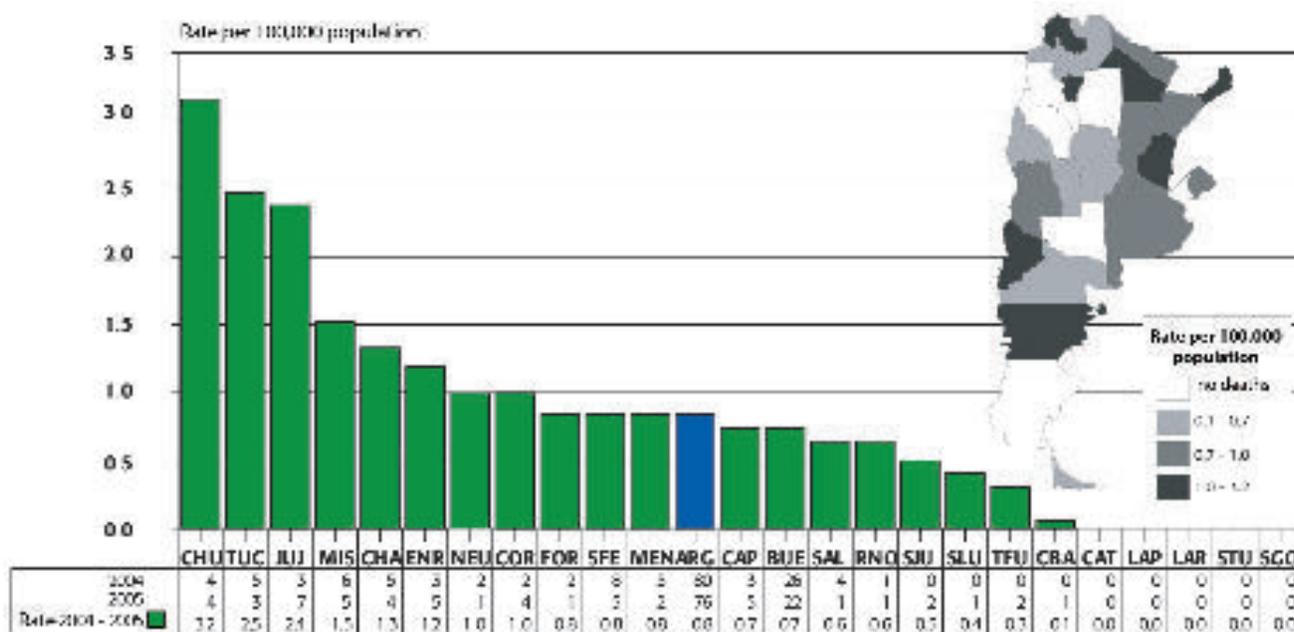
Source: Ministry of Health. Direction of Health Statistics and Information. Annals 2000, 2002 and 2005. Vital Statistics

### Violence and aggression

The number of deaths from violence among Argentinean children and youth under 15 years of age is similar in number and rate to that of suicide – slightly higher at 0.76 per 100,000 population in 2004–2005. There were great variations across the country – with five of the 24 jurisdictions

registering no deaths due to violence or aggression in the same time period and three jurisdictions reporting a rate between three or more than four times greater than the national average.

**DEATHS DUE TO VIOLENCE AND AGGRESSION (X85-X09) IN CHILDREN AND YOUTH UNDER 15 YEARS OF AGE BY JURISDICTION. RATE PER 100,000 POPULATION. ARGENTINA, 2004 TO 2005**



Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, May 2007.

Access to weapons can aggravate the outcomes of violent behaviour. In Argentina, 9.8% of youth and adults over 18 years of age have access to weapons in their surroundings.

Almost 6% (5.6%) have been victims of violence, 9% have witnessed armed-robbery, and 3.5% have been beaten.<sup>10</sup>

# Pregnancy loss and infant death

## Perinatal conditions

A series of environmental factors put mothers and babies at high risk of death and disease. WHO estimates that the environmental burden related to perinatal deaths, including low birth weight, prematurity, suffocation and neonatal trauma, is 11% (3–25%) for developing countries and 6% (2–10%) for developed countries. The exposure to environmental factors is higher in developing countries but is poorly documented. A higher incidence of low birth weight

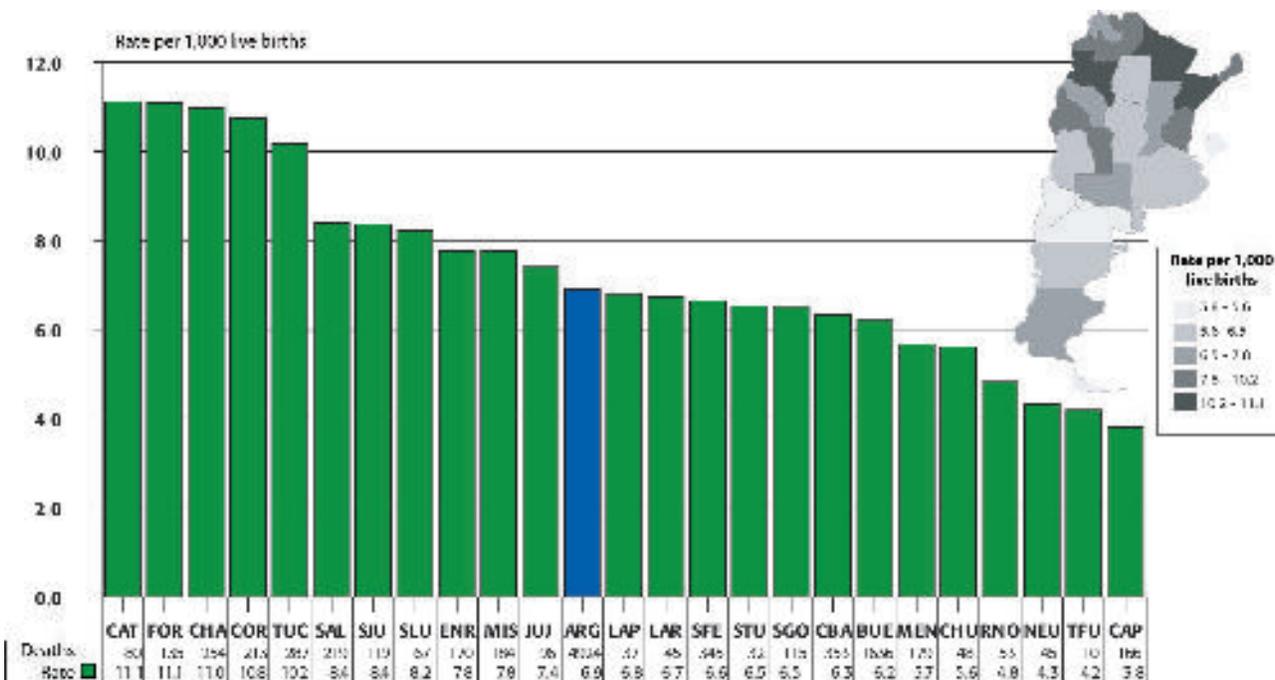
babies is observed in mothers exposed to chemicals and to polluted air or who smoke. In developing countries the exposure to environmental risks such as lack of drinking water and sanitary infrastructure; access to adequate and safe food; pesticide exposure and other chemical exposure puts the health of infants at risk for early death and increased mortality in those infants with low birth weight and prematurity.

## Perinatal deaths (28 weeks of pregnancy to 4 weeks of life)

In Argentina, more than half (55%) of babies who die before their first birthday do so during the perinatal period from 28 weeks of pregnancy to 4 weeks of life. In 2005 the national perinatal death rate was 6.91 per 1,000 live births,

with variances between the provinces. In the city of Buenos Aires the rate was almost half the national average and the provinces of Catamarca and Formosa saw rates almost double the national rate.

**PERINATAL DEATHS (P000-P99Z) BY JURISDICTION.  
RATE PER 1,000 LIVE BIRTHS. ARGENTINA, 2005**

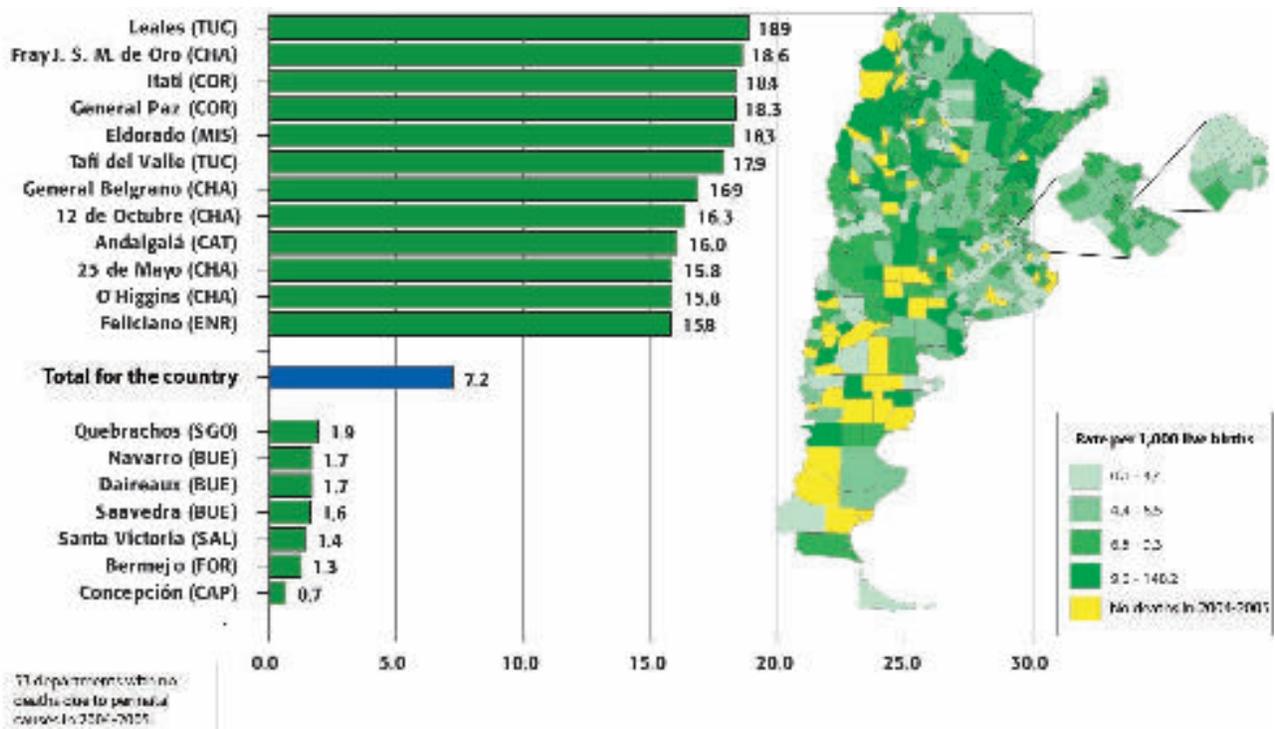


Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, April 2007.

Looking more closely within the provinces, at the department level, the differences are even larger. The perinatal death rate reaches more than double the national average in some departments and soars to 30 times greater in others.



**PERINATAL DEATHS (P000-P99Z) BY JURISDICTION.  
RATE PER 1,000 LIVE BIRTHS. ARGENTINA, BIENNIAL RATE 2004–2005**

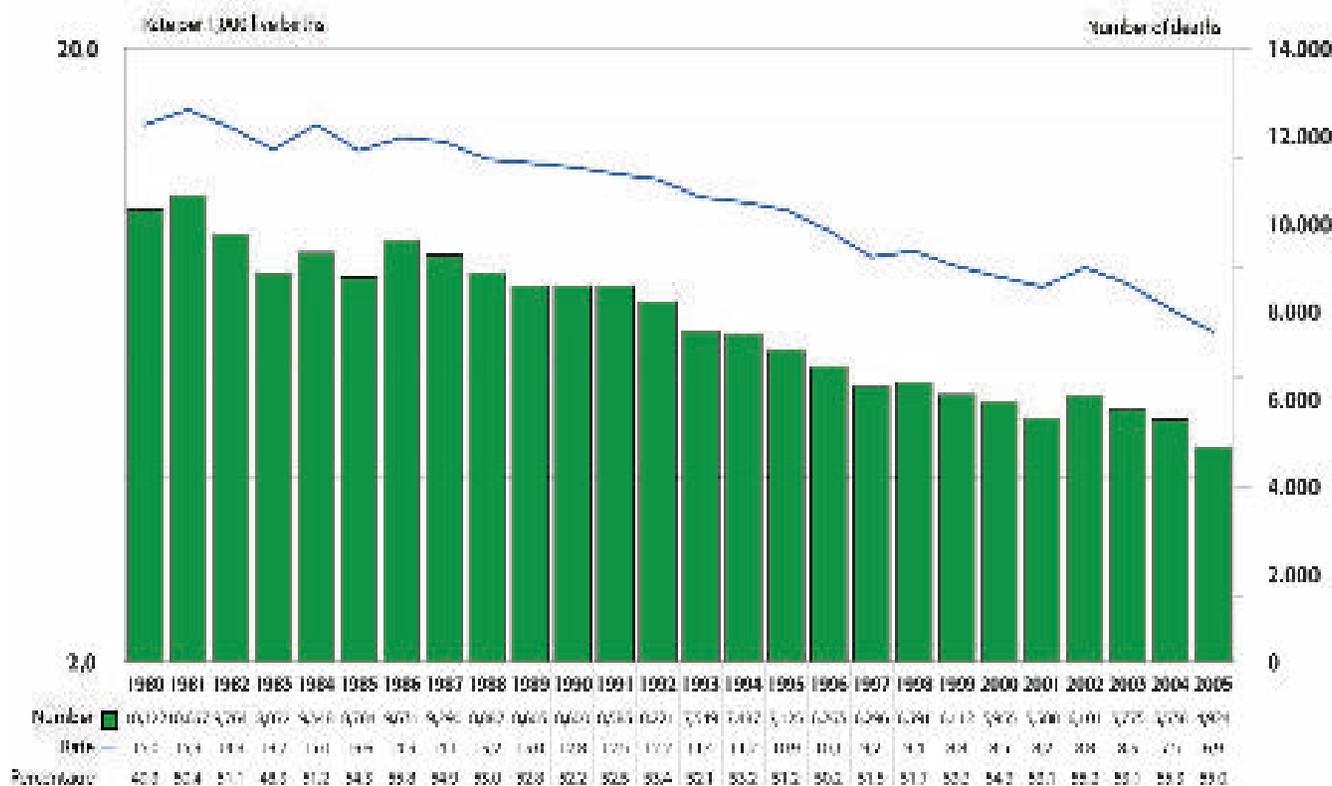


Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, April 2007.

In Argentina the perinatal death rate has steadily decreased over the last twenty-five years. In 2005 the rate was half that of 1980. Also, in the last ten years (1995–2005) the decrease in the perinatal death rate was 83% higher than the rate of decline in the ten previous years (1985–1995).



**PERINATAL DEATHS DUE TO SPECIFIC CAUSES DURING THIS PERIOD.  
NUMBER AND RATE PER 1,000 LIVE BIRTHS. ARGENTINA, 1980 TO 2005**



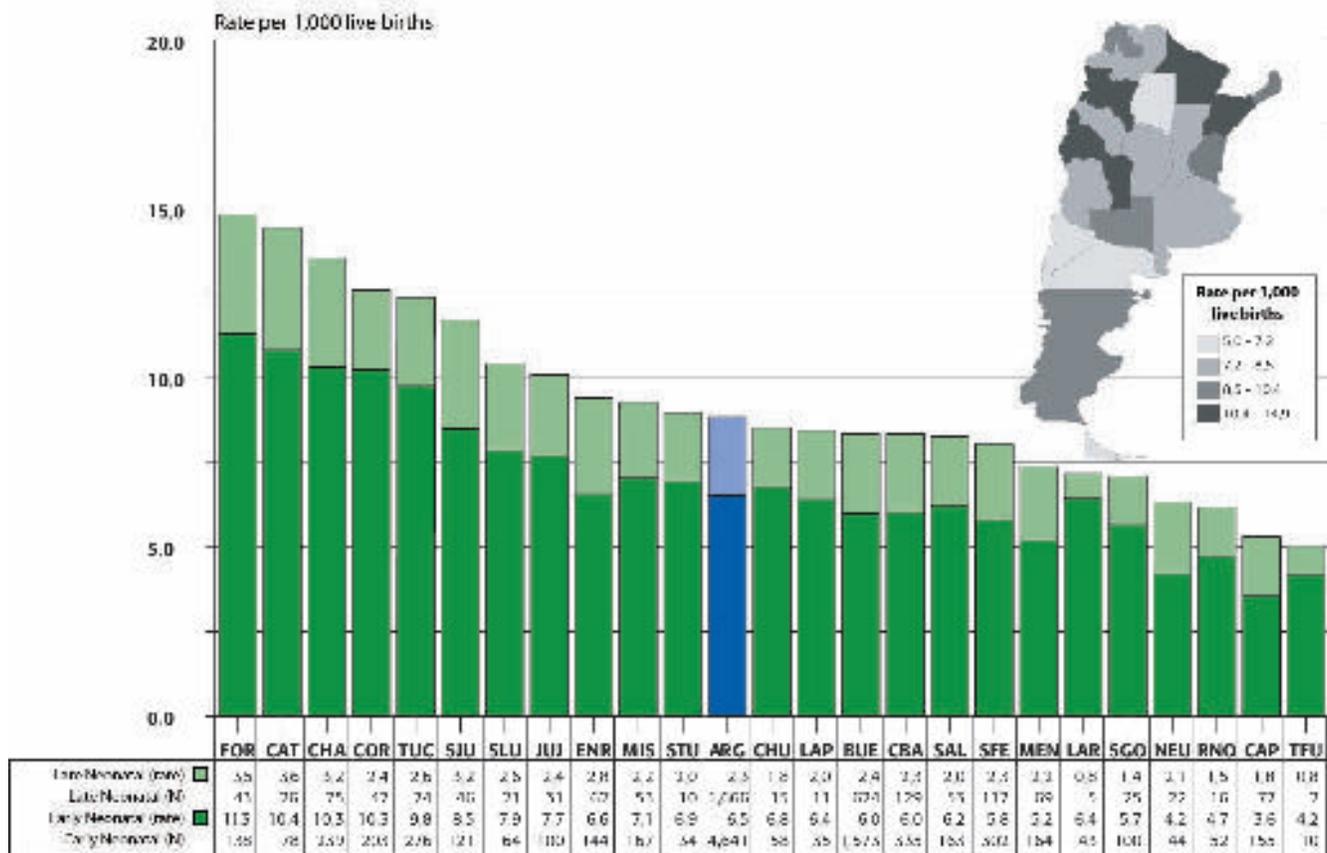
Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, April 2007.

## Neonatal deaths (during the first month of life)

In Argentina two thirds of infant deaths under one year occur during the first month of life. Almost half of infant deaths before the first year of age (48.8%) happen in the first week of life. In 2005, the neonatal death rate (deaths

during the first month of life) in Argentina was 8.9 per 1,000 live births. It varied between 5.0 per 1,000 in the province of Tierra del Fuego and almost 15 per 1,000 in the province of Formosa.

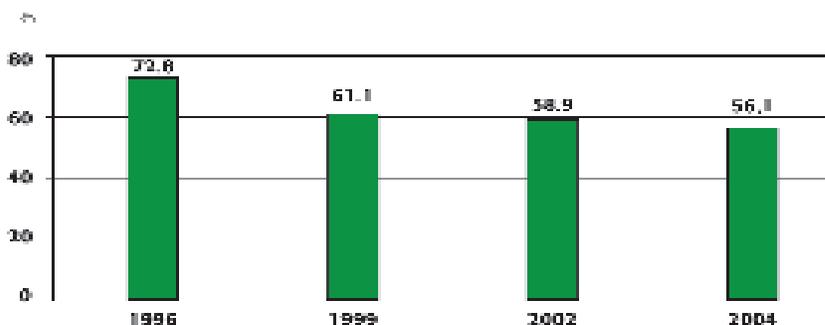
**NEONATAL DEATHS BY JURISDICTION.  
RATE PER 1,000 LIVE BIRTHS. ARGENTINA, 2005**



Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, April 2007.

More than half of all neonatal deaths are from causes that could be avoided by prevention, early diagnosis and treatment. In Argentina, the proportion of neonatal deaths that could have been prevented has decreased during the last few years.

PERCENTAGE OF PREVENTABLE NEONATAL DEATHS.  
ARGENTINA, 1996 TO 2004



Source: National Bureau of Statistics and Health Information, Ministry of Health of Argentina. Annals 1996, 2000, 2002 and 2005. Vital Statistics.

### Postneonatal mortality (from 4 weeks up to the first year of life)

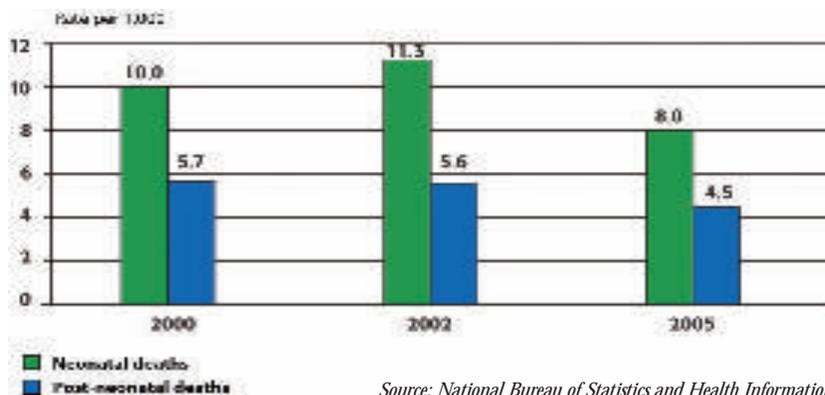
*Postneonatal mortality (28 to 365 days of life) increases proportionally as child mortality increases, just as it is observed in advanced countries or in populations with good socioeconomic cultural conditions.*

*Environmental factors cause most postneonatal deaths. Environmental factors are increasingly more likely to cause death further away from the moment of birth. Causes include infections, diarrhea, dehydration, acute respiratory disorders and others.*

*It should be noted that many high risk neonates (pre-term, under weight and others) even after surviving the neonatal period, face unfavorable environmental conditions and die before their first birthday. In turn, while it is not very common for low risk babies (full term, with appropriate weight, without malformations) to die during the first month of life, their risk of death increases during the postneonatal period if the environmental conditions are unfavorable.<sup>12</sup>*

In Argentina, postneonatal death represents approximately a third of child mortality.\* The postneonatal death rate declined by approximately one third between 2000 and 2005.

NEONATAL AND POSTNEONATAL DEATHS.  
RATE PER 1,000 LIVE BIRTHS. ARGENTINA, 2000 TO 2005



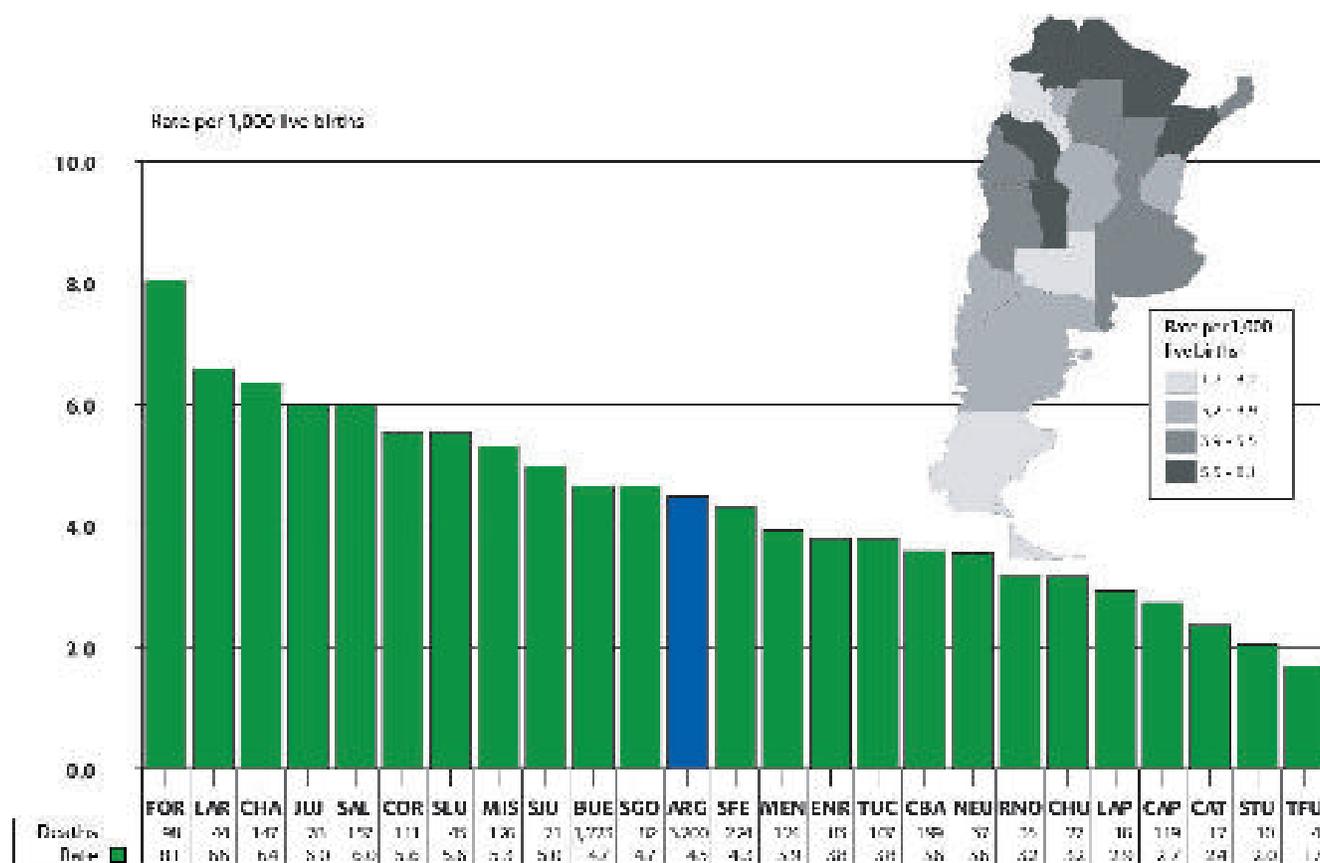
Source: National Bureau of Statistics and Health Information, Ministry of Health of Argentina. Annals 1996, 2000, 2002 and 2005. Vital Statistics.

\* Postnatal period is from 28 to 365 days of life.

In 2005, 3,200 children died between their first month of life and first birthday – a rate of 4.5 per 1,000 live births. The postneonatal mortality rate varied among jurisdictions.

In Tierra del Fuego it was one-third the national rate, while it was almost double the national average in the province of Formosa.

**POSTNEONATAL DEATHS BY JURISDICTION.  
RATE PER 1,000 LIVE BIRTHS. ARGENTINA, 2005**



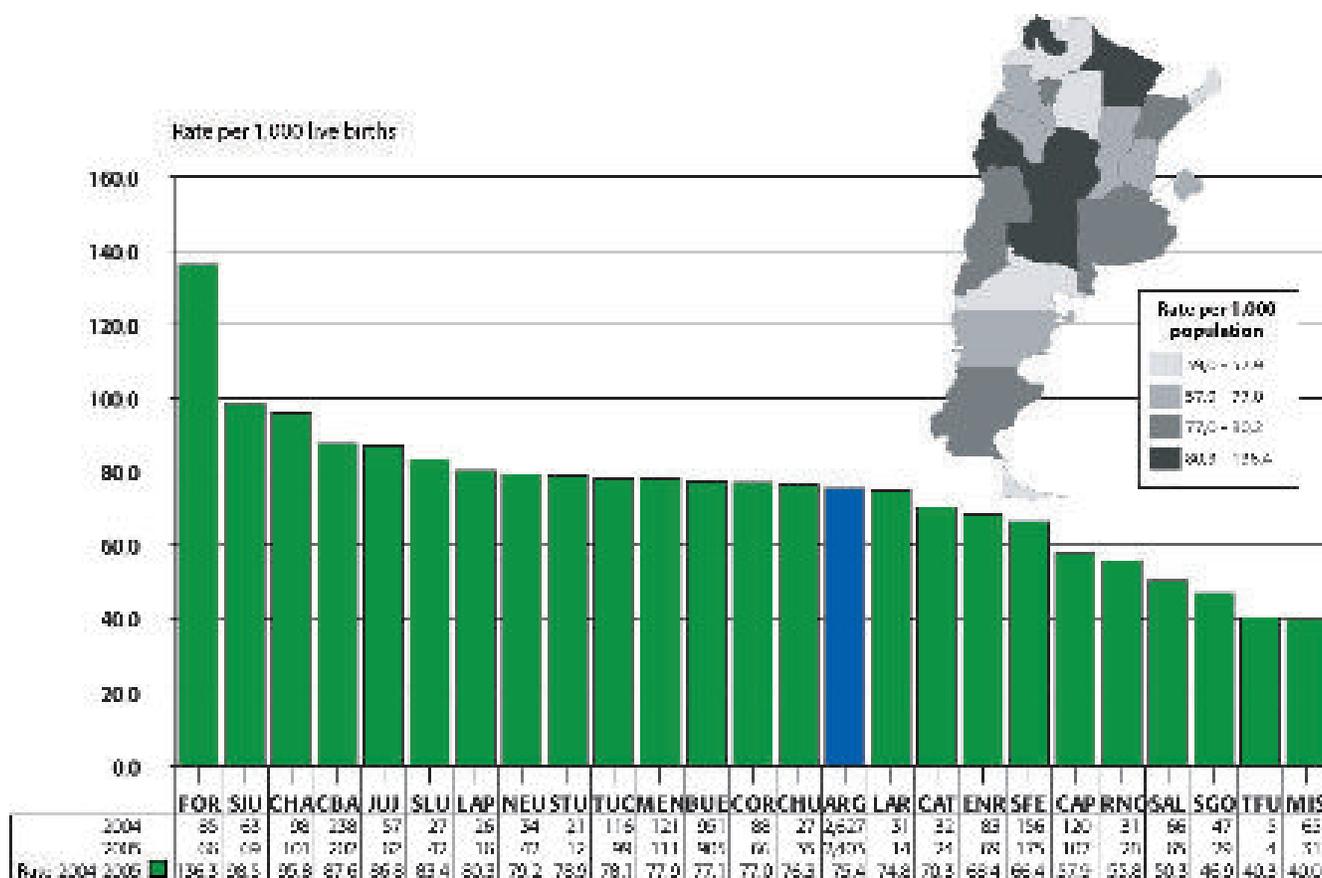
Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, April 2007.

## Congenital malformations (birth defects)

WHO estimates that environmental factors contribute to 5% (2–10%) of congenital malformations (birth defects). Abdominal wall malformations, rectal and esophageal atresia, nasal-lip palate fissures, heart abnormalities, spina bífida and Down syndrome can all be caused by occupational or environmental maternal exposure to chemicals, radiation or air pollutants.<sup>1</sup> Congenital malformations are the second cause of infant death (in the first year of life) in Argentina.

Among children under five years of age, congenital malformations caused more than 2,000 deaths per year in the last two years, reaching an average rate of 75.4 per 100,000 population. This figure varied among jurisdictions with the lowest rate in the province of Misiones and the highest in the province of Formosa, a province that had a death rate almost three times greater.

**DEATHS DUE TO CONGENITAL MALFORMATIONS, MALFORMATIONS AND CHROMOSOMAL MALFORMATIONS (Q00-Q99) IN CHILDREN UNDER 5 YEARS OF AGE BY JURISDICTION. RATE PER 100,000 POPULATION. ARGENTINA, 2004 TO 2005.**

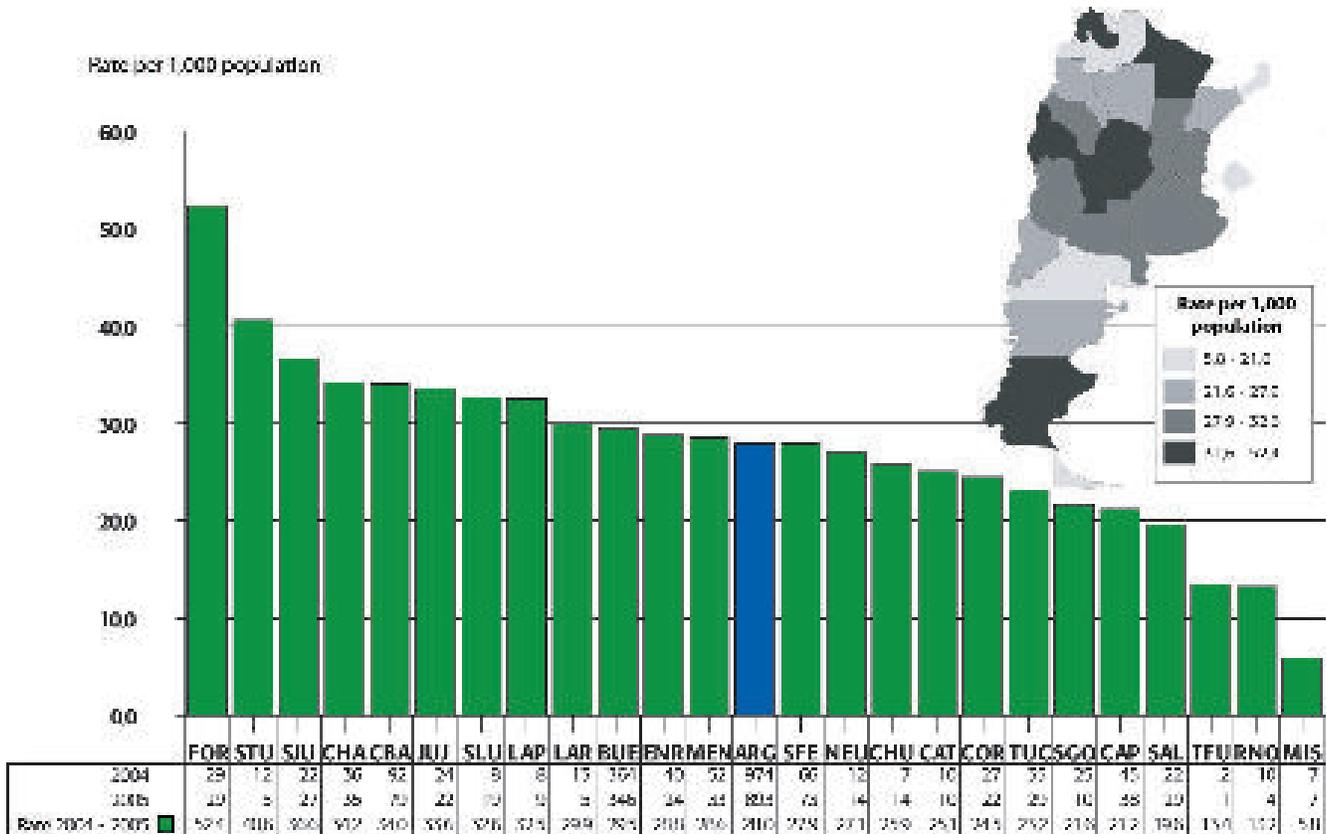


Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, May 2007.

Congenital malformations of the circulatory system accounted for almost half of the all deaths due to congenital malformations, with an average rate of 28 per 100,000 children under five years of age in 2004–2005. The death rates

due to congenital malformations of the circulatory system vary among jurisdictions. The rate in Misiones is approximately one quarter the national rate, while Formosa has a rate almost double the national average.

**DEATHS DUE TO CONGENITAL MALFORMATIONS OF THE CIRCULATORY SYSTEM (Q20-Q28) IN CHILDREN UNDER 5 YEARS OF AGE BY JURISDICTION. RATE PER 100,000 POPULATION. ARGENTINA 2004 TO 2005**



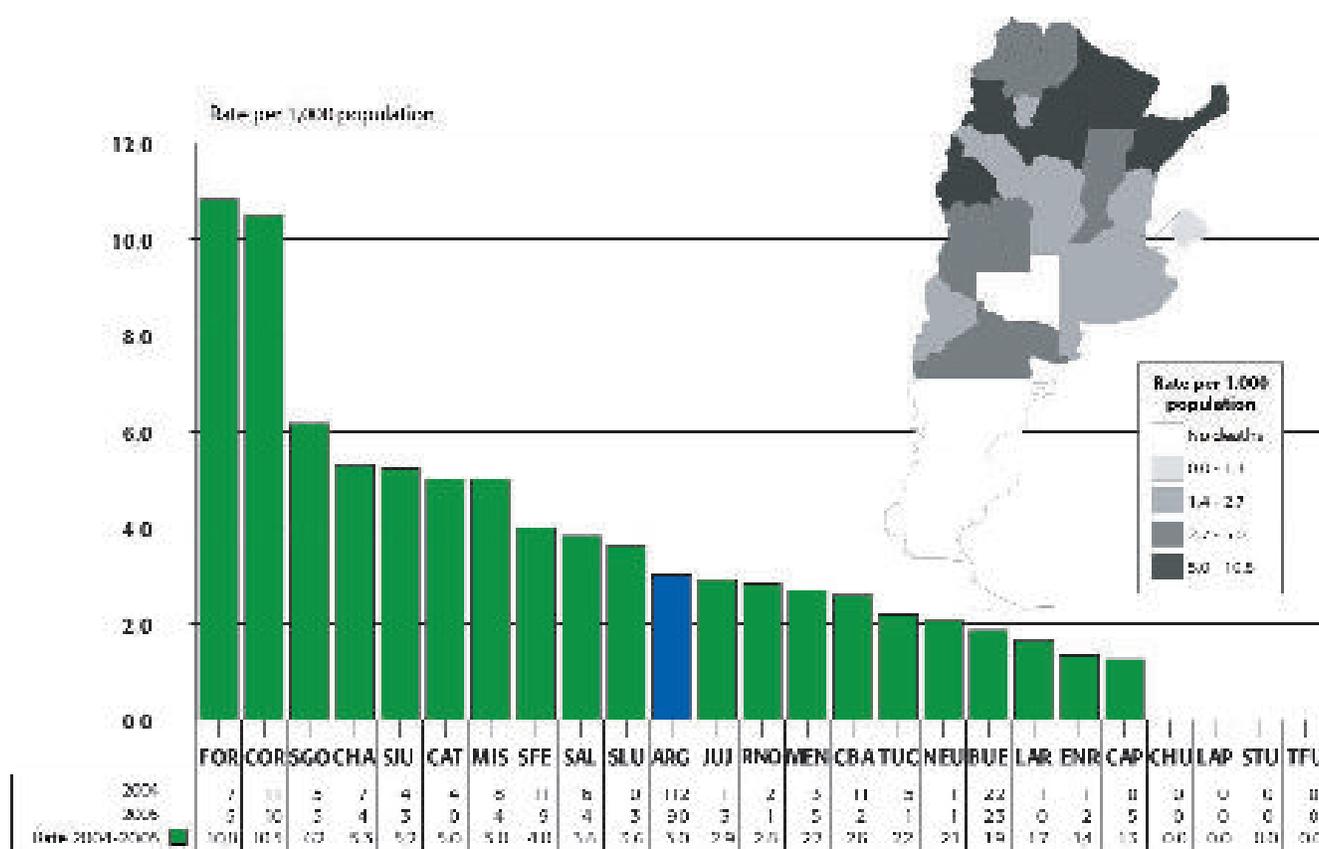
Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, May 2007.

Chapter 2 | *Children's health and the environment*

Congenital hydrocephalus causes fewer deaths in children under five years of age (less than 100 in 2005) than do

cardiovascular malformations. The rate of death due to hydrocephalus was 3 per 100,000 in 2004–2005.

**DEATHS DUE TO CONGENITAL HYDROCEPHALUS (Q03) IN CHILDREN UNDER 5 YEARS OF AGE BY JURISDICTION. ARGENTINA, 2004 TO 2005**

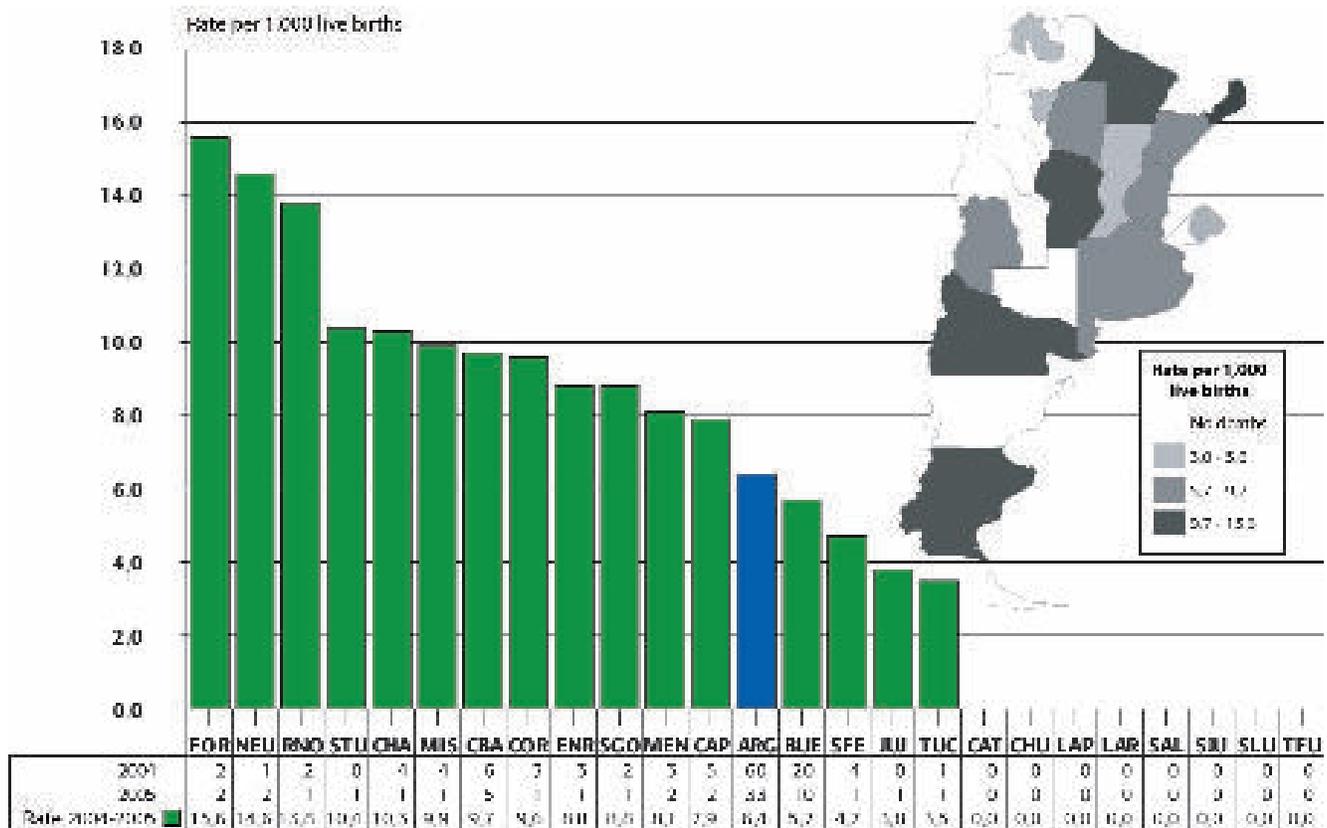


Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, May 2007.

The mortality rate due to spina bifida alone is much lower. For children and youth under 15 years of age 60 deaths in 2004 and 33 in 2005 were reported, with eight of the

twenty-four jurisdictions not registering any deaths due to spina bifida in the same time period.

**MORTALITY RATES DUE TO SPINA BIFIDA (Q05) IN CHILDREN AND YOUTH UNDER 15 YEARS OF AGE BY JURISDICTION. ARGENTINA, 2004-2005.**



Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, May 2007.

# Cancer

Globally, WHO estimates that 19% (12–29%) of all cancers are attributable to environmental exposures resulting in 1,300,000 deaths annually. In developing countries it is considered that 18% (10–45%) of cancers in men (excluding lung cancer) and 16% (10–35%) of cancers in women are attributable to environmental causes.<sup>1</sup>

Some early environmental exposures, such as ionizing or ultraviolet radiation, environmental tobacco smoke, pesticides, solvents, radon, arsenic and asbestos can contribute to the development of childhood cancer or to its appearance later in life.

The uncertainty regarding the relationship between specific environmental or occupational factors and cancer is due to the fact that information is still incomplete. Therefore, it remains impossible to completely separate environmental causes from other sources. Occupational factors have been well documented.

WHO estimates that in developing countries environmental factors contribute 33% (3–65%) of the global lung cancer burden in men and 25% (6–37%) in women. Lung cancer represents 15% of the global cancer burden. Smoking tobacco is the main risk factor (66%), while 9% is occupational, 5% air pollution and 1% contamination of indoor air due to the burning of solid fuel. Other causes include exposure to environmental tobacco smoke, radon and occupational exposure to ionizing radiation, asbestos and chemicals (for example chromium, nickel and cadmium).<sup>13,1</sup>

The second most important burden in terms of disease is stomach cancer, especially in developing countries where infection by *Helicobacter pylori* is common. Transmission can be facilitated by poor sanitary infrastructure and overcrowding.

Other cancers such as *leukemia* have been associated with exposure to chemical agents, with 2% being associated with occupational exposures to chemicals with well established carcinogenic properties such as benzene and ethylene oxide.

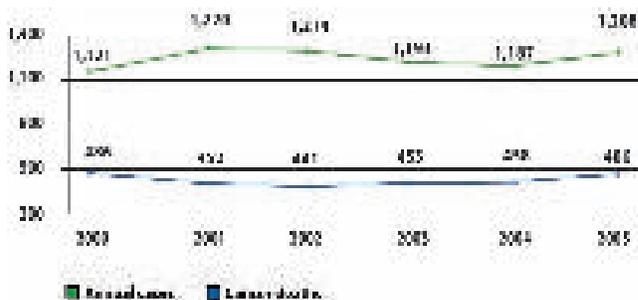
There is clear evidence on the relationship of melanoma and excessive exposure to ultraviolet radiation due to the thinning of the ozone layer, and risk behaviors such as excessive sun exposure from early age without appropriate protection.

Liver cancer is also related to aflatoxin contamination in food (toxins produced by fungi growing on peanuts, nuts, wheat, corn, oilseeds and vegetables; it can also be found in contaminated beer).

The Argentinean Oncopediatric Hospital Registry (ROHA) – Kaleidos Foundation has registered children under 15 years of age with a new cancer diagnosis since 2000. The data is supplied by public and private institutions that treat children with cancer, regional cancer registries, mortality data supplied by the Ministry of Health, Health Statistics and Information Directorate, collaborative work groups and private practice professionals who work with children with cancer. All malignant and benign brain tumours are reported. The current coverage by ROHA is considered to be 88% (actual cases versus expected cases in Argentina).

According to the Ministry of Health, Health Statistics and Information Directorate, between 2000 and 2005, more than 7,000 children under 15 were reported to have cancer.

**REGISTERED ANNUAL CASES OF CANCER AND DEATHS DUE TO CANCER IN CHILDREN AND YOUTH UNDER 15 YEARS OF AGE. ARGENTINA, 2000 TO 2005**

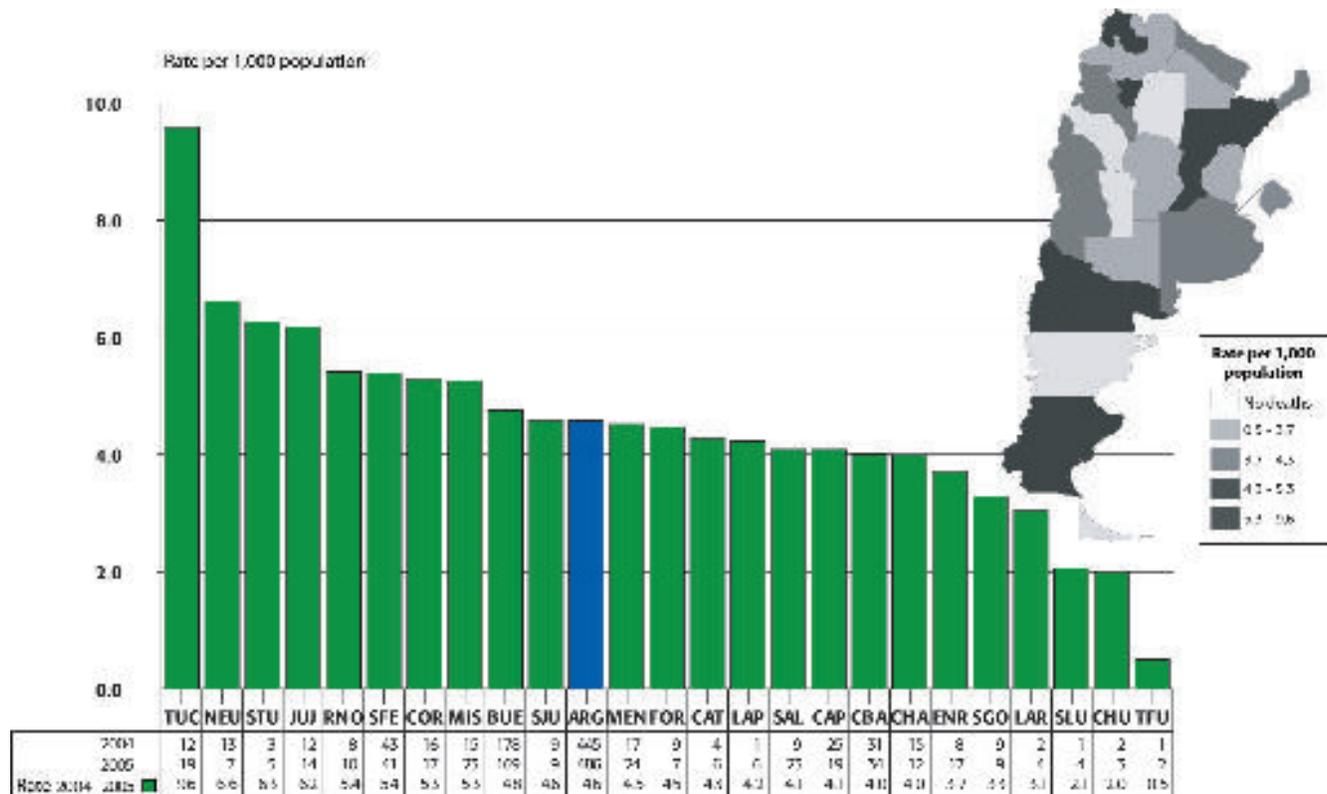


Source: ROHA/ Kaleidos Foundation. National Bureau of Statistics and Health Information, Ministry of Health of Argentina, 2006.

Cancer claimed the lives of more than 400 Argentinean children and youth under 15 years, in both 2004 and 2005 according to the national cancer registry. The rate of cancer deaths among children under 15 is 4.6 deaths per 100,000. Among children and youth 5 to 15 years of age, cancer is the second leading cause of death, only preceded by injuries.<sup>14</sup>

There are wide variations among jurisdictions. The rate in Tierra del Fuego is about one-eighth the national rate and the Province of Chubut is one half of the national rate. However, a number of provinces have much higher rates – for example, the Province of Tucumán has a rate more than twice the national average.

**DEATHS DUE TO CANCER (C00-D48) IN CHILDREN AND YOUTH UNDER 15 YEARS OF AGE BY JURISDICTION. RATE PER 100,000 POPULATION. ARGENTINA, 2004 TO 2005**



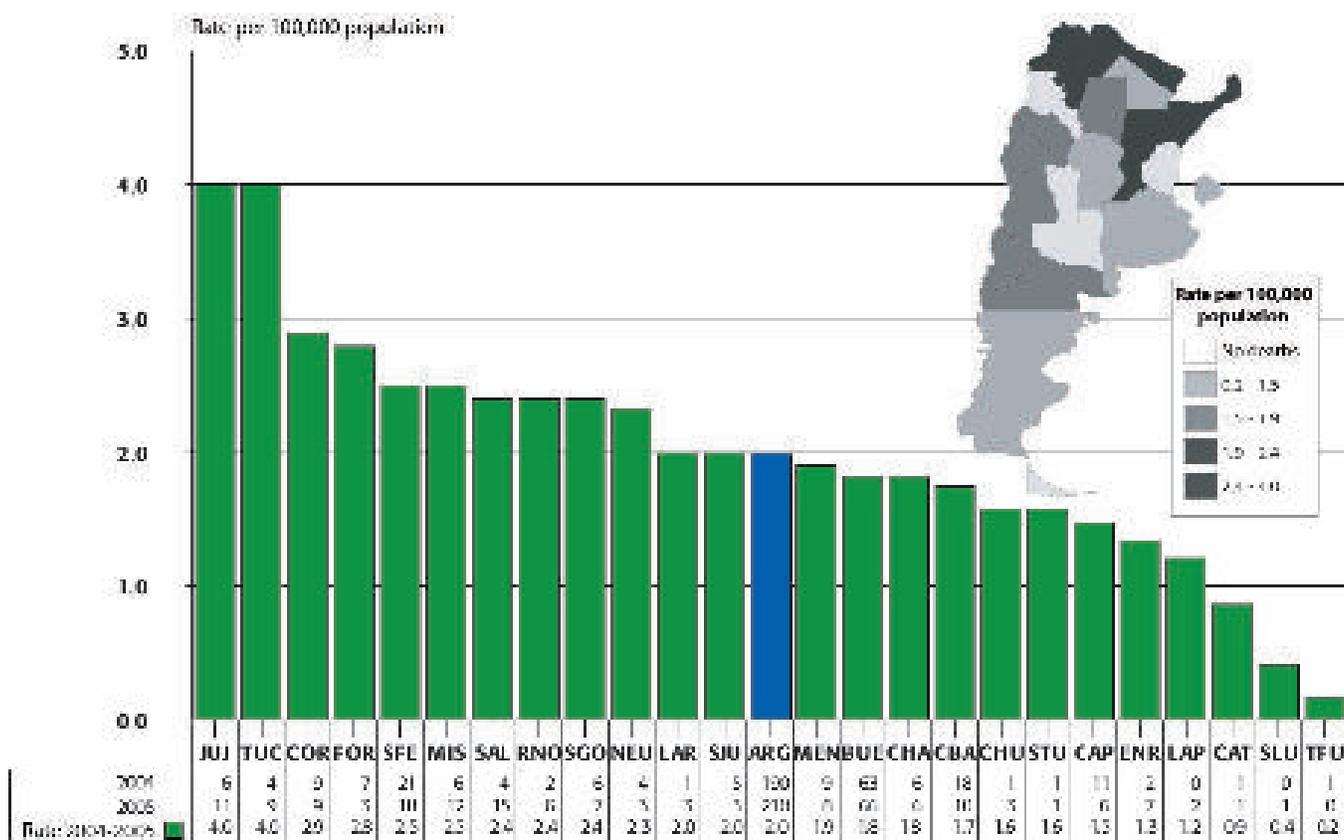
Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, May 2007.

## Chapter 2 | Children's health and the environment

Approximately half of the cancer deaths in children and youth under 15 years of age are due to malignant tumors of the lymphatic tissue, hematopoietic organs and adjacent tissue. The registered mortality rate was of 2.0 deaths per 100,000 children under 15 years of age. The magnitude of

the mortality rate varied among jurisdictions – being about one-tenth the national rate in the province of Tierra del Fuego and double the national average in the province of Jujuy.

**DEATHS DUE TO CANCERS OF THE LYMPHATIC TISSUE, HEMATOPOIETIC ORGANS AND ADJACENT TISSUE (C81-C96) IN CHILDREN AND YOUTH UNDER 15 YEARS OF AGE BY JURISDICTION. RATE PER 100,000 POPULATION. ARGENTINA, 2004 TO 2005**

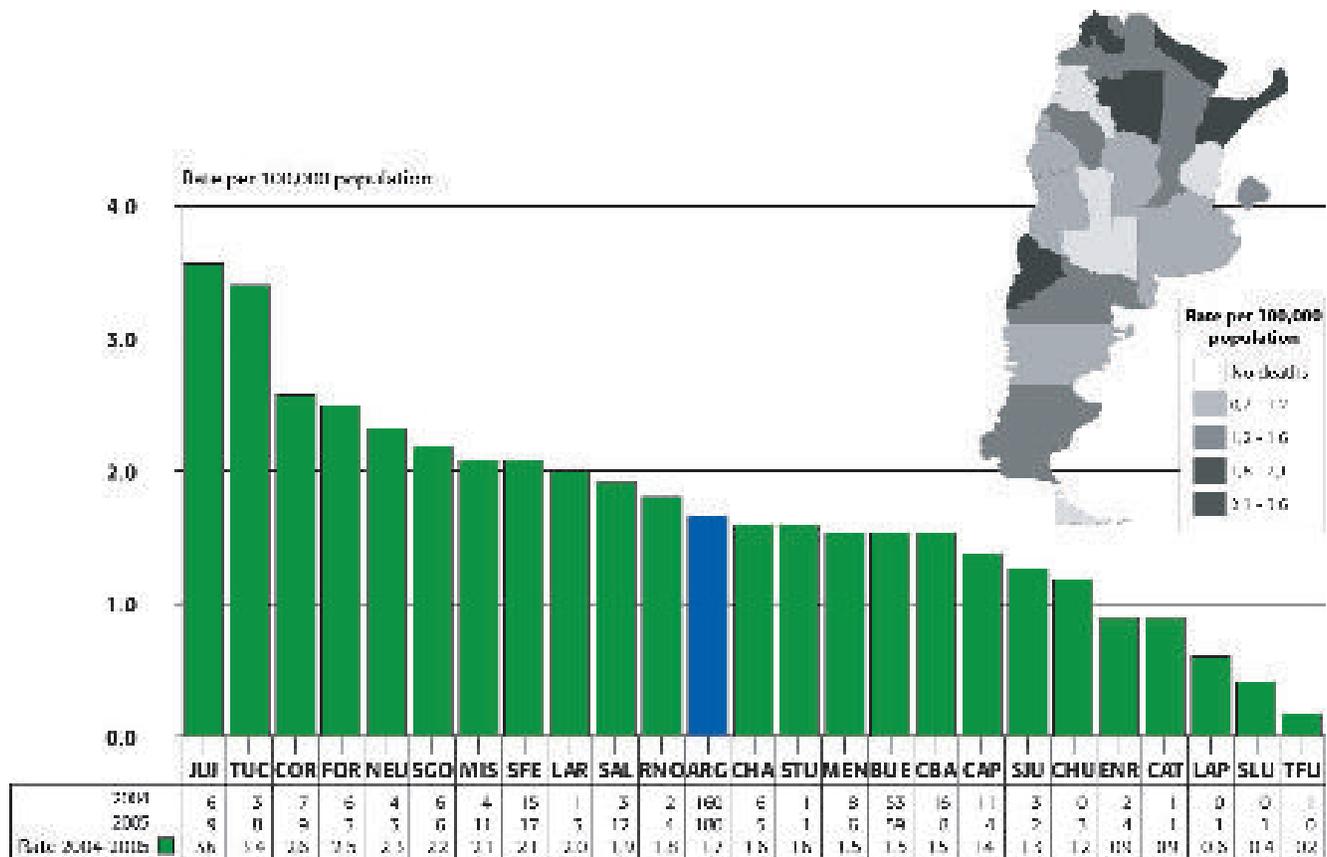


Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, May 2007.

Among these cancers, the majority of children die from leukemia. Leukemia was responsible for more than 150 deaths/year in children and youth under 15 years of age

in the country during 2004–2005. The death rate for leukemia in this age group was 1.7 per 100,000, once again varying considerably by jurisdiction.

**DEATHS DUE TO LEUKEMIA (C91-C95) IN CHILDREN AND YOUTH UNDER 15 YEARS OF AGE BY JURISDICTION. RATE PER 100,000 POPULATION. ARGENTINA, 2004 TO 2005**

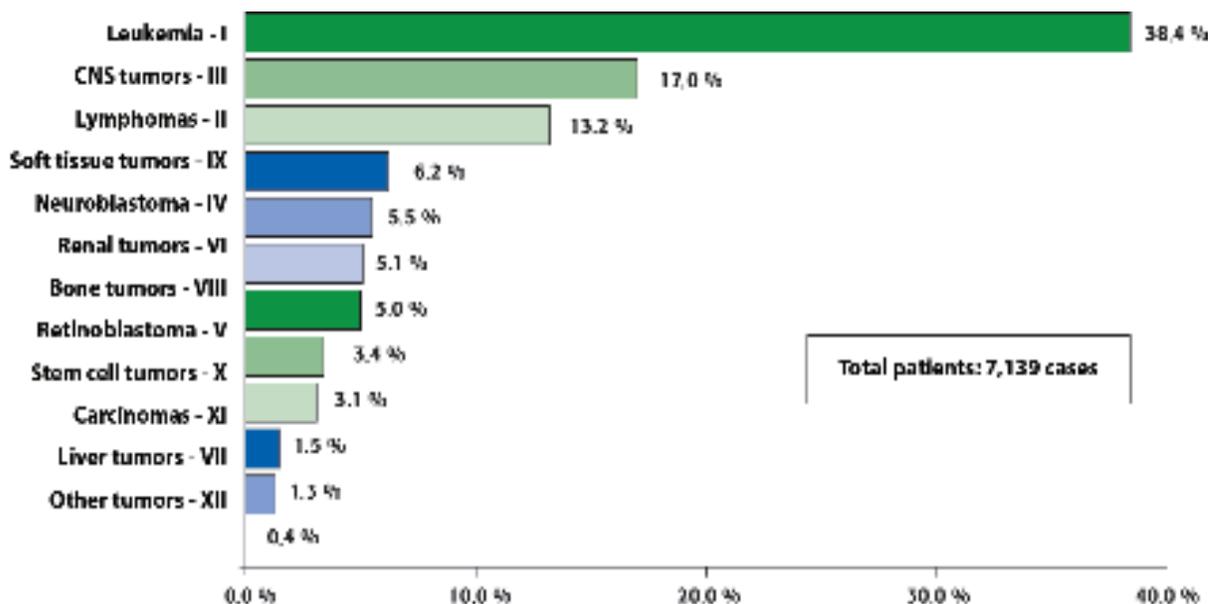


Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, May 2007.

The Argentinean Oncopediatric Hospital Registry (ROHA) (Kaleidos Foundation), reports that leukemia is the most common cancer among children under 15, followed by

tumors of the central nervous system and lymphoma. This distribution of cancer cases is similar internationally.

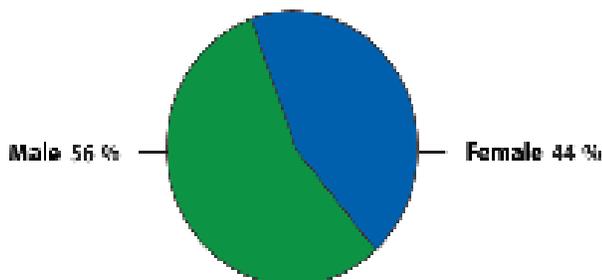
**DISTRIBUTION OF THE 7,139 REGISTERED CANCER CASES IN CHILDREN AND YOUTH UNDER 15 YEARS OF AGE. ARGENTINA, 2000 TO 2005.**



Source: Argentinean Oncopediatric Hospital Registry (ROHA/Kaleidos Foundation), 2006.

According to the Argentinean Oncopediatric Hospital Registry (ROHA) (Kaleidos Foundation), boys (56%) are slightly more likely to have cancer than are girls (44%).

**GENDER DISTRIBUTION OF THE 7,139 CANCER CASES IN CHILDREN AND YOUTH UNDER 15 YEARS. ARGENTINA, 2000 TO 2005**

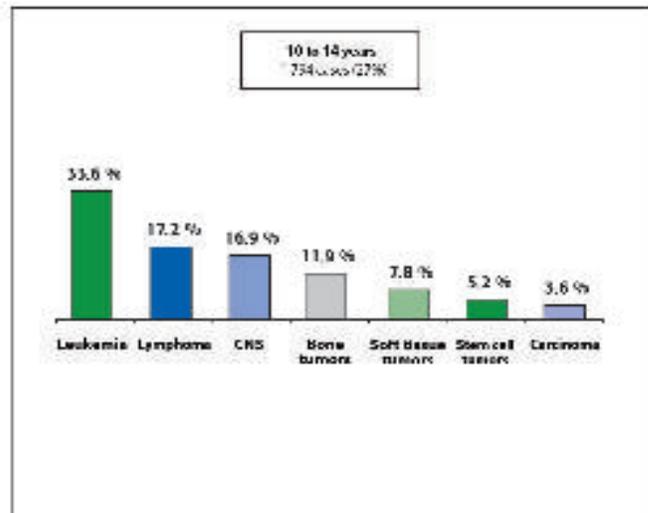
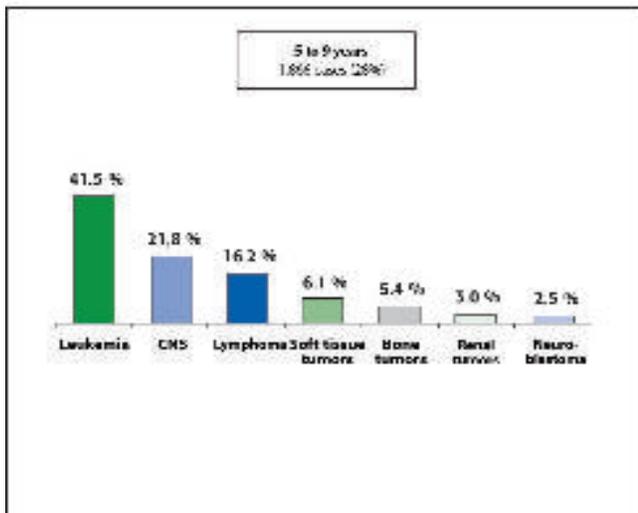
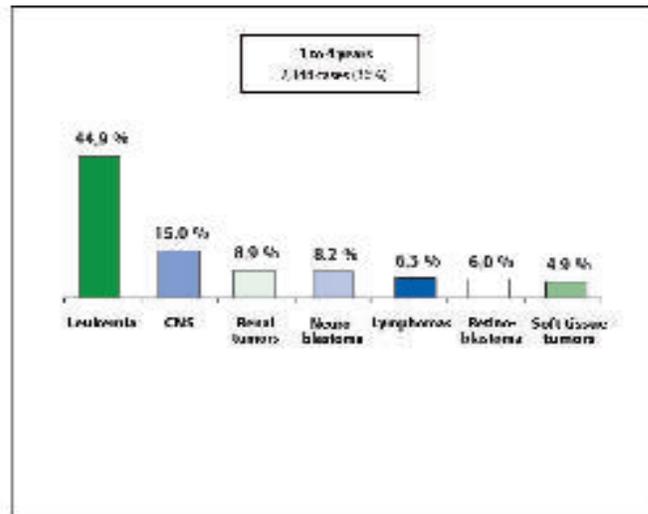
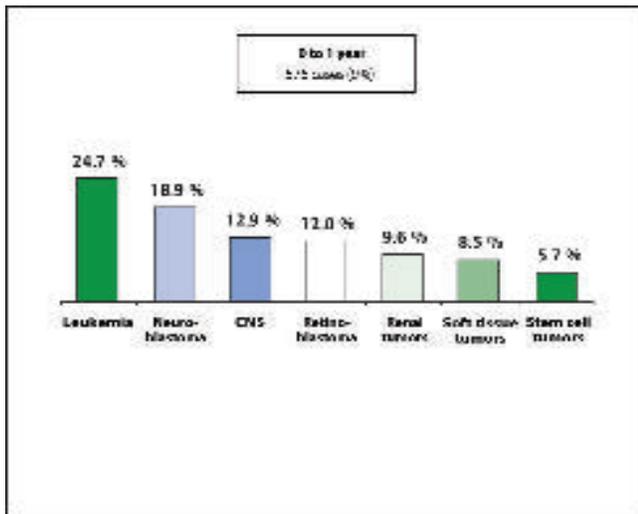


Source: Argentinean Oncopediatric Hospital Registry (ROHA/Kaleidos Foundation), 2006.

After leukemia, neuroblastoma is the most common cancer among children under 1 year of age. Among children

between 1 and 9 years of age, after leukemia, cancer of the central nervous system is the next most common cancer.

**DISTRIBUTION OF THE MOST COMMON CHILDHOOD CANCERS BY AGE GROUP.  
ARGENTINA, 2000-2005**



Source: Argentinean Oncopediatric Hospital Registry (ROHA/Kaleidos Foundation), 2006.

# Nutrition

## Malnutrition and obesity

According to WHO, malnutrition plays a role in more than half of child deaths worldwide – making it one of the most important global child health risk factors. Growing childhood obesity is identified as an epidemic in some developed countries and may be extending to developing countries. The total environmental burden of disease attributed to malnutrition (according to WHO) is 50% (39–61%). This is especially related to a lack of drinking water, hygiene, sanitary infrastructure and food safety, increasing the incidence of diarrheas and parasites and affecting nutrition. Malnutrition is also associated with poor sanitary habits, soil degradation and contamination. Furthermore, it is estimated that 2% of the environmental burden of malnutrition is attributed to climate change.

In Argentina, nutritional problems are wide and complex with a range of causes from food safety to other environmental factors. The short and long term outcomes of these deficiencies are significant – particularly among mothers and children.

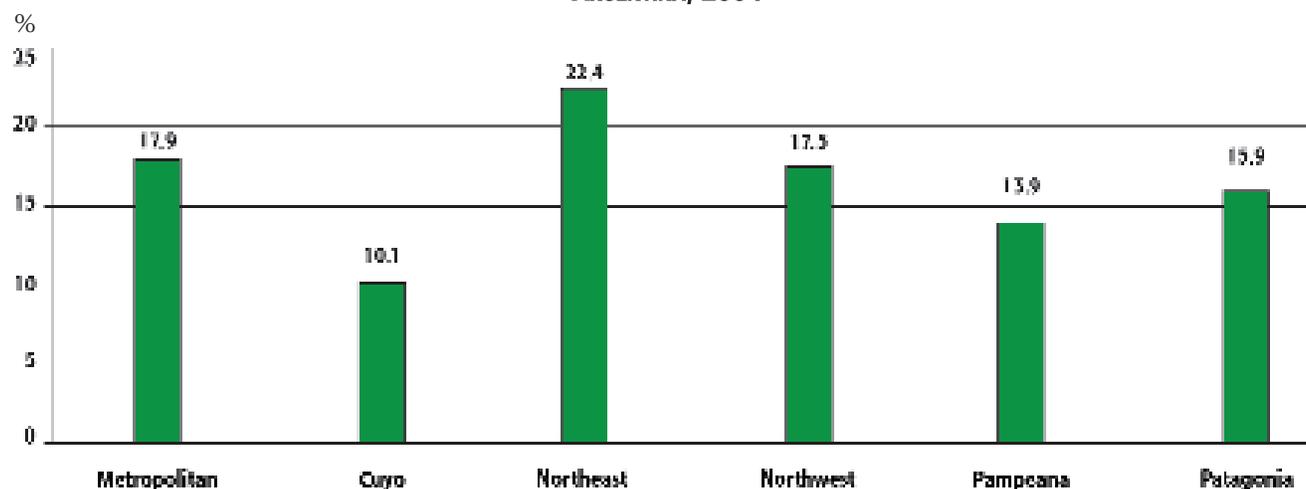
Precise, valid and up-to-date data are needed to be able to analyze the extent of nutrition problems, including age, geographical distribution and other relevant conditions. As a result, Argentina developed the First National Health and Nutrition Survey in 2004.

## Anemia

Anemia due to iron deficiency is a critical problem in Argentina – with a high prevalence among children under 5 years of age and pregnant women. In the Northeast

Region (NEA), almost one-quarter of all children 6 months to 5 years suffer from anemia.<sup>15</sup>

**PREVALENCE OF ANEMIA\* IN CHILDREN 6 MONTHS TO 5 YEARS OF AGE BY REGION  
ARGENTINA, 2004**



Source: Child and Maternal Program, National Health and Nutrition Survey. Ministry of Health of Argentina, 2004.

\* Hemoglobin < 11g/dl in children 6 months to 4.9 years and < 11.5g/dl in children 5 to 5.9 years (WHO/UNICEF/UN. Iron deficiency anemia. Assessment, Prevention and Control. A guide for program managers. WHO 2001).

## Other nutritional deficiencies

Children between 2 and 5 years are the group most vulnerable to the effects of vitamin A deficiency. However, we have little information regarding this problem. Similarly, there is not enough information specific to Argentina

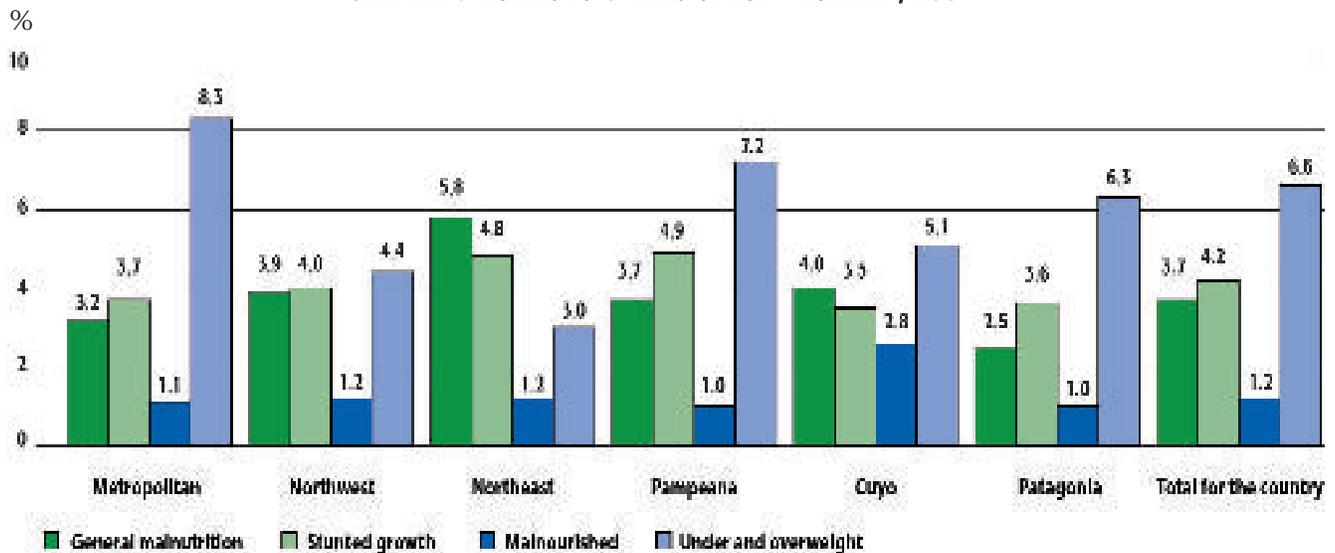
regarding folate and vitamin D deficiencies in children and women of child bearing age. The only evidence of Vitamin D deficiencies is on children residing in Tierra del Fuego.<sup>15</sup>

## Nutritional status of young children

The National Survey of Health Nutrition of 2004 measured the nutritional anthropometric status of children 6 months to 5 years. Classifications included general malnutrition, stunted growth, emaciated, overweight and obese for the different regions of the country.\*

Children in the Northeast Region (NEA) are more likely to suffer from malnutrition and stunted growth, at a rate almost three times that of the children in Patagonia. Children in the Metropolitan Region have the highest rates of obesity.

**PREVALENCE OF THE ANTHROPOMETRIC NUTRITIONAL STATUS OF CHILDREN 6 MONTHS TO 5 YEARS OF AGE. ARGENTINA, 2004.**



Source: National Bureau of Maternal and Child Health, Ministry of Health of Argentina, 2004.

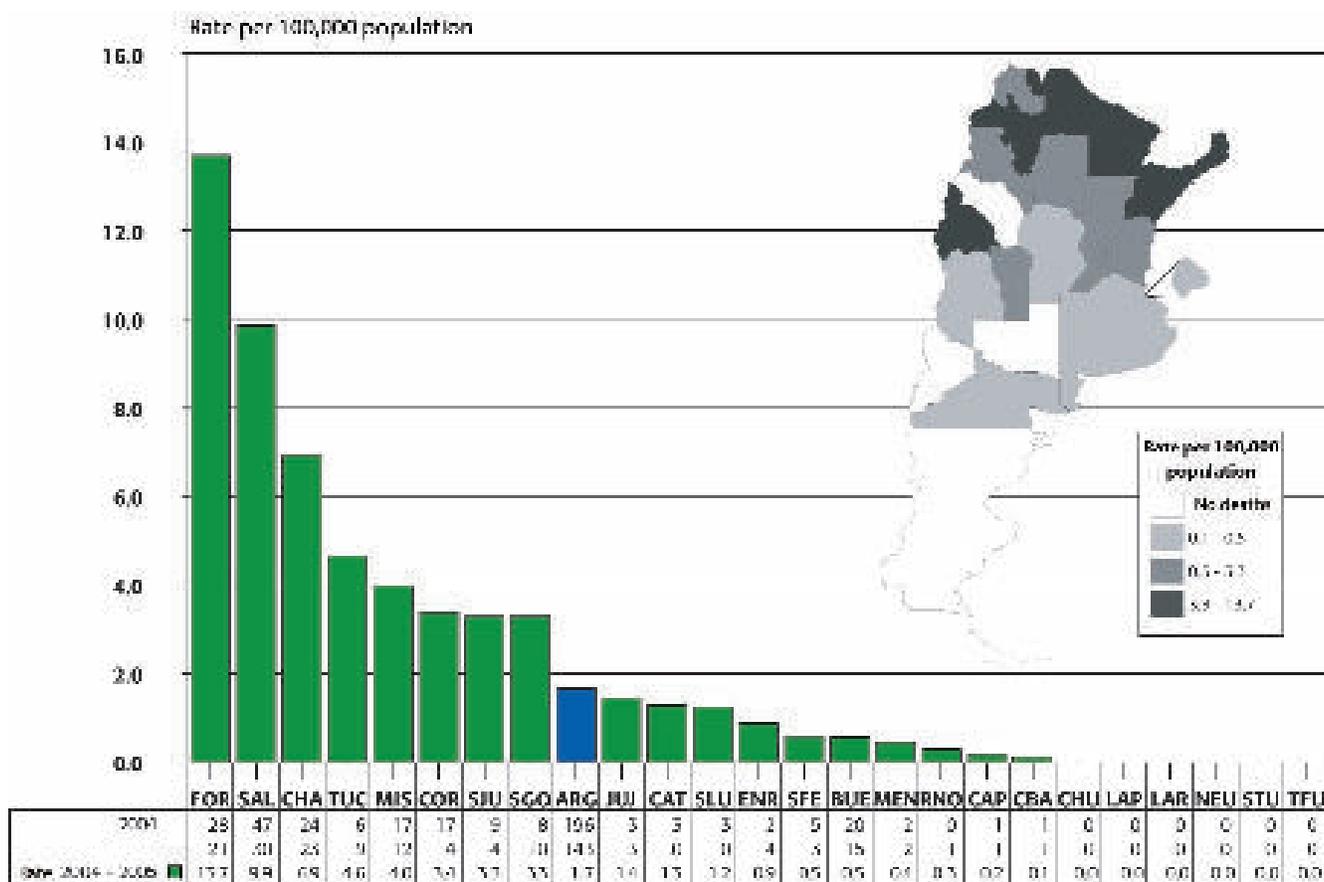
\*Definitions: General Malnutrition is defined as those children whose weight for age and sex is 2 standard deviations below the average of the growth curve of national reference from the Argentine Society of Pediatrics (SAP). Children defined as "small" ("stunted") are children whose stature for their age and sex is 2 standard deviations below the average of the curve of national reference of SAP. "Malnourished" refers to those children whose weight presents a deficit of 20% or more with respect to the weight of a child of the same stature on the curve of national reference of SAP. "Overweight" and "Obese" refer to children whose weight for stature presents an excess of 20% or more than the weight of a child of the same stature of the curve of national reference of SAP.

## Death due to malnutrition

Although malnutrition is not considered a direct cause of death, for more than 150 children and youth under 15 years of age who die annually in Argentina, malnutrition is reported as the cause of death. In 2004–2005, this represented a mortality rate of 1.66 per 100,000. The mortality

rate for malnutrition in this age group varied among jurisdictions. Six provinces did not register any deaths due to this cause during 2004–2005. In contrast, the mortality rate in two provinces was six and eight times greater than the national average (Salta and Formosa respectively).

**DEATHS DUE TO MALNUTRITION (E40-E45) IN CHILDREN AND YOUTH UNDER 15 YEARS OF AGE BY JURISDICTION. RATE PER 100,000 POPULATION. ARGENTINA, 2004 TO 2005**

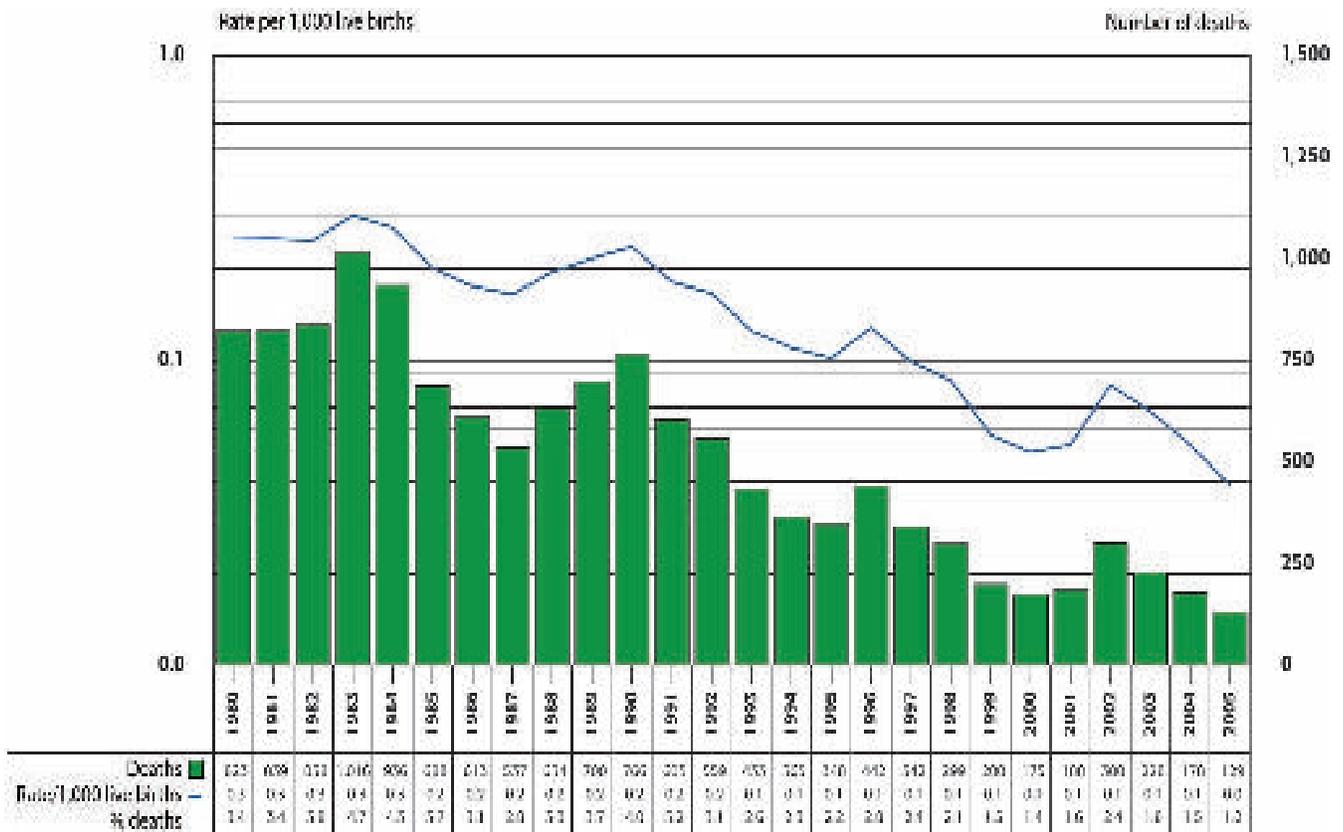


Source: National Institute for Respiratory Disease (INER) "Emilio Coni"; based on information provided by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, May 2007.

Most of the deaths due to malnutrition in children under 15 years of age occur before 5 years of age (90% in 2005). The trend in the death rate due to malnutrition in children

under 5 years of age has markedly decreased between 1980 to 2005 – in this period the death rate decreased by 84.5%.

**DEATHS DUE TO MALNUTRITION IN CHILDREN UNDER 5 YEARS OF AGE.  
NUMBER OF DEATHS, MORTALITY RATE PER 1,000 LIVE BIRTHS AND PERCENTAGE OF THE TOTAL NUMBER OF DEATHS.  
ARGENTINA, 1980 TO 2005**



Source: National Bureau of Statistics and Health Information, Ministry of Health of Argentina, May 2007.

## Diabetes

Several studies show the relationship between endocrine disruption chemicals (for example 2,3,7,8-Tetrachlorodibenzo-p-dioxin, TCDD\*) and type 2 diabetes as compared to the population's exposure through food and not from accidental or occupational exposures\*\*.<sup>16,17</sup>

According to information published by the National Survey of Risk Factors of the Ministry of Health of Argentina (in individuals over 18 years) 69.3% of the survey population had blood sugar tests. Of this group, the prevalence of diabetes in the survey population was 11.9%. There are no national data regarding the prevalence of diabetes in children.

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\*TCDD is the most potent dioxin and is recognized as carcinogenic by the International Agency for Research on Cancer (IARC), Working Group on the Evaluation of Carcinogenic Risks to Humans, 1997.

\*\*The mechanism by which TCDD can cause diabetes is by binding to the receptor and antagonizing the action of other nuclear receptors with antidiabetic action. Remillard and Bunce, 2002.



## Neurodevelopmental disorders

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Neurodevelopmental disorders include both behavioural problems and learning disabilities. These disorders include autism, attention deficit and hyperactivity, dyslexia and others.<sup>18</sup> Neurodevelopment disorders, affect between 5 and 8% of the 4 million children born each year in the United States.

Although in general the causes of these disorders are not completely clear, it is thought that exposure to lead, mercury, PCBs, some pesticides and other chemicals may have a toxic effect on neurodevelopment. A committee of experts of the US National Academy of Science concluded in July 2000, that 3% of developmental disorders were a direct consequence of toxic environmental exposures, and 25% were the result of interactions between environmental factors and the individual susceptibility of children.<sup>18</sup>

The exposure to certain toxins may cause alterations to development, damaging the brain and producing attention,

learning, behavior problems and hearing loss. Lead, mercury, PCBs and some pesticides are known as “intellectual robbers” due their effects on neurodevelopment.

It is believed that environmental factors are linked to the epidemic of learning and behavior problems observed in some parts of the world. It is a significant and frequent problem whose frequency is underrated, particularly in developing countries where the focus is on malnutrition and infections (mainly parasitic infections) as contributors to these illnesses.

In Argentina, data sources do not exist to accurately measure the incidence of neurodevelopmental problems in children. Proxy indicators of these problems are difficulties in school, such as repeating a grade and school dropout rates. Chapter 1 described the incidence of children repeating a grade in Argentina.

## Immune system diseases

There are more than 80 recognized chronic auto-immune diseases including lupus erythematosus, glomerulonephritis, multiple sclerosis, thyroiditis autoimmune, rheumatoid arthritis and myositis, among others. Although these only affect a small number of individuals they represent an important concern for public health. The common characteristic of these diseases is that they direct the immune response to healthy tissue or to normal cellular components.

Although these diseases have been linked to genetic factors and exposure to infectious agents (widely studied) they are not responsible for all cases observed.

Recent investigations suggest exposure to environmental agents as one of the causes of auto-immune diseases. Human studies have shown an association to vinyl chloride, silica and organic compound exposure and experimental studies show changes related to auto-immunity as a result of

exposure to metals, polycyclic aromatic hydrocarbons and mycotoxins.

The possible mechanisms of action for environmentally induced auto-immunity include molecular mimicry, alterations in cellular (lymphocyte) signals and interference in the development of tolerance to auto-antigens.<sup>19</sup>

Studies in communities of children (Inuit) conclude that prenatal exposure to organochloride chemicals can be a risk factor for acute otitis media.<sup>20</sup>

The effects on the immune system due to environmental factors may have a role in the development of diseases and can also affect the immune response to vaccines.

For example, among identified physical environmental factors, exposure to UV radiation contributes to immunosuppression, playing an important role in the development of skin cancer (carcinoma of scaly cells).

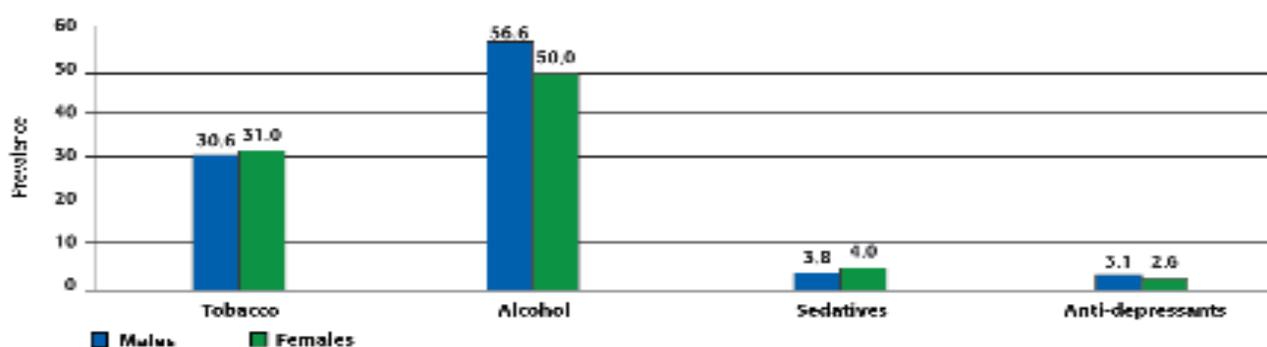
## Drug use

The social environment has an important impact on the health and well-being of children and youth. The influence of the social environment increases as children get older, when they have more independence and are more influenced by their peer group.

Alcohol and drug use is an important measure of the impact of the social environment on children and youth.

Alcohol is the drug used most frequently among children and adolescents in Argentina, as in other Latin American countries. Other non-illicit drugs that children and youth use are tobacco and psychotropic drugs obtained without a medical prescription (e.g., tranquilizing benzodiazepines and synthetic stimulants such as amphetamines and methamphetamines).

**PREVALENCE OF NON-ILICIT DRUGS ABUSED AMONG STUDENTS 14 TO 17 YEARS OF AGE. ARGENTINA, 2005**

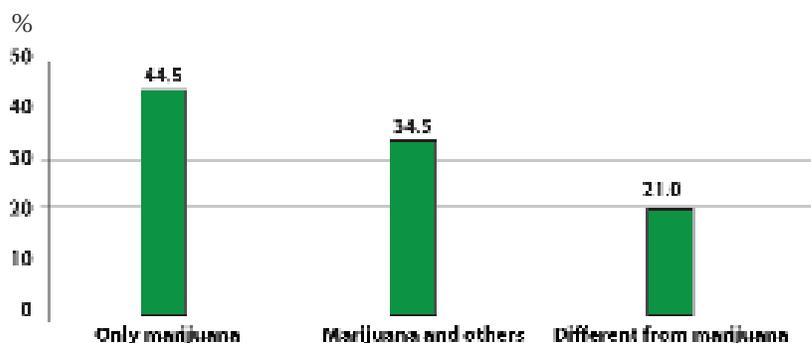


Source: SEDRONAR. Published in: United Nations. Office against crime and drugs (2006). Youth and drugs in South American countries: a challenge for public policy

In a study targeting the student population in Argentina in 2005, it was found that among students under 15 years, 21.8% had consumed alcohol and 12.1% had smoked tobacco in the 30 days prior to the survey. In high school students the prevalence was higher.<sup>21</sup>

With regards to illicit drug use among high school students, marijuana is the most commonly used drug, either alone or combined with other non-illicit and illicit drugs.

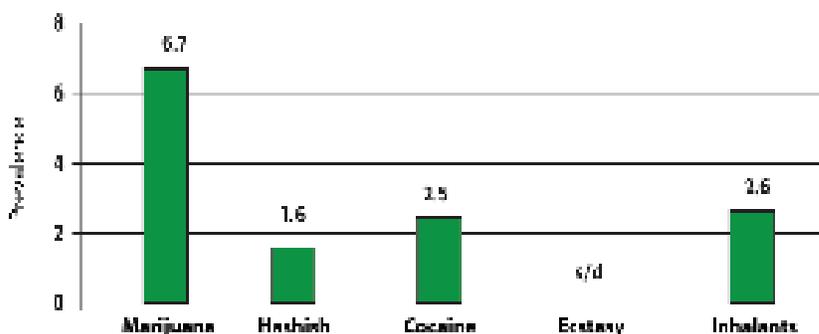
**DRUG USE AMONG STUDENTS 14 TO 17 YEARS OF AGE. ARGENTINA, 2005**



Source: SEDRONAR. Published in: United Nations. Office against crime and drugs (2006). *Youth and drugs in South American countries: a challenge for public policy.*

In a comparative study among nine Latin American countries in 2005, Argentina and Chile had the highest levels of recent consumption of cocaine and cocaine based paste among students 14 to 17 years of age.<sup>21</sup>

**ILLICIT DRUG PREVALENCE CONSUMPTION AMONG STUDENTS 14 TO 17 YEARS OF AGE. ARGENTINA, 2005**



Source: SEDRONAR. Published in: United Nations. Office against crime and drugs (2006). *Youth and drugs in South American countries: a challenge for public policy.*

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*NOTES*

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## CHAPTER 3

# Environmental Exposures\*

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*\*For this chapter on environmental exposures, information from the publication entitled "Sustainable Development Indicators System, Argentina (SIDSA) 2006" of the Secretariat of Environment and Sustainable Development has been incorporated (among other sources). The indicators of sustainable development present the country's current status, identify potential trends and account for the progress made toward the goals set out by the Argentinean government. The readiness of an indicators system on the state and trends of sustainable development in the country is an essential element for the generation and evaluation of implemented public policies.*

***This chapter will provide information regarding children's exposure – and potential exposure – to environmental pollutants by presenting data on air, water and sewage, food, soil, chemical sources of pollution, waste, noise and vibrations, radiation, and global change.***

Children are exposed to environmental pollutants first in the placenta and then through the air they breathe; the water and food that they consume (including breast milk); the soil – through their close contact with the ground while playing, crawling, or through hand-to-mouth activities; and the elements that surround them – for example, clothing, toys, pacifiers, among others.

The sources of pollution, whether natural or person-made, can be physical, chemical and/or biological. Children are not only exposed to these pollutants in the external environment, but also in their homes, schools and recreation areas.

Children are, for a number of reasons, the group most vulnerable to the health impacts of environmental conditions and contaminants – they are far more vulnerable than adults. The biology, behavior, and developmental status of children make them especially at risk to the environmental contaminants they encounter. In proportion to their weight and size, children eat more food, drink more water and breathe more air than adults, thereby causing them to have relatively greater exposures to environmental contaminants. Children also have more hand-to-mouth contact and spend more time close to the ground, resulting in a greater intake of dust and soil, and hence a greater amount of lead and other contaminants contained therein.



# Air

Children are exposed to pollutants in the air outside where they play, walk, run and travel. They are also exposed to pollutants in the air inside their homes, schools and other buildings where they work and play.

Poor air quality presents a serious threat to children's physical health and safety. No safe levels for human exposure to the primary components of air pollution have been established. Exposure can adversely affect human health even at

very low levels, and long-term exposure to low levels may be even more damaging.

The air quality in Argentina varies among regions of the country due to the concentration of the population, traffic, proximity to rural areas, climate and the quality and types of housing.

## Outdoor air pollution

A number of outdoor air pollutants are associated with adverse health effects on the respiratory system. They are: ground-level ozone, sulfur dioxide, carbon monoxide, nitrogen oxide, fine particulate matter and acid aerosols.

Ground-level ozone and other oxidative substances are formed when two common air pollutants – nitrogen oxides (NOx) and volatile organic compounds (VOCs) react together as the air is heated by the sun. The main source of these gases is automobile traffic but they are also emitted by refineries and gasoline stations. Ground level ozone is one of the primary components of smog.

Fine particulate matter refers, in this context, to air-borne particles that can be in solid or liquid form. Fine particulate matter (PM2.5) consists of the smallest particles, with diameters of 2.5 micrometers or less. They pose the greatest

risks to human health because they can penetrate deep into the lungs and can pass into the circulatory system. They come from burning fuels for transportation, industry and residential heating.

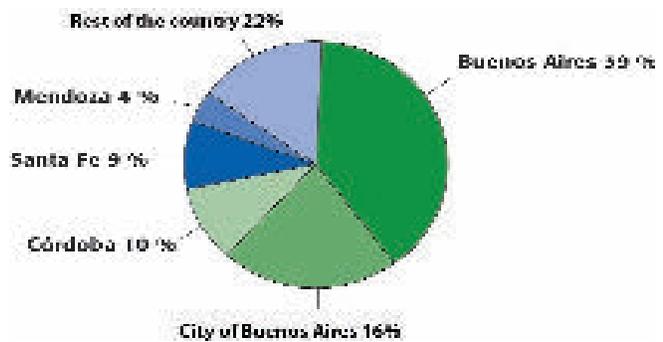
Other pollutants found in outdoor air are toxic substances such as carbon monoxide, heavy metals and organic chemicals of ubiquitous distribution.

In Argentina, the main sources of outdoor air pollutants are automobile traffic, the open burning of garbage, industrial emissions, forest and field fires, thermal power plant emissions and grain and cereal mill emissions (the latter frequently present in rural areas and rural communities where cereals are stored and transported).

## Vehicular traffic

Vehicular traffic is a major contributor to outdoor air pollution in Argentina. In the country overall, the number of vehicles grew 85% between 1990 and 2006 – from 6,390,974 vehicles to 11,826,456 vehicles. Fifty-five percent of the country's vehicles are concentrated in the City of Buenos Aires and the Province of Buenos Aires. This distribution has varied little over the years.

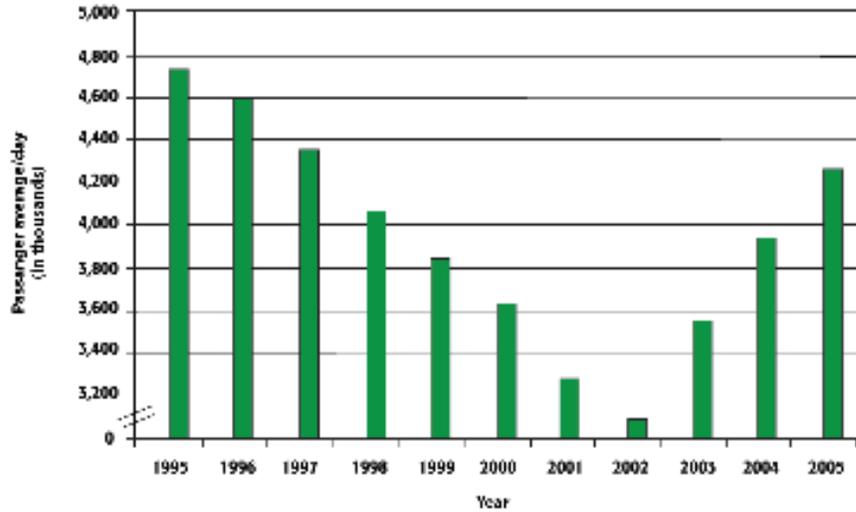
**DISTRIBUTION OF MOTORIZED VEHICLES  
(UP TO DECEMBER 31, 2006) BY PROVINCE.**



Source: Provincial highway registry, 2006. National Bureau of Driver Property and Secured Credit Registries, Subsecretary of Registry and Ministry of Justice and Human Rights.

The main source of outdoor air pollution in the City of Buenos Aires is the emission of automobile gases – both private vehicles and public transport. This is followed by fixed industrial sources. There are many other problems that exacerbate the high traffic volume and density situation. For example, there is a lack of emission controls, along with insufficient personnel to control these emissions. This is aggravated by an aging public transport fleet, and deficiencies in the quality, accessibility and frequency of public transportation.

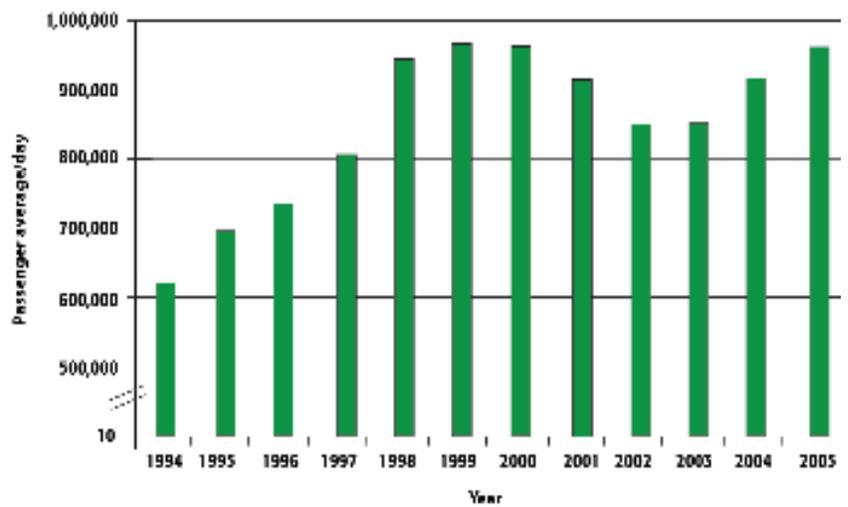
**DAILY AVERAGE NUMBER OF PASSENGERS TRANSPORTED VIA PUBLIC TRANSPORTATION BUSES IN THE CITY OF BUENOS AIRES ARGENTINA, 1995 TO 2005**



Source: Department of Statistics and Census, City of Buenos Aires, based on data from the National Transport Commission, 2006.

In the City of Buenos Aires the subway is a preferred method of transportation among many people. The use of the subway has been increasing overall – except during the economic crisis, when people did not have work.

**DAILY AVERAGE NUMBER OF PASSENGERS TRANSPORTED VIA SUBWAY IN THE CITY OF BUENOS AIRES ARGENTINA, 1994 TO 2005**



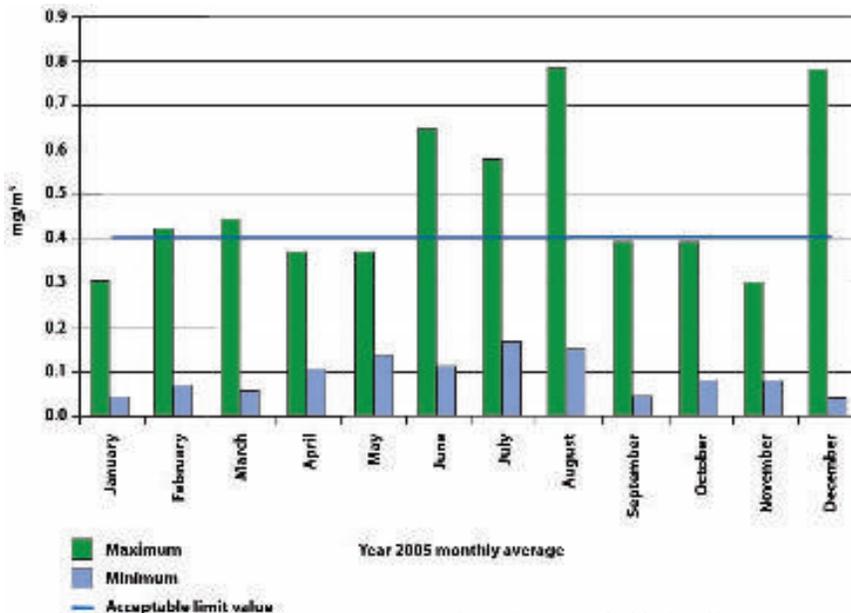
Source: Department of Statistics and Census, City of Buenos Aires, based on metro data, 2006.

## Air quality in the City of Buenos Aires

The City of Buenos Aires measures levels of carbon monoxide and reports on them monthly. The emissions reported in the city have not exceeded the average concentration limits of 9 ppm for an 8 hour period. For levels above this, EPA and WHO recommend an advisory.<sup>1</sup>

The City of Buenos Aires also measures levels of nitrogen oxide and reports on them monthly. The maximum average level of total nitrogen oxides exceeded the acceptable limit of 0.4 mg/m<sup>3</sup> (Law 39.025, City of Buenos Aires) in six out of the twelve months in 2005.

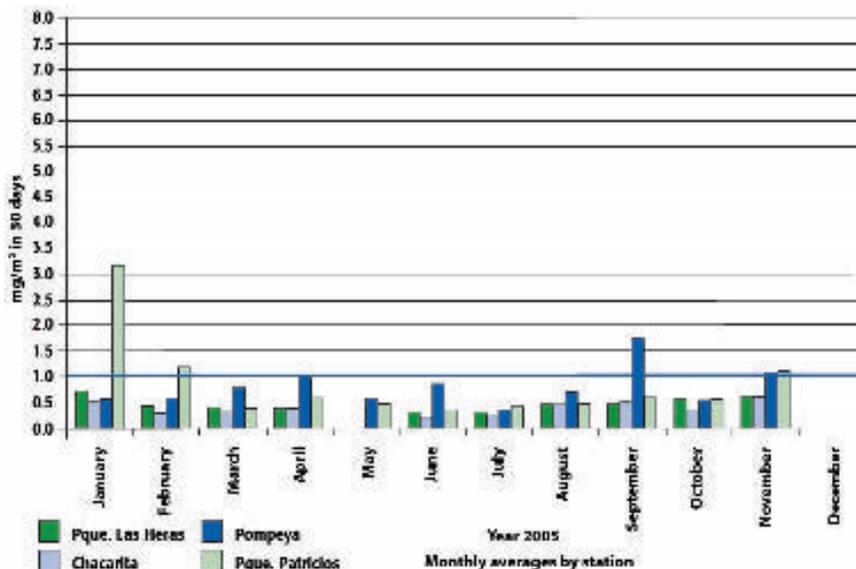
**MAXIMUM AND MINIMUM AVERAGE LEVEL OF TOTAL NITROGEN OXIDES  
CITY OF BUENOS AIRES, 2005.**



Source: *Statistic Annals of the City of Buenos Aires, 2005.*

The City of Buenos Aires also reports on the total particulate matter in the air. The city measures total particulate matter, greater than 10µm, in the air at four different locations in the city. The reference value is 1.0 mg/cm<sup>2</sup> for 30 days (according to Law 39.025 of the City of Buenos Aires). However, no information is collected on fine, breathable particulate matter (less than 10µm in diameter) – which is particularly harmful to human health\*.

**TOTAL PARTICULATE MATTER MONTHLY AVERAGES BY MONITORING STATION  
CITY OF BUENOS AIRES, 2005**



Source: *Environmental Quality Laboratory, General Bureau of Environmental Quality Control, City of Buenos Aires.*

\* Source: For particulate matter the samples correspond to 4 stations situated in Parque las Heras, Chacarita, Pompeya and Parque Patricios. Department of Security, General Directorate of Environmental Quality Control, City of Buenos Aires.

## Clean Air Continuous Monitoring Program for the Petrochemical Pole Dock Sud by the Ministry of Environment and Sustainable Development

The industrial area known as Dock Sud, located south of the City of Buenos Aires in the Municipality of Avellaneda covers an approximate surface area of 40 km<sup>2</sup>.

Fifty industrial establishments are found in this area, most notably, two petroleum refineries, eight petroleum/derivative storage and reception sites, four chemical product reception and storage sites and a thermoelectric power station. The area has other industries including

processing plants, gas stations, land and marine transport companies, and waste deposits. It is a large shipping port. The boats come into the Sarandi Canal, ship chemicals and discharge their wastes. The port has movement of 2,700 ships per year. Approximately 5,500 vehicles circulate around the area every day.

Almost 40,000 people live in Dock Sud, and a further 3,000 people work in the area.<sup>2,3</sup>

*Left:  
Aerial picture of the Petrochemical area showing the industrial surface area of Dock Sud and the surrounding area. Dock Sud is highlighted in yellow and the surface area of the City of Buenos Aires is shown in green.*



*Right:  
Enlarged view of the Dock Sud area.*



***In 2003 the Secretariat of Sustainable Development and Environmental Policy of Argentina published the “Study of baseline levels of gas concentrations in the atmosphere in the area of Dock Sud in Argentina.” This was funded by the International Cooperation Agency of Japan, and is known as the JICA study.***

As part of the study three sampling stations determined the presence of SO<sub>2</sub> and SH<sub>2</sub>, nitrogen oxides, particulate matter, total hydrocarbons, methane, non-methane hydrocarbons (NMHC), ozone and carbon

monoxide in 2001. In the sampling station located at the Athletic Club Dock Sur, samples obtained during November, December and January showed lower than average levels for pollutants with limit levels set by legislation, except for 3 peaks of nitrogen oxides.<sup>4</sup> The analysis of hourly and weekly pollutant distribution showed an important peak in concentration between 5 and 10 am, and on Mondays and Wednesdays.<sup>4</sup>

*In a separate study, the Municipality of Avellaneda conducted an evaluation of “Exposed children in the petrochemical area of Dock Sud”. This report was presented by the Secretary of Environmental Policy of the Province of Buenos Aires during the National Child Health Conference in 2005.*

This evaluation took air quality measurements in Dock Sud and found the permanent as well as episodic presence of chemicals in the air.

Approximately thirty compounds were identified over a 24 hour period. The permanent compounds found in the air included: Carbon tetrachloride, ethylene tetrachloride (PCE), Toluene, Benzene, Chlorobenzene, Ethylbenzene, m/p-xylene, o-xylene, Styrene, Cumene,

1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, 1,3 dichlorobenzene, 1,4-dichlorobenzene, p-Isopropyl toluene, p-butylbenzene, 1,2,4-Trichloro- benzene (in general all of them are aromatic hydrocarbons except for carbon tetrachloride and ethylene tetrachloride).<sup>5</sup> In addition, they identified the presence of the following compounds episodically, none aromatic but all chlorinated: 1,1-Dichloroethylene, cis-1,2-Dichloroethylene, Methylene Chloride, Chloroform, 1,1,1-Trichloroethane, 1,2 Dichloroethane (EDC), Trichloroethylene (TCE), cis-1,3-Dichloropropane, trans-1,3-Dichloropropene, 1,1,2-Trichloroethane, 1,3-Dichloropropane, 1,1,2,2-Tetrachloroethane, Hexachlorobutadiene.

## **Actions taken in Dock Sud**

A number of actions are now being taken to monitor the environment and the health of the residents of Dock Sud who are most affected and to address the sources of pollution.

In 2003, the Petrochemical area Dock Sud Committee of Environmental Administration was formed to plan and take the necessary measures to clean up this highly polluted area. The committee has members from the national government, the province of Buenos Aires and the Municipality of Avellaneda.

An agreement was signed in September 2006 to transform the petrochemical area and focus on the development and execution of a scheme of joint action to reduce the levels of industrial complexity, environmental risk and social vulnerability in the area.

Industrial permits to renovate or establish new companies in the area will not be renewed or granted. In addition, existing companies will have to provide remediation plans. The Department of Environment and Sustainable Development has initiated action to reduce emissions

and prevent the exposure of the population. The municipality is committed to the re-location of the ‘Villa Inflammable’ and to build housing for families that have been affected by the pollution of the petrochemical area.

In April 2007 coordinated activities such as the “Health risk prevention program: Toxic pollutants and derivatives resulting from inadequate basic sanitation” were implemented to train health worker teams in the area and increase their diagnostic and intervention capacity. The program will generate prevention strategies relating to water, food and waste.

This initiative includes the “Cleaning Products Provision Program” that provides inhabitants of ‘Villa Inflammable’ with a pamphlet educating them on how they can reduce the pollutants present in the area.

## Indoor air pollution

Children spend a lot of time indoors – in their homes, schools and recreation areas. The air that they breathe indoors is influenced by the quality of the outdoor air surrounding the buildings as well as the products found and activities inside the home. The concentration of some pollutants in indoor air can be many times higher than concentrations in outdoor air.

Indoor air pollutants include particulate matter; nitrogen dioxide; carbon monoxide; volatile or semi-volatile organic compounds; products used at home such as pesticides,

cleaners and fragrances, among others; and allergenic and infectious agents.

In Argentina, the main sources of indoor air pollution in homes are tobacco smoke, the burning of solid and fossil fuel (firewood, coal, gas and kerosene), cleaning agents, pesticides, and emissions derived from construction, insulation and renovation materials. Unfortunately, there are few specific studies on these issues.

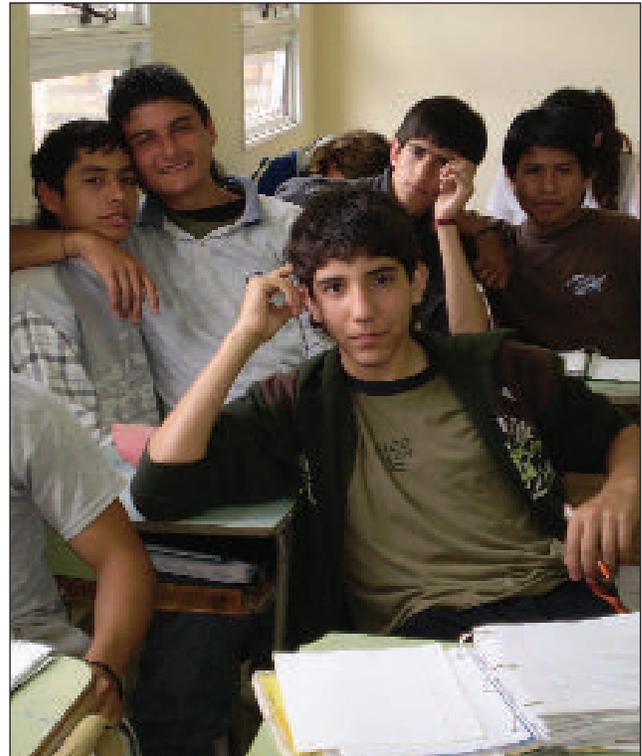
## Tobacco smoke

Tobacco smoke contains nearly 4,000 chemicals, including 60 carcinogenic and toxic substances such as carbon monoxide, tar, arsenic and lead. Nicotine, present in tobacco, is addictive and is absorbed quickly.<sup>6,7</sup>

Exposure to “second hand” or “environmental tobacco smoke” jeopardizes the health and quality of life of people. Its effects are not limited to smokers. Exposure considerably increases the risk of lung cancer and is responsible for infections of the lower respiratory tract in children.<sup>8</sup>

Over one third (33.5%) of Argentines smoke – there are 8 million smokers in Argentina. One third of adolescents smoke – teenage girls are more likely to be smokers than are teenage boys. It is estimated that 12 million pesos are spent each day to attend to illnesses related to tobacco smoke exposure, that every day 100 people die from smoking and another 20 non-smokers die from illnesses related to exposure to environmental tobacco smoke.<sup>9</sup>

Although Argentina did not join the WHO Framework Convention on Tobacco Control, a successful program launched by the Ministry of Health of Argentina, the National Tobacco Control Program, has resulted in the reduction of smoking from 40% in 1999 to 33.5% in 2005.<sup>7</sup>



# Water and sewage

In Argentina a marked disparity exists in the availability of drinking water, infrastructure and water treatment plants among provinces and among urban and rural areas.

## Access to safe drinking water

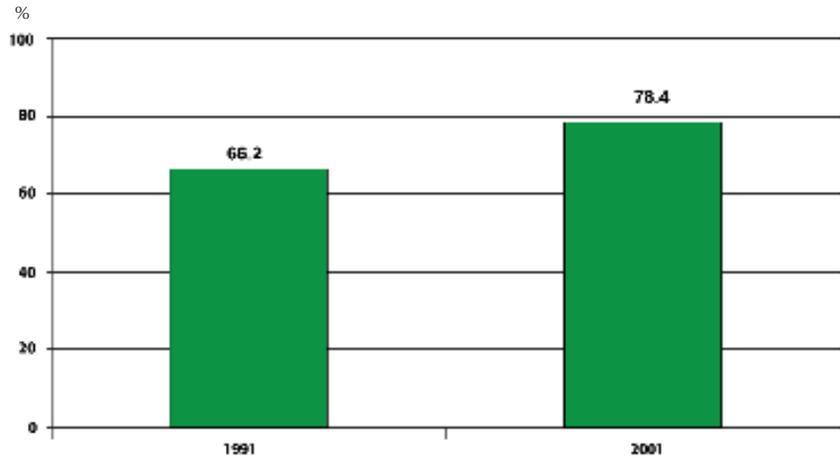
Access to safe drinking water is considered an essential human right and is intimately related to community development. It is essential to the reduction of waterborne disease.

In 2003, 78% of the population had access to running water and 43% to a drainage system.<sup>10</sup> However, the drainage system coverage does not necessarily imply that treatment plants exist to treat these effluents. Most of the large urban centers return their untreated raw waste to natural bodies of water.

According to the last National Census of Population and Housing, between 1991 and 2001 the national coverage for the provision of safe drinking water increased from 66% to 78%. This resulted in 7 million more users having access to the public water system.

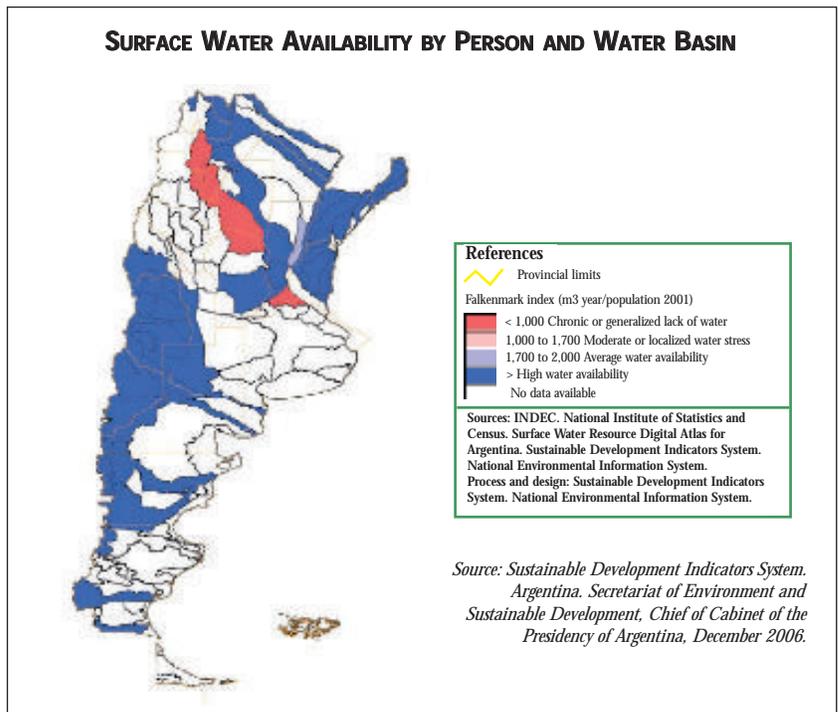
Access to clean water is not consistent across the country. In addition, the degradation of fresh water sources resulting from human activity is a significant problem. These issues generate conflict between the urban, industrial and agricultural areas.<sup>11</sup>

**PERCENTAGE OF THE POPULATION LIVING IN HOMES WITH ACCESS TO DRINKING WATER VIA PUBLIC SYSTEMS ARGENTINA, 1991 TO 2001**



Source: INDEC. National Institute of Statistics and Census. National Census of Population and Housing. 1991 and 2001.

**SURFACE WATER AVAILABILITY BY PERSON AND WATER BASIN**



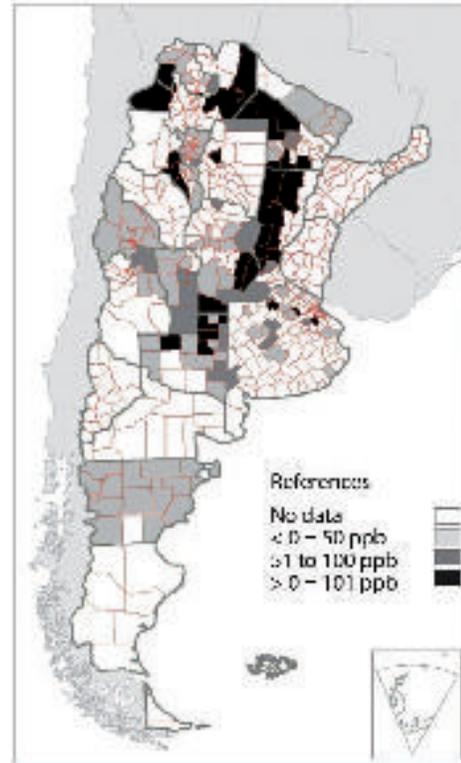
Source: Sustainable Development Indicators System. Argentina. Secretariat of Environment and Sustainable Development, Chief of Cabinet of the Presidency of Argentina, December 2006.

## Arsenic in water

Arsenic is a highly toxic and carcinogenic substance. Groundwater is particularly vulnerable to contamination with arsenic as a result of natural geochemical processes. Problems can be exacerbated by mining activity and atmospheric deposition (burning of fossil fuel and waste). Even natural concentrations of arsenic in groundwater can limit its suitability for drinking.

A natural concentration of arsenic is found in water in a large part of Argentina. There are regions where high concentrations are found in the groundwater supply. The consumption of low doses of arsenic during long periods may cause lesions and skin cancer, vascular disease, nervous system effects and possibly cancer in other organs. Arsenic can cross the placenta and can also be found in breast milk. The only known treatment is to remove the person from the source of exposure.

**ARSENIC CONCENTRATIONS BY REGION  
ARGENTINA, 2006<sup>12</sup>**



*Source: Chronic Endemic Hydro-  
Arsenical Disease Epidemiology in Argentina.  
Collaborative multicentre study, Carrillo-Oñatibia Scholarship.*



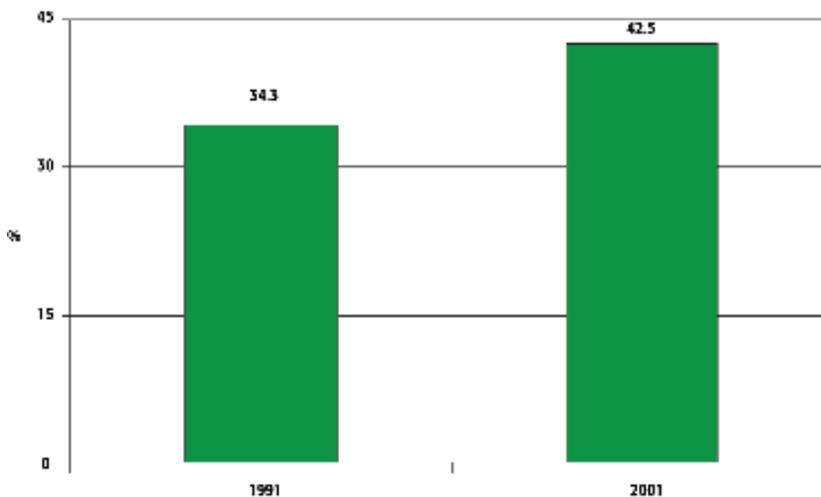
### Access to sewage systems

The availability of sewage systems is fundamental for improving public health since it reduces the risk of bacterial, parasitic and viral disease and promotes the development of healthy environments.

In Argentina 42.5% of the population have access to sewage systems, varying from 96.6% in the City of Buenos Aires to 11.3% in the Province of Misiones. Coverage in the Provinces of Tierra del Fuego (91.2%), Santa Cruz (73.1%), Chubut (67.9%), and Neuquen (64.5%) is much higher than the national average; however it is only 38.7% in the Province of Buenos Aires.<sup>10</sup>

Between 1991 and 2001 sewage service coverage increased by eight percentage points in Argentina – which resulted in 4.2 million users with access to service.<sup>13</sup>

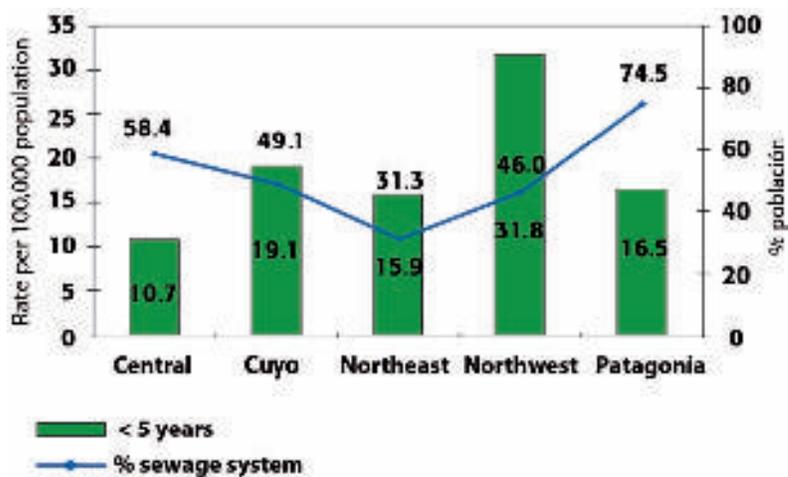
**PERCENTAGE OF THE POPULATION LIVING IN HOMES WITH SEWAGE SYSTEM ACCESS. ARGENTINA 1991 AND 2001**



Source: INDEC. National Institute of Statistics and Census. National Census of Population and Housing, 1991 and 2001. Sustainable Development Indicators System, Argentina. Secretariat of Environment and Sustainable Development, Chief of Cabinet of the Presidency, December 2006.

The Centro and Patagonia regions both have high sewage coverage – 58% and 75% of the population are covered respectively. As a result they have lower incidences of children under five with acute diarrhea. Conversely, the regions of Cuyo and Northwest (NOA) have lower coverage and higher rates of acute diarrheal disease. The Northeast (NEA) Region has the lowest percentage of population with access to sewage services, but reports a lower rate of acute diarrhea in children under 5 years of age; this information needs to be further explored and could be due to reporting discrepancies\*

**RELATIONSHIP AMONG REPORTED CASES OF ACUTE DIARRHEA (RATE FOR EVERY 100,000 POPULATION) IN CHILDREN UNDER 5 YEARS OF AGE AND PERCENTAGE OF THE POPULATION WITH SEWAGE SERVICE. ARGENTINA, 2002**



\* From data analysis of epidemiological surveillance, 2000-2004, notifications show a clear tendency to increase with discrepancies according to regions.

Sources: INDEC. National Census of Population and Housing. National Institute of Statistics and Census. Ministry of Economy and Production. 2003. Unit of Health and Environment, Secretariat of Environment and Sustainable Development. Bulletin EPINOTICIAS. N° 527 - Year IV. 2005.

## Health and environment in the Matanza Riachuelo basin

The Matanza Riachuelo river basin is an area 64 km long by 35 km wide, covering a surface of approximately 2,240 km<sup>2</sup>. The Matanza Riachuelo basin collects waters from approximately 60 tributaries from the most populated and industrialized regions of Argentina, including part of the City of Buenos Aires as well as 15 other municipalities in the Province of Buenos Aires.

Over the last 15 years, a number of different groups have analyzed the basin water. They have found that all the pollution indicators investigated (dissolved oxygen, biological oxygen demand, concentration of coliform bacteria, basic chemical parameters, nitrogen, sulphur, metals, and organic compounds) have exceeded the safety guidelines set through national standards. These pollution indicators have been found upriver 500 meters perpendicular to the mouth of the Rio de la Plata river, which feeds the Matanza Riachuelo basin.

The contamination in this area is the result of an ongoing absence of basic sewage services, increased urban waste dumping and the industrial waste effluents. More than four million people live around the Matanza Riachuelo basin, only 45% of them have sewage services and only 65% have access to safe drinking water.

More than 3,000 industrial establishments operate in the area, carrying out a wide variety of industrial activities including: oil and gas, food, electrical devices, automotive, construction, leather tanneries, gas stations and mechanical car service bays, ice factories, galvanoplasty, detergents, metallurgical, plastic, chemical, and textile, among others. As a result there are numerous highly hazardous substances for human

health found in the basin's environment including: mineral oils, surfactant agents, aldehydes, anilines, chrome-plated compounds, detergents, phenols, lubricants, metals, pigments, paint and solvents, among others. Historically there has been a lack of control, inspection and enforcement guidelines with regards to these industries. Very few establishments operate in an eco-efficient manner. The resulting pollution has had an impact on the ground/surface water and will effect future land use.

There are many shanty towns or emergency villages situated in this area and most are along the water's edge. In 1999 the Faculty of Architecture, Design and Urban Planning of the National University of Buenos Aires collected information on thirteen precarious villages in the basin close to the mouth of the Matanza Riachuelo river. Inside these villages they found 11,435 homes and 49,305 inhabitants covering a surface of little more than 200 hectares. These people are exposed directly to the pollutants in the water, soil and air.

Since the end of the 19<sup>th</sup> Century the environmental problem of the Matanza Riachuelo basin has been brought to the attention of the authorities and numerous times solutions have been attempted without success. This is due to a combination of factors: the complexity of the situation; absence of political will; coordination among the various jurisdictions and the involvement of competent organizations.

To overcome this situation, in 2006 the Supreme Court of Justice ordered the National and Provincial States to design an effective plan to solve the problem. For more information on this situation please go to: [www.aamma.org](http://www.aamma.org)

## Food

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Argentina is one of the world's major food producers. It is a significant producer of meat, grains, corn, dairy products, vegetables and beans. Given the country's vast production of beef, red meat is an especially common part of the Argentine diet. Similarly, the enormous quantities of domestically-harvested wheat have made white bread, pasta and pizza inexpensive and popular.

Foods can be contaminated with toxic substances from a variety of sources. Food can contain pesticide residues. It can be contaminated with substances transferred from storage containers such as lead from cans or chemical plasticizers from plastic wrappings. Foods can absorb and concentrate substances that are in contaminated soil or water or that have been treated with agrochemicals.

Fish, livestock and their by-products dairy, fat and animal oils – destined for human consumption may concentrate pollutants from organisms lower in the food chain and those found in water and sediments.

Lifestyle can also influence food contamination. For example, different food preparation techniques and the way food is consumed can result in contamination. For example, food can be contaminated with lead from ceramic glazes.

Little is known about children's specific exposure to toxic substances in food. However they are particularly vulnerable due to their rapid development, patterns of food consumption and metabolism.



## Soil contamination

Soil can contain pollutants such as heavy metals and pesticides that can be absorbed by direct contact, ingestion or inhalation. Children have close contact with the floor and objects where soil and pollutants can easily accumulate.

Argentina is a country of significant agricultural production and uses an intensive and extensive amount of agrochemicals. The soil and water suffer the impact.

It is also important to pay attention to the use of land. In

Argentina, there are a number of communities where people of low income live on recovered lands that have been infilled or were previously used for industrial purposes. These areas are placed on the market at low values or are often simply “occupied” by people. Because these areas are not suitable for human habitation, the health and quality of life of the whole family unit living there is impacted, especially that of children.

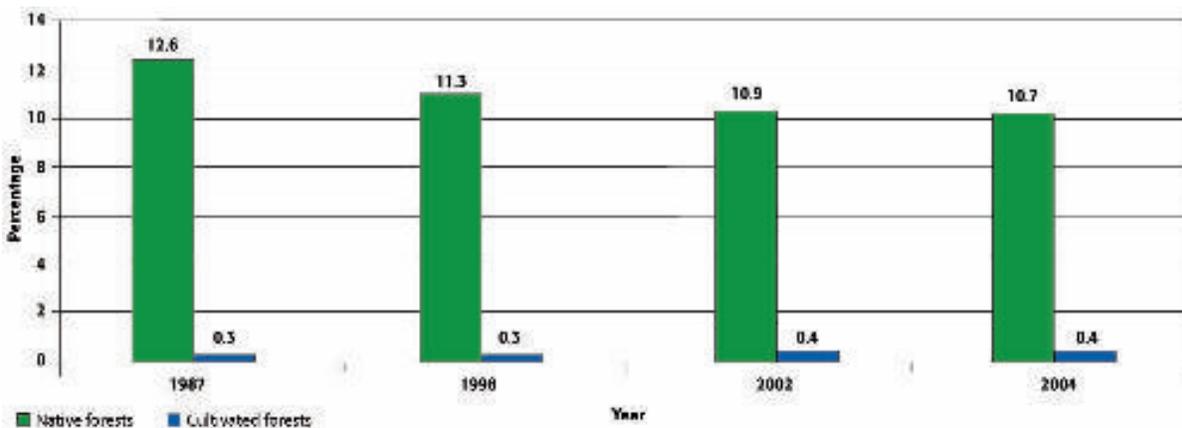
## Desertification

Desertification is the process when fertile soil becomes desert through natural soil erosion or as a result of human activity.

In Argentina there are 34 million hectares of natural forest – this is compared to 105 million hectares in 1914. The loss is estimated to be in the range of 500,000 hectares per year.<sup>14</sup> This loss is a direct consequence of deforestation and the expansion of areas of cultivation over the last 75 years.

Between 1987 and 2004 the percentage of surface area of Argentina covered by forest declined from 12.6% to 10.7%. The resulting loss of bio-diversity and degradation of the environment impacts the socioeconomic opportunities of the population.<sup>10</sup>

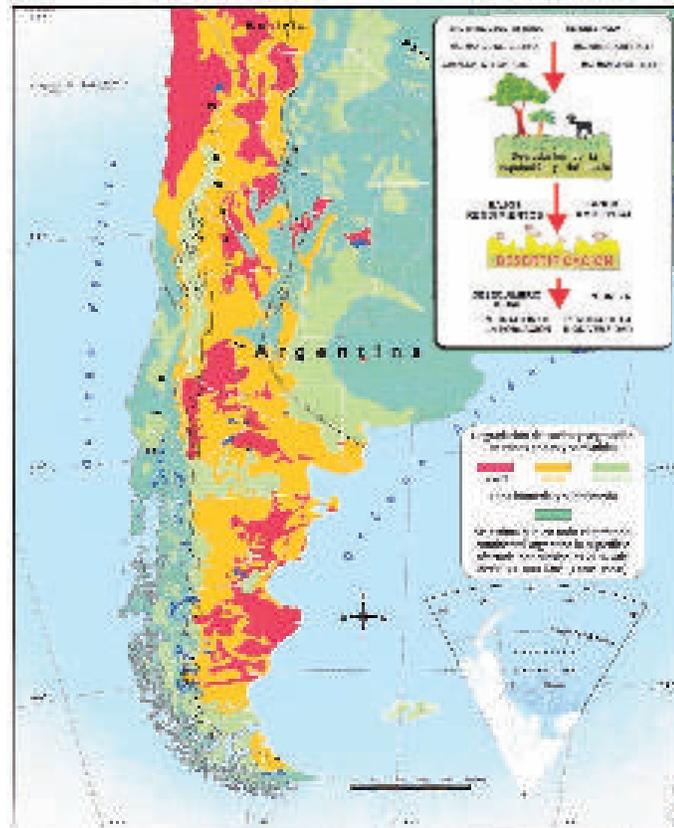
**PERCENTAGE OF THE SURFACE AREA OF ARGENTINA COVERED BY FORESTS. 1987 TO 2004**



Source: Forestry Evaluation Management System Unit (UMSEF). National Bureau of Forestry. Secretariat of Environment and Sustainable Development, Chief of Cabinet of the Presidency of Argentina, Forestry Inventory and Geographical Information System Unit. National Bureau of Reforestation. Subsecretary of Agriculture and Forestry. Ministry of Agriculture, Cattle, Fisheries and Foods.

**DEGRADATION OF SOIL AND VEGETATION IN DRY AND SEMI-DRY AREAS.  
ARGENTINA, 2000**

Seventy-five percent of Argentinean territory consists of arid and semi-arid land. These zones have a high tendency towards desertification.<sup>15</sup>

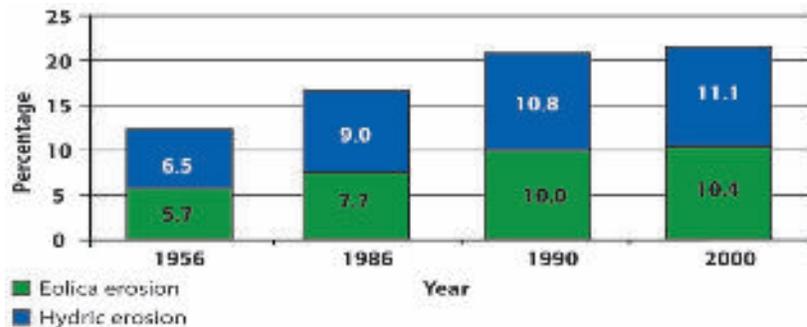


Source: Produced by the National Environmental Information System. Atlas of Argentina. Soil Conservation Directorate (SAyDS-PAN-GTZ), 2003.

Increasing proportions of Argentinean land are being degraded by erosion that can have serious social, cultural and economic consequences.<sup>10</sup>

In 1956, 12.3% of all land in Argentina had been destroyed by erosion – half of that was due to hydric erosion. By 2000, that proportion had almost doubled to 21.5%.

**PERCENTAGE OF HECTARES AFFECTED BY EROSION, BY TYPE OF EROSION  
ARGENTINA, 2000**



Source: Soil and Agrotechnology Institute (1957). Environmental deterioration in Argentina. Education, Science and Technology Foundation (FECIC) (1988). Soil Institute INTA (1990). INTA-CIRN, personal communication (2000).

### Endocrine disruptors

Endocrine disruptors are compounds that mimic or modify the action of natural hormones in living organisms. They can be synthetic chemicals or natural compounds. Initially, the term was applied to chemicals with estrogenic effects; now it is recognized that they have a broader effect. For example, they can interfere with the thyroid, insulin and androgenic activity in the body together with complex multi-hormonal processes such as those that act during puberty and development.

Children can be exposed to endocrine disruptors in two ways – either through acute, perhaps one-time exposures, or through low dose chronic exposure. These chemicals can accumulate and concentrate in living organisms, cross the placenta and interfere with normal developmental processes

### Pesticides

Pesticides are toxic substances designed to kill, repel or inhibit the growth of living organisms. They are used to control insects, mammals, plants, mushrooms, parasites and other creatures that can be a problem for agriculture, public or home health, schools, buildings or communities.<sup>16</sup>

Pesticides disturb the action of essential life processes such as those carried out by the nervous and reproductive systems. The mechanism of action for which a pesticide's chemical structure has been designed can also be toxic for people.

Once applied, pesticides can accumulate in air, water and soil. Not only can they damage the species that they were intended for, they can damage other species as well and reduce biodiversity. Groundwater, lakes, rivers and other water bodies can become contaminated with pesticides. This can affect drinking water, fish and other vital resources for human life. When soil becomes contaminated, children are at specific risk since they often play and work outside and close to the ground. Furthermore, soil contamination affects the use of soil for other purposes.<sup>17</sup>

The impact of pesticides on human health depends on the type of pesticide, dose, entry route and timing of exposure. Children are exposed to pesticide residues from food, water and breast milk from conception, through the period of breastfeeding and throughout their development.<sup>17</sup>

of the embryo and the fetus. Clinically, the effects may not be detected immediately but changes taking place as a result of chronic exposure to low doses can emerge later in life. These effects have been linked to low birth weight, thyroid changes, hypospadias and cryptorchidism, changes in the quantity and quality of sperm, premature puberty (menarche and breast development), appearance of hormonal cancers (breast) among other effects.

A number of pesticides have been recognized as interfering with endocrine processes (endocrine disruptors) – for example DDT, chlordane and methoxychlor. Industrial chemicals such as PCBs can also have endocrine disruptor characteristics.

The total impact of pesticide exposure may be greater than current numbers suggest. Acute poisoning symptoms may not be diagnosed or detected. Affected individuals may not have access to the public health system. In addition, the cause of the poisoning may go unrecognized and therefore not documented.

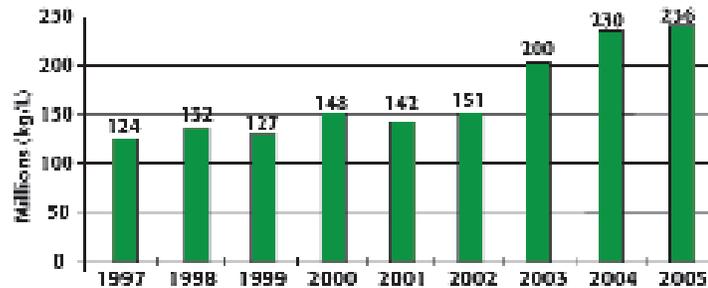
The chronic exposure to low levels of pesticides is often difficult to associate to symptoms because time lapses between exposure and symptoms. It becomes almost impossible to make the connection in individual cases.



## Increasing pesticide use in Argentina

Pesticides are being used at an increasing rate in Argentina. In 2005, 236 million kg/L of pesticides were commercially produced and sold in Argentina, a 10 year record. Herbicides comprised 50% of total pesticides used. This coincides with the growing application of glyphosates (widely used herbicide) in the country in the last decade.<sup>18</sup>

**COMMERCIAL VOLUME OF PESTICIDES INCLUDING HERBICIDES, INSECTICIDES, FUNGICIDES, ACARICIDES AND OTHERS ARGENTINA, 1997 TO 2005**



Source: Data obtained from the Argentinean Chamber of Agricultural Health and Fertilizers, 2005.

The use of fertilizers and pesticides by hectare measures the intensity of the application of these products. In Argentina, the commercial volume and use of pesticides by sowed hectare has consistently increased since 1991.<sup>10</sup>

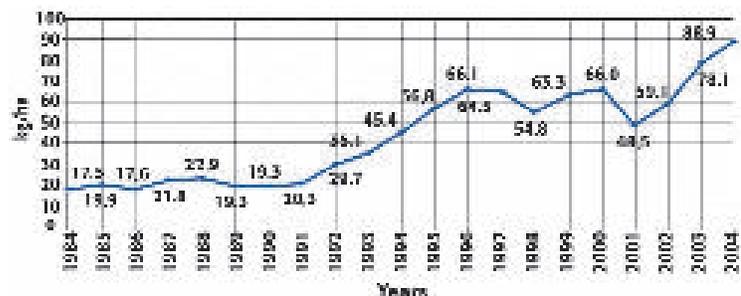
**COMMERCIAL VOLUME OF PESTICIDES BY SOWED HECTARE OF GRAINS AND CEREALS.**



Source: Sustainable Development Indicators System, Argentina. Secretariat of Environment and Sustainable Development, Chief of Cabinet of the Presidency of Argentina, December 2006.

The increasing use of fertilizers and their increasing concentrations has resulted in the depletion of nutrients in the soil. This results in technological dependency, decreased productivity, degradation of the soil and threatens agricultural sustainability.<sup>10</sup> As a result, it becomes necessary to use fertilizers to grow adequate crops.

**USE OF FERTILIZERS BY SOWED HECTARE OF GRAINS AND CEREALS.**



Source: Sustainable Development Indicators System, Argentina. Secretariat of Environment and Sustainable Development, Chief of Cabinet of the Presidency of Argentina, December 2006.

## THE PROBLEM OF AGROCHEMICALS AND THEIR CONTAINERS AND THE IMPACT ON THE HEALTH OF WORKERS, THE EXPOSED POPULATION AND THE ENVIRONMENT

Between April 2005 and March 2006 a study was conducted in Argentina to identify problems originating from the inappropriate use and management of agrochemicals and their containers in different domestic agricultural areas, and the resultant impact on health. The objectives of the study were to report the most used agrochemicals in each region of the study; study the lifecycle of agrochemicals and their containers

from the perspective of the workers who spray them; investigate how agrochemicals are managed in the field (from the perspective of the workers who spray them); carry out a preliminary health report of workers spraying pesticides and their families; and verify the possibility of establishing a correlation between certain symptoms in the exposed population and the use of agrochemicals (especially pesticides).

### The study's main conclusions were:

- The inappropriate management of agrochemicals and their containers constitutes a serious environmental, health and domestic productivity problem.
- The health damage caused by pesticides can be irreversible but is preventable. It affects producers and their families – especially the children and youth who participate in rural work activities, rural populations and the population in general.

### Related to exposure, the study concluded that:

- Exposure occurs from an early age
- Workers are exposed
- Communities (homes and schools) are exposed
- There is a lack of information and training for workers and their families
- There is a lack of training for rural teachers and agro-technical schools.

The complete study can be found at: [www.aamma.org](http://www.aamma.org)

*The 2005 report Pesticides Management in Domestic Uses, prepared under the coordination of the Society of Argentine Pediatrics, (Ramón Carrillo–Arturo Oñativía Scholarship, Ministry of*

*Health and Environment), concluded that the use of domestic pesticides by the general population is high and broad-reaching*

## Persistent organic pollutants POPs

A group of pesticides of special concern are persistent organic pollutants, or POPs. They are very worrisome because they are extremely toxic, they persist in the environment for long periods of time, and can travel long distances in air, water and in living organisms. POPs can be found in regions where they have never been used or produced. POPs are bio-accumulative, bio-magnifiable and can be found in living organisms high in the food chain.

In 2001 the Stockholm Convention was adopted internationally as a legally binding global treaty. Nine of the 12 substances that appear on the initial list included in this Treaty for the Elimination or Reduction of POPs are pesticides: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex, toxaphene and hexachlorobenzene (also for industrial use). The other three POPs that complete the list are dioxins, furans and PCBs.

## Dioxins, furans and PCBs

Dioxins and furans are spontaneous products of the synthesis and burning of some chemicals. They are produced during processes such as paper bleaching, incineration and burning of waste and other industrial processes. It is possible that they are the most toxic of all synthetic chemicals known.

The combustion of biomass including the burning of waste (urban and agricultural), forest and field fires are the main contributors to the emissions of dioxins and furans in Argentina.

Polychlorinated biphenyls, or PCBs, were created to act as flame retardants, insulators and especially (but not only) to be used in transformers and electric capacitors.

Dioxins, furans and PCBs are endocrine disruptors; they can cross the placenta and can be found in breast milk.

In 2003, Argentina released 701.1 gTEQ\* of dioxins and furans into the atmosphere. The main sources responsible for the emissions were uncontrolled combustion processes (Category 6) with 559.9 gTEQ, representing approximately 80% of the total dioxin and furan emissions. This category includes the burning of biomass (40,524,836.8 tons) and combustion of solid urban waste (1,177,490 tons).<sup>19</sup>

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\* Toxic equivalents (TEQ) is the unit used to measure individual dioxins in a dioxin mixture expressed in grams. It is a value describing how toxic each dioxin and dioxin-like compound is compared to the most toxic members of this category. (gEQT in Spanish).

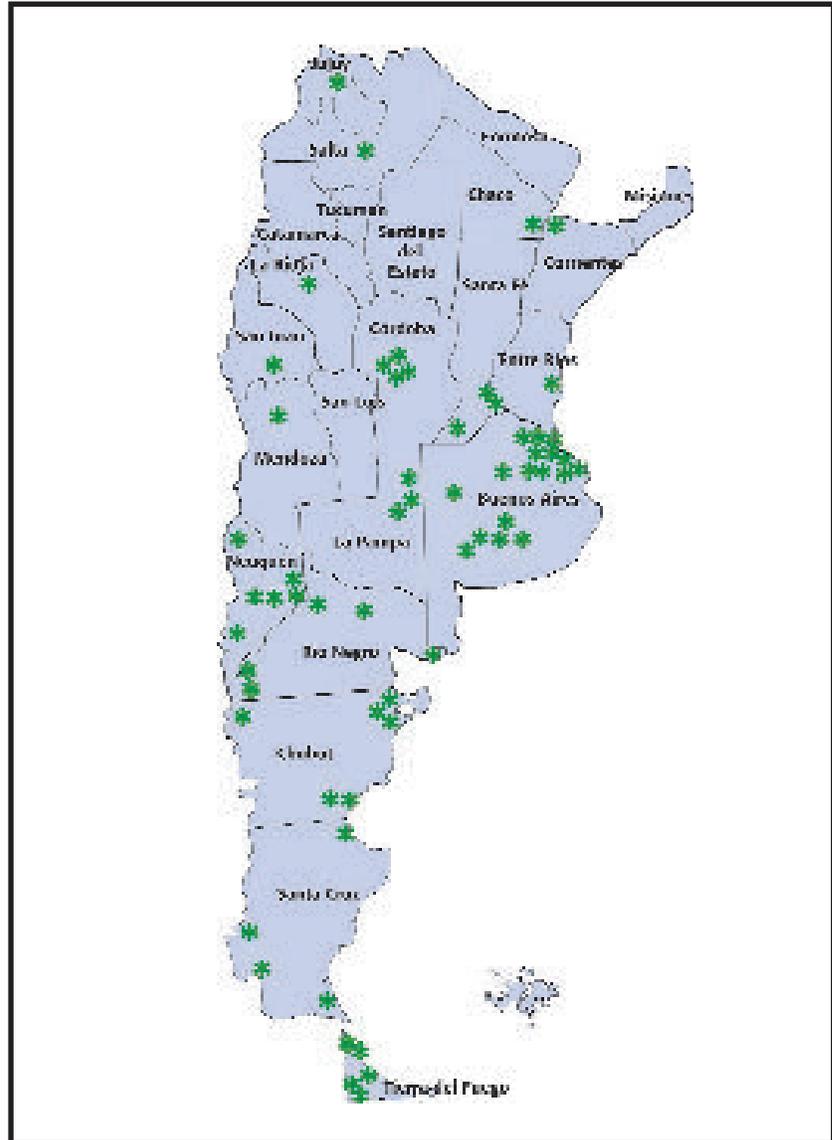


## Medical and industrial waste incinerators

In 2004, the Anti-Incineration Citizens Coalition registered 53 medical and industrial waste incinerators distributed throughout the Argentinean territory. This does not account for small incinerators in rural hospitals or crematoria in small municipalities.

Argentina does not have a complete picture of how many medical and industrial waste incinerators are in the country. This is because the National Registry of Operators and Transport of Dangerous Waste Residues only includes those facilities that deal with inter-provincial waste management. Some municipal and provincial registers exist.

LOCATION OF MEDICAL AND INDUSTRIAL WASTE INCINERATORS.  
ARGENTINA, 2004.



Source: Anti-Incineration Citizens Coalition.

## Burning of biomass for heat production and incinerators

In Argentina it was estimated that 1,177,000 tons of urban solid waste from home environments and urban garbage dump sites were burned in uncontrolled open sky fires in 2003.<sup>19</sup>

In that same year, 37,920 tons of dangerous waste and 14,359 tons of hospital waste were incinerated.<sup>19</sup>

# Heavy metals

## Lead

Lead is an element that is naturally present in the environment. The main sources of emission have been leaded gasoline, lead paint dust, and dust deposition or inhalation of contaminated smoke from the burning of garbage and waste incineration containing lead. It is also common to find contaminated soil in areas close to lead smelters whether active or closed.

For decades, published international studies have demonstrated that asymptomatic children, exposed to low doses of lead can have blood lead levels that affect their IQ, language, attention and hyperactivity as well as contribute to learning and behavioural disorder problems.

Lead crosses the placenta and can be found in breast milk – therefore it can be present during vulnerable periods of development of the central nervous system. It may also interfere with calcium and iron metabolism – therefore its effects are increased with malnutrition.

Other sources of exposure in Argentina include commercial elements that are not controlled or regulated for lead such as cosmetics, ceramic glazes, canned food or drinks, paints, pencils, modeling elements, candlewicks and others.

There are no national data describing the blood lead levels of the general population of Argentinean children. There are specific studies on occupational exposure in adults and some case studies – not all of them published – relating to children.

The U.S. Centers for Disease Control and Prevention (CDC) define the threshold blood lead level that should trigger intervention as 10 µg/dL (micrograms /deciliter).

Canadian researchers Tsekrekos and Buka say a growing body of evidence suggests harmful health effects may occur below the current standards. And they warn that lead exposure may be so prevalent, the effects are not easily recognized.

In fact, understanding the role that low-level lead exposure may play in neuro-developmental disorders is still in its infancy.<sup>20</sup>

The U.S. Center for Disease Control (CDC) recommends the following actions according to blood lead levels.<sup>21</sup>

**CATEGORIZATION OF BLOOD LEAD LEVELS (µG/DL) BY ACTION (CDC)**

Blood Lead Level, ug/dl	Recommended Action
10 - 14	Repeat testing in 3 months Evaluate sources Educate: clean hands and mouth
15 - 19	Repeat testing in 2 months Evaluate sources Educate: clean hands and mouth Refer to health care
20 - 44	Repeat testing in 1 month Evaluate sources Educate: clean hands and mouth Refer to health care
45 - 74	Repeat testing in 1 month Evaluate sources Educate: clean hands and mouth Refer to health care Chelation treatment
75 or higher	IMMEDIATE HOSPITALIZATION Chelation with two drugs

*Source: Managing Elevated Blood Lead Levels Among Young Children: Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention, U.S. Centres for Disease Control, 2002*

## Mercury

Mercury has been used by humans in industry and pharmaceuticals for many years. Although it is naturally found in fossil fuels such as coal and petroleum, environmental contamination comes from mining, smelting and environmental discharges. Elementary mercury is also used in thermometers, apparatus to measure blood pressure, thermostats, dental amalgams, fluorescent light bulbs, batteries and car batteries. Mercury has been used in pharmaceuticals and as a grain fungicide and is a residual product of a number of industrial processes.

Inadequate disposal of elements and residues containing mercury is a very important source of release into the envi-



ronment. This happens when these substances are poured into the water, buried in unsecured landfills or burned or incinerated, passing into the air or remaining in the ashes.

Bacteria in water transforms mercury into methylmercury; this compound penetrates, bio-accumulates\* and biomagnifies\*\* in the food chain.

Mercury crosses the placenta and can be found in breast milk – therefore exposing the fetus, embryo and infant from the moment of conception and in moments of developmental vulnerability. Exposure to methylmercury affects the nervous system where it disrupts the development of neurons. It is a potent teratogen.

\* *Bio-accumulation: accumulation of chemical substances in a living organism.*

\*\* *Bio-magnification: a cumulative increase in the concentration of a chemical substance in a living organism through the food chain.*



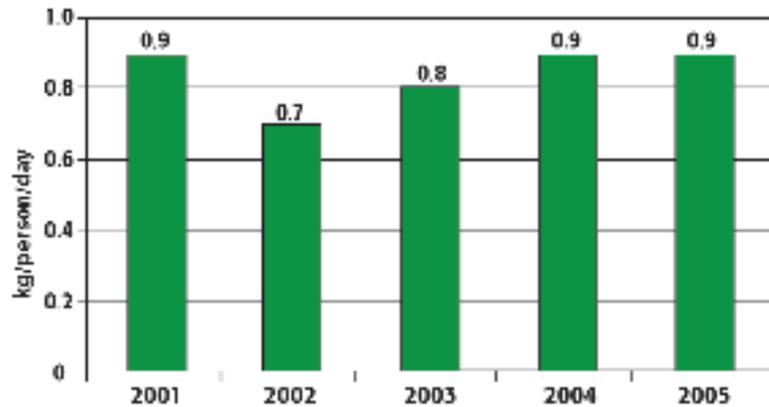
# Waste

## Solid urban waste (SUW)

The generation of solid urban waste reflects the production and consumption characteristics of a society. When there is disproportionate production and inadequate management of waste, human health, the environment and quality of life are adversely affected.

In 2002, as a result of the socio-economic crisis in Argentina, a reduction in the generation of solid urban waste was observed. It began to increase again when the economic recovery began.

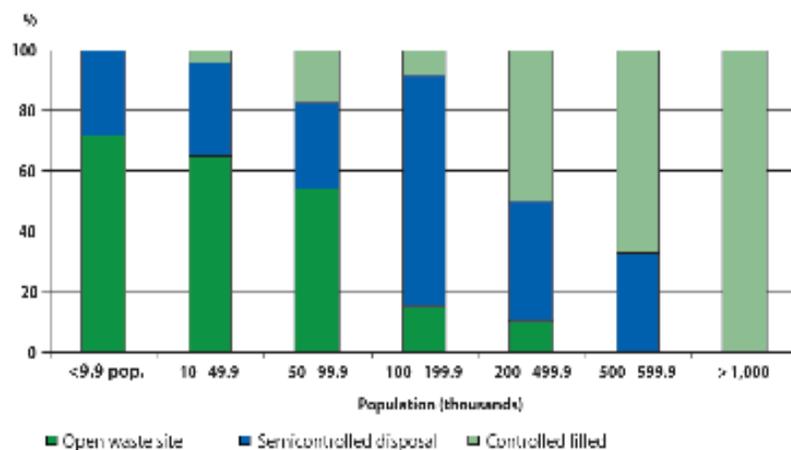
**AVERAGE SOLID URBAN WASTE PRODUCTION.  
ARGENTINA, 2001-2005.**



Source: Preliminary diagnosis of the national strategy for the administration of solid urban waste. Secretariat of Environment and Sustainable Development. 2005.

In small municipalities solid urban waste is predominantly disposed of in open sky landfills. In medium-sized towns the waste is disposed of using a combination of semi-controlled dumps and controlled landfills. In large municipalities (more than 1 million people), solid urban waste is generally disposed of in sanitary landfills where leachates\* and gases are controlled and treated. Clandestine disposal sites have been documented but fall outside of any disposal control measures.

**SOLID URBAN WASTE BY TYPE OF FINAL DISPOSAL MECHANISM.  
ARGENTINA, 2004**



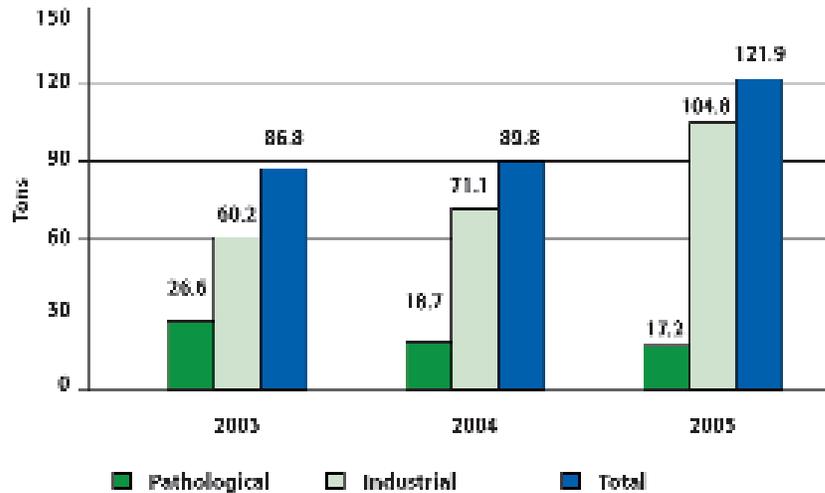
Source: Preliminary diagnosis of the National Strategy for the Administration of Solid Urban Waste. Secretariat of Environment and Sustainable Development. 2005.

\* A leachate is a product or solution that is formed by leaching, especially a solution containing contaminants picked up through the leaching of soil.<sup>24</sup>

## Generation of hazardous waste

Reporting on the production, transport and treatment of waste is important. Transport manifests are documents that account for the quantity, type, origin, transport and destination of waste. According to 2005 transport manifest reports, 122 tons of hazardous waste were produced in Argentina, of which 14% by weight was pathological waste and 86% was of other industrial origin. In the last three years (2003–2005) the production of hazardous waste of industrial origin has increased and the production of medical hazardous waste has decreased.<sup>22</sup>

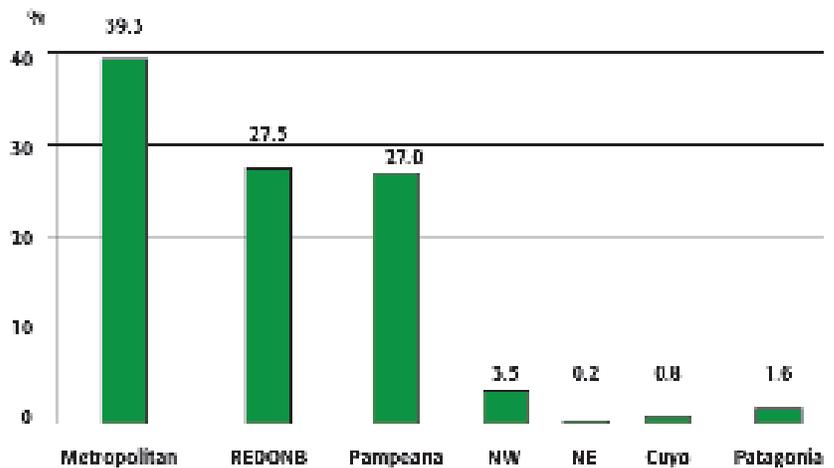
**QUANTITY OF WASTE DECLARED BY THE HAZARDOUS WASTE UNIT. ARGENTINA, 2003-2005**



Source: Secretariat of Environment and Sustainable Development. Hazardous Waste Unit (2006). Report on the interjurisdictional transport of hazardous waste. Year 2005 and provincial reports.

In Argentina 2005, the Unit of Hazardous Waste of the Secretariat of Environment and Sustainable Development registered the production of 104.8 tons of hazardous waste of industrial origin. Most of this waste was produced in the City of Buenos Aires (39%) and in the Pampeana Region (27%), while 28% came from Residues Derived from the Normal Operation of Ships (REDONB - Spanish acronym).<sup>22</sup>

**REGIONAL DISTRIBUTION OF HAZARDOUS WASTE PRODUCTION DECLARED BY THE HAZARDOUS WASTE UNIT. ARGENTINA, 2005**



Source: Secretariat of Environment and Sustainable Development. Hazardous Waste Unit (2006). Report on the interjurisdictional transport of hazardous waste. Year 2005 and provincial reports.

## Noise and vibrations

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Noise is undesired, unpleasant sound. Noise can sometimes be inaudible to the human ear.

Exposure to noise and vibrations can have a number of unpleasant effects. These include: the loss of hearing; psychological effects such as sleep loss, learning and attention alterations; physiological effects due to stress on the hypothalamus-pituitary axis; increase in the excretion of adrenaline; cardiovascular (vasoconstriction, hypertension and tachycardia)<sup>23</sup>; and gastrointestinal alterations. Exposure to vibrations (audible or inaudible) can also affect the muscle-skeletal system causing contractures and fractures – especially when it is high and/or chronic in young children.

Exposure to noise can be either acute or chronic and it can be of low or high frequency (ultra or infra sounds). Loud noise and short, intense noise can destroy the eardrum, cause temporary deafness and injure the cochlear cilia. This acute trauma can cause lifelong problems. Sudden noises are more harmful than continuous ones, due to the body's natural protection reaction. But, chronic exposure to noise can also be damaging – for example, chronic exposure to low frequency vibrations in baby incubators.

Prenatal exposure to noise can be detrimental. Studies have related maternal exposure and the baby's intra-uterine exposure with a baby's loss of hearing, prematurity and intra-uterine growth restriction.

Children are more susceptible to the influences of noise and vibrations than are adults. Often they are unable to avoid the exposures or protect themselves from these hazards. Many toys are specially designed to make noise and vibrations – even explosions.

Adolescents' exposure to noise is of particular concern. The noise in discos and rock concerts is similar to, and sometimes louder than, occupational exposures but without protection from this noise. Furthermore, because noise is generally

associated with youth and therefore socially accepted – youth are often exposed to higher levels. Exposure to loud music can affect the hearing of low tones and the human voice. Hearing losses due to loud music could go unnoticed until later in life. Portable music players are designed not to emit sound over 80 dB, but the combination of auditory immaturity and prolonged use can accumulate negative effects.

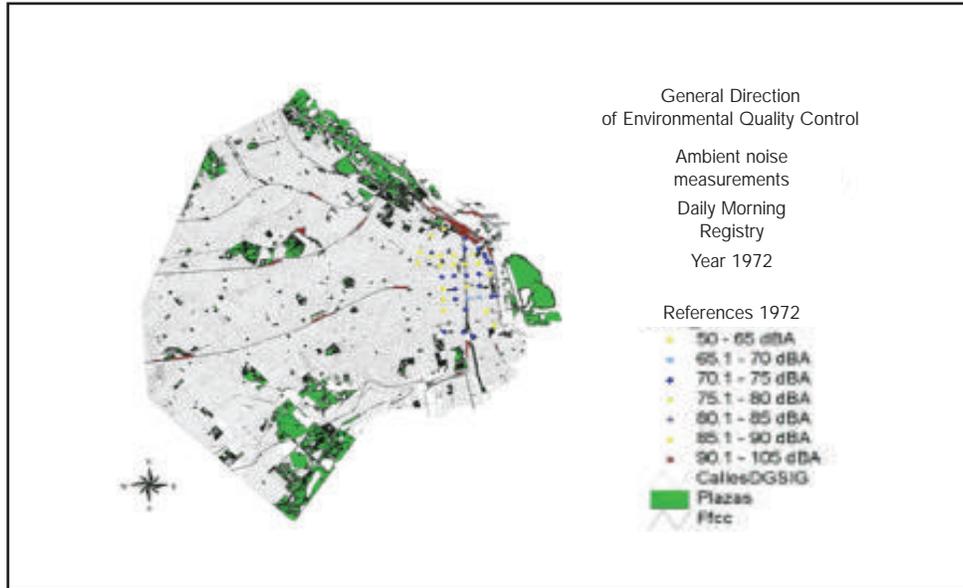
Noise can also create immediate dangers. Distraction and loss of concentration and the resultant tendency to block contact with the external world can slow reaction time and expose the most vulnerable and immature to accidents. For example, adolescents may be in dangerous situations when driving automobiles and listening to loud music.

Exposure to noise can best be prevented by controlling it at the source. The use of protective equipment is a second choice when the source cannot be controlled. It is important to educate people and to encourage hearing conservation programs. Also, it is critical to study sound landscapes in environments where children live, learn, play and work. It is necessary to learn how to recognize and to be aware of noise and vibrations.

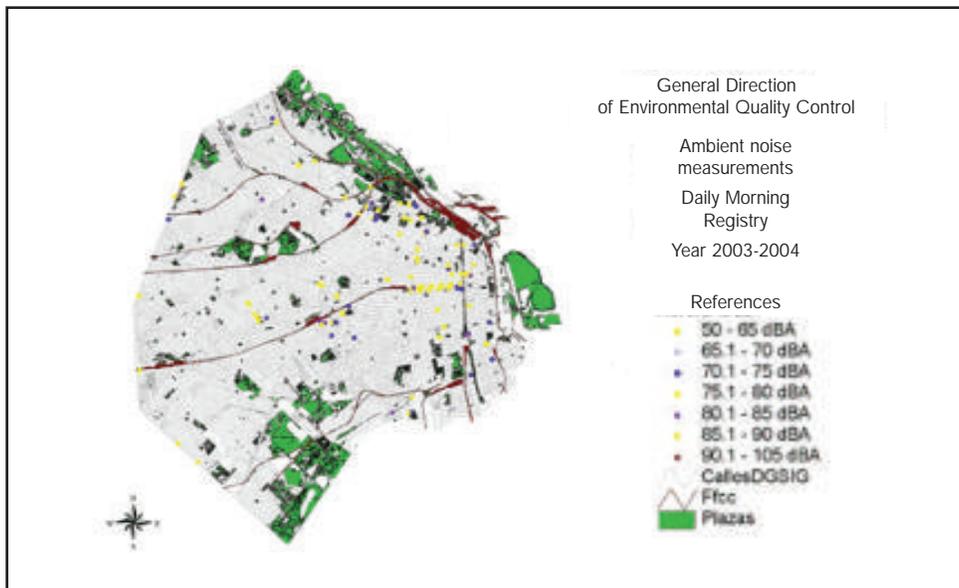
Globally automobile traffic is the first contributor to noise contamination in cities. In the City of Buenos Aires the noise levels are higher than 75dB in most neighborhoods during the day – demonstrating a serious sound pollution problem. A clear relationship exists between the levels of noise, the type of vehicles and traffic congestion.

The Monitoring and Sound Contamination Control Program of the City of Buenos Aires produces Noise Maps. Since 1972 measurements carried out at different city sites (critical corners, intersections and traffic corridors) are geo-referenced. It has been observed that there have not been any major changes in the noise distribution between 1972 and 2004/2005. However, the noise problem has increased and is exacerbated in a number of places.

**AMBIENT NOISE MEASUREMENTS, BUENOS AIRES**  
**REGISTRATION PERIOD: MORNING, 1972<sup>24</sup>**



**AMBIENT NOISE MEASUREMENTS, BUENOS AIRES**  
**REGISTRATION PERIOD: MORNING, 2003 - 2004<sup>24</sup>**



# Radiation

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## Ionizing Radiation

Ionizing radiation produces charged particles (Ionizing Radiation) in materials or tissue that can be absorbed. When this occurs in human tissue it produces recognizable damage, such as damage to the DNA. More seriously, exposure creates a risk of cancer.

The effects vary according to the type of ionizing radiation (alpha, beta, gamma, X-ray and neutrons), however, all are damaging. The biological effects also depend on the radiosensitivity of the exposed tissue.<sup>23</sup> The effects also vary with the dose.

Outcomes range from immediate death to survival with

serious consequences and eventual death from cancer (breast, brain, thyroid and other) and leukemia. Exposure to radiation during pregnancy is associated with teratogenesis,\* mutagenesis\*\* and developmental delay – all varying in severity with the dose and timing of exposure.

Two nuclear power stations are in operation in Argentina. One is in the Province of Buenos Aires – in operation since 1974. The other is in Córdoba – in operation since 1984. There are also three atomic centers and six experimental and production nuclear reactors.<sup>25</sup> A third nuclear power station is under construction.

## Radon in the home

Radon gas comes from ubiquitous deposits of uranium products in soils and rocks. Exposure to radon is associated with lung cancer, and the risk grows when it is associated

with smoking tobacco. There are no studies that link childhood cancer to radon exposure, although it is speculated that there is an association with leukemia.

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\* The development of defects in an embryo during fetal development.

\*\* Any event that changes genetic structure (genes, chromosomes) that results in a permanent alteration of hereditary traits.



## NON-IONIZING RADIATION

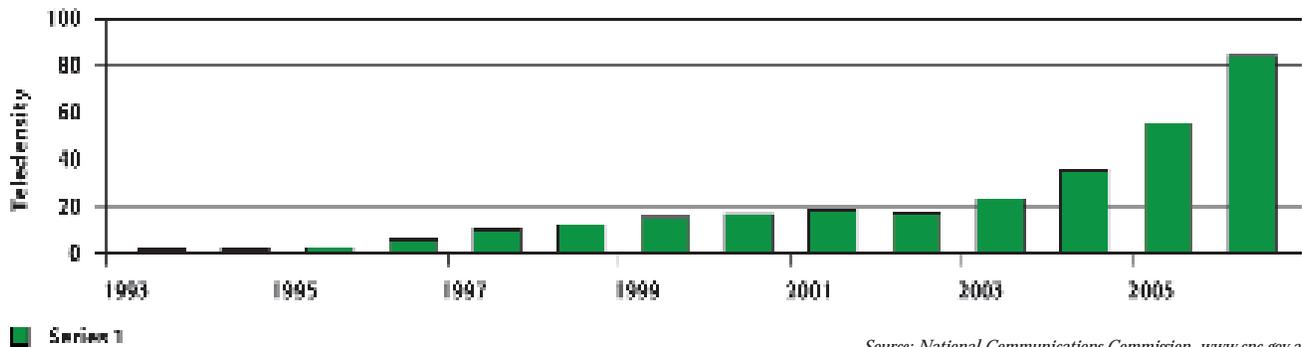
### Electric and electromagnetic fields

Electric and electromagnetic fields are force fields created by the electrical charge that surrounds power lines and electric hardware. Electromagnetic fields associated with electricity have an extremely low frequency (50 or 60 Hz). Telephone towers and cellular telephones emit and receive radio frequencies and microwave frequencies at a higher range (800 to 1900 Mega Hz) (1MHz = 1 million Hz). The primary sources of exposure to radio frequency waves and

microwave frequencies are microwave ovens and more recently cellular telephones.

Teledensity is the relationship between the number of mobile phone terminals in service in a certain geographical area and the number of people in the same area.<sup>25</sup> Argentina is undergoing a period of rapid expansion in teledensity. In only three years the number of terminals has quadrupled.

**TELEDENSITY ARGENTINA, 1993 TO 2005**

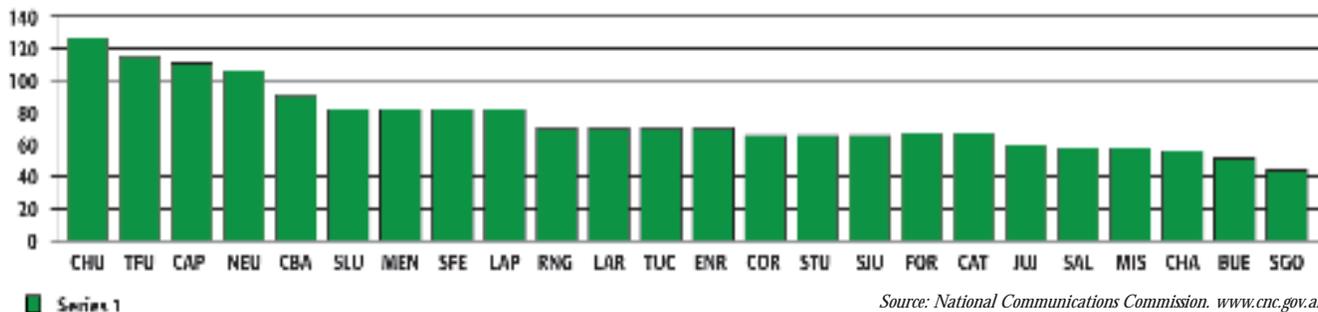


Source: National Communications Commission. [www.cnc.gov.ar](http://www.cnc.gov.ar)

There is a relatively homogeneous distribution of teledensity across the country – the provinces with the highest den-

sity are not quite double those that have the lowest density.

**TELEDENSITY BY PROVINCE ARGENTINA, 2006**



Source: National Communications Commission. [www.cnc.gov.ar](http://www.cnc.gov.ar)

# Global changes

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There is a global consensus that our climate is changing. It is believed that these changes are due to the increased release of greenhouse gases as a result of human activity. It is predicted that extreme weather events such as heat waves, severe cold, storms, droughts and floods will increase over time. The extent of climate change and its effects will differ across regions and countries. Changing patterns of food production from longer growing seasons and changing patterns of disease will also require that we adapt to new situations.

## Global climate change and children's health

There are three ways by which Global Climate Change (GCC) can affect child health:

- Immediate environmental consequences from air pollution as a result of the burning of biomass or forest fires. Pollutants in the air can affect the respiratory system and exacerbate asthma, especially in urban environments.
- Direct impact from climate alterations. Heat waves, intensity and the frequency of climate related catastrophes can increase dehydration, gastrointestinal illnesses and psychological trauma (loss of families and communities).
- Indirect impact from ecological alterations. Problems in the production and distribution of food; increased production of pollen and spores; and increased temperature

The most recent report of the Intergovernmental Panel on Climate Change (IPCC)\* emphasized that there is sufficient evidence that climate changes have a wide range of implications for human health. Climate variability and change can cause death and disease as many important diseases are highly sensitive to changing temperatures and precipitation, increasing the transmission and distribution of many different diseases that were traditionally specific to certain parts of the world.

and floods will exacerbate the activity and territorial expansion of vectors of disease. Droughts followed by rains will produce an imbalance between rodents and predators linked to hanta virus, and there will be an increase in human exposure to the virus excreted by rodents.

In children, other expected direct consequences from the exposure to climate change related to extreme temperatures (intense heat or cold) are diarrheal disease, drowning and psychological trauma. The indirect consequences in children will include malnutrition; stunted growth; developmental delay; increase in respiratory diseases, allergies and asthma; increase in diarrheal illnesses; and increases in illnesses transmitted by vectors such as malaria, dengue, Chagas and encephalitis.<sup>23</sup>

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\* This panel was the recipient of the Nobel Peace Prize, 2007.



## Effects of climate change on disease vectors

Climate change results in changes in the climatic patterns of precipitation and wind. These in turn result in changes in demographic distribution and uses of land. This will ultimately result in changes in the distribution and behavior of disease vectors.

Climate change produces increases in temperature and ambient humidity that affect all stages of the lifecycle of vectors: prolonging the life of adults; accelerating the basal metabolism of the vector and increasing their nutritional requirements; increasing the average number of bites; accelerating the larva incubation period in liquid media; and increasing the production of eggs. This could result in true demographic explosions.

The Intergovernmental Panel on Climate Change (IPCC) points out that if population growth and global increase of urban populations is not accompanied with policy and adequate investment of resources, serious environmental problems can result. These include air pollution (e.g., particulate matter and lead) and reduced sanitary infrastructure. When these are associated with the lack of safe drinking water and water for other human uses the health system will be overwhelmed.

Calculating the impact of climate change on health is difficult because it depends on many factors such as migration,

the urban environment, nutrition, the availability of safe drinking water, sanitary infrastructure, control measures for illnesses transmitted by vectors, land use, resistance to insecticides and health service readiness, among others.

Many countries in Latin America, among them Argentina, are significantly affected by adverse seasonal circumstances and the climate issues created by the phenomenon of “El Niño.”

Non-climate effects can be more important than climate change itself – and can certainly exacerbate the problems associated with climate change. Poverty, a growing problem in urban areas in recent decades; migration; the growing demand for sanitary infrastructure, water, health services, transport, energy, and housing – all of these especially acute in the capital cities of Latin America – impact strongly on the health of the population and of individuals.

In order to protect children from the resulting health consequences and threats to their quality of life, a substantial change is required in the patterns of economic activity and use of technology options.

Understanding the risks that global climate change poses to public health will contribute to the current debate on sustainable management of the biosphere.<sup>26</sup>



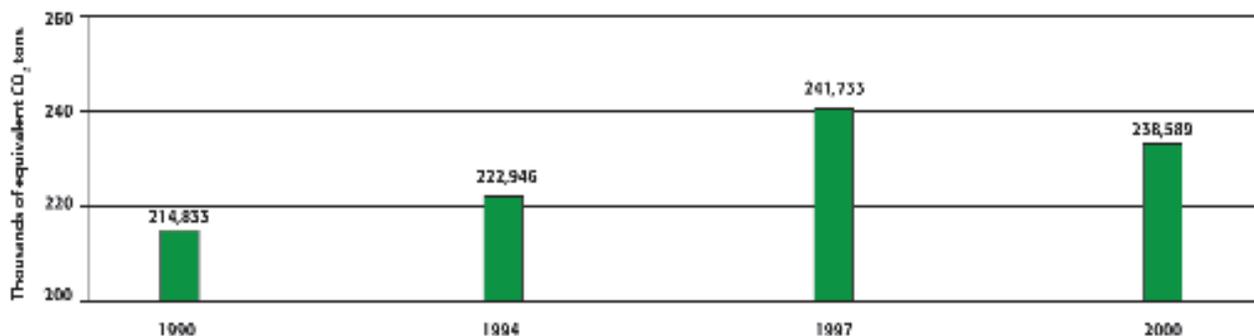
## Greenhouse gas emissions (GGE) in Argentina

Although natural GGE sources exist, human activities emit the largest proportion of these gases. These emissions come from diverse sectors: the generation of energy, industrial processes, the agricultural sector, waste, transport, changes in the use of the land, and forestry.

The stabilization of greenhouse gas emissions – carbon dioxide, methane and nitrogen oxide – all of which contribute to global change – are regulated by the Kyoto Protocol.

There was an increase in greenhouse gas emissions in Argentina between 1990 and 1997. This can be related to the increase in the consumption of energy relative to the low cost of electric power and natural gas. The observed decline between 1997 and 2000 could be due to the introduction of less polluting technologies, such as combined cycles for the generation of electricity, vehicle redesign and upgrading and reduction of bovine livestock.<sup>27</sup>

**GREENHOUSE GAS EMISSIONS ARGENTINA, 1990-2000**



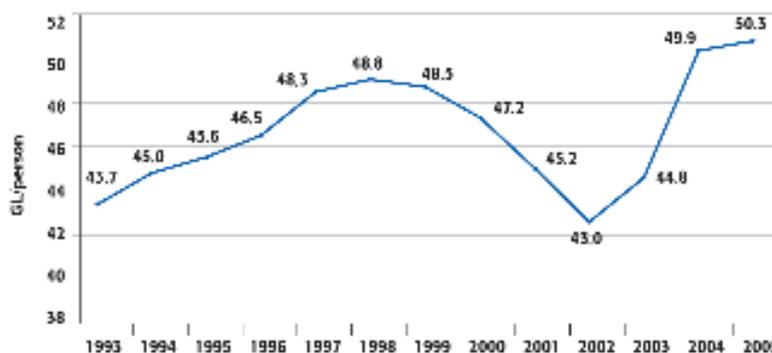
*The values include CUSS: changes in the use of soil and forestry.*

*Source: Secretariat of Environment and Sustainable Development. Sustainable Development Indicators System. 2006.*

## Energy consumption

In Argentina, energy consumption per capita\* increased gradually from 1993 to 1998. Then it suffered a sustained decrease with a low peak in 2002, coinciding with the economic and social crisis that the country suffered. Starting in 2003 energy consumption began to increase again, associated with economic recovery.

**FINAL CONSUMPTION OF ENERGY PER CAPITA. ARGENTINA, 1993 TO 2005**



*Source: National Direction of Prospective. Department of Energy. Ministry of Federal Planning, Public Investment and Services. National Accounts. Ministry of Economy and Production.*

\* The final consumption of energy per capita is calculated as the ratio of the final consumption of energy of all the sectors of the economy (primary and secondary) and the number of inhabitants. It is estimated annually.

## Total carbon dioxide emissions by electric generation

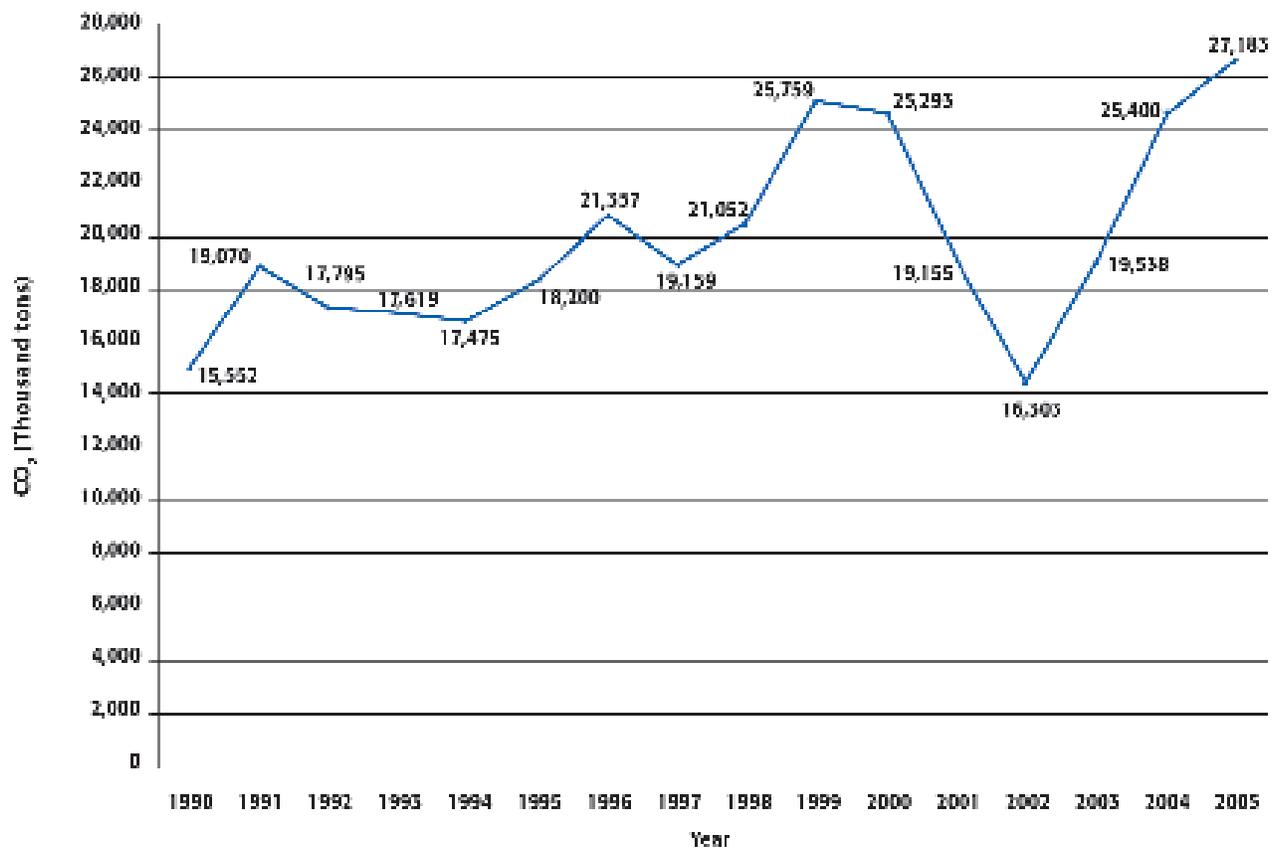
Argentina is considered one of the cleanest producers of electricity in South America due to the high proportion of hydroelectric generation and thermal electric plants that operate primarily with natural gas.

The highest levels of carbon dioxide emission by electric generation were observed between 1999 and 2000. Between 2000 and 2002 the emissions declined and began to grow again starting in 2003. The increase continued

through 2004 and 2005. This can be explained by the increased use of thermal energy in the total electric generation country-wide, along with the lower quality of fossil fuels used due to restrictions on the consumption of natural gas fuel oil.<sup>10</sup>

Overall, electric generation has contributed 7 to 11% of the total greenhouse gas emissions.

**TOTAL EMISSIONS OF CARBON DIOXIDE DUE TO THE GENERATION OF ELECTRICITY. ARGENTINA, 1990 TO 2005**



Source: National Bureau of Forecasts. Department of Energy. Ministry of Federal Planning, Public Investment and Services. National Accounts. Ministry of Economy and Production.

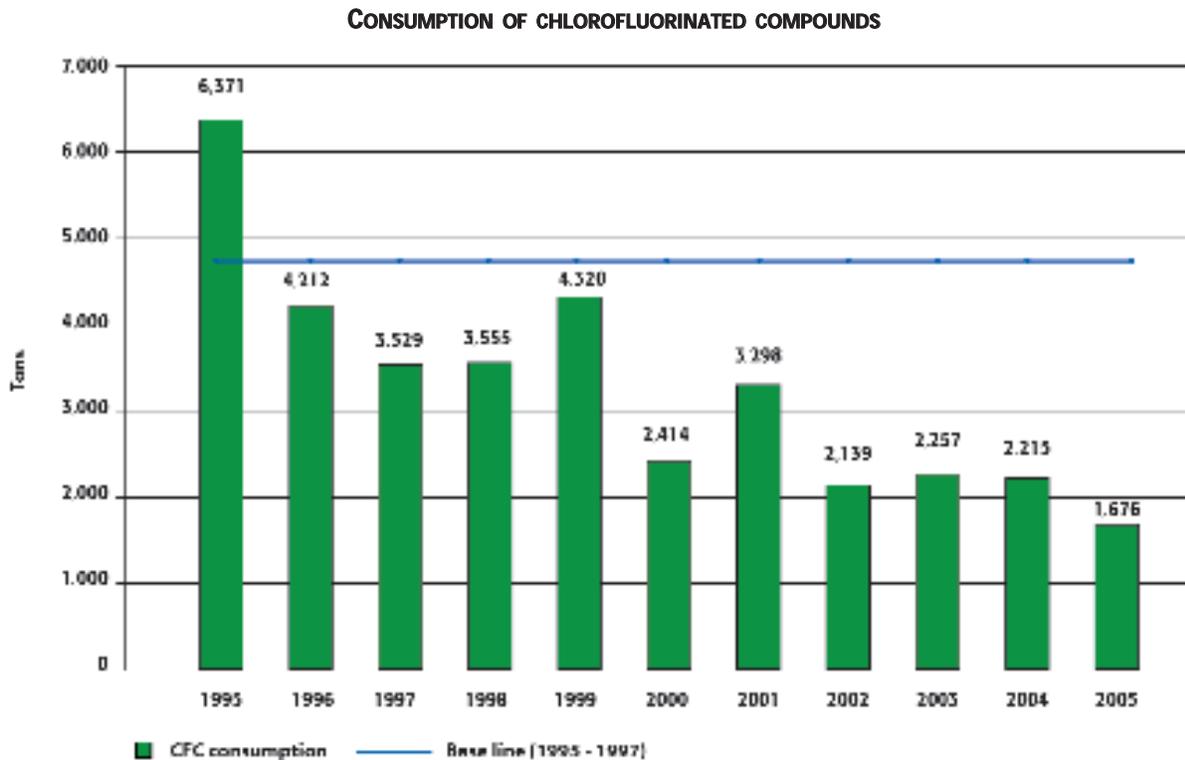
## Relative observations of atmospheric ozone

Ozone is a colorless gas composed of three atoms of oxygen. Chemically, ozone is very active; it reacts readily with a great many other substances. Near the earth's surface, these reactions can damage human health and that of other species, such as lung tissues. But ozone also absorbs harmful components of sunlight, known as "ultraviolet B", or "UV-B". High above the surface, above even the weather systems, a tenuous layer of ozone gas absorbs UV-B, protecting living things below. The ozone layer protects the earth's surface against ultraviolet radiation from the sun.

Chlorofluorocarbons (CFCs)\* deplete the ozone layer – therefore their control is essential.

The timelines for the reduction of the use of CFCs in Argentina, according to that agreed in the Montreal Protocol, were a 50% reduction in the consumption of CFCs by 2005, an 85% reduction by 2007 and total elimination by 2010 – in relation to the baseline levels from 1995 to 1997, with the work on the levels beginning in 1999. The country is reaching the reduction goals set.

\* Chlorofluorocarbons (CFCs) are compounds containing chlorine, fluorine and carbon only, that is they contain no hydrogen. They were formerly used widely in industry, for example as refrigerants, propellants, and cleaning solvents.



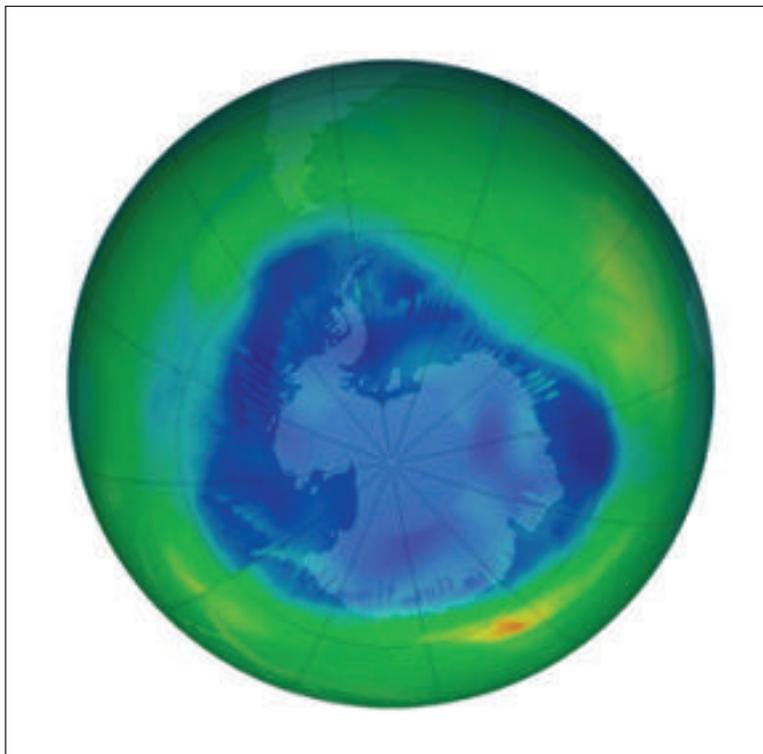
*Source: OZONE Program. Secretariat of Environment and Sustainable Development, Chief of Cabinet of the Presidency of Argentina.*

For the past few decades during the Southern Hemisphere spring (September–December), chemical reactions involving chlorine cause ozone depletion up to 70%<sup>28</sup> over the Antarctic\* region each year. This depletion is known as the “ozone hole”. It projects over Chile and Argentina in South America.

It is suspected that a variety of biological consequences such as increases in skin cancer, damage vegetation, and reduction of plankton populations in the ocean may result from the increased UV exposure resulting from ozone depletion.

Because of international agreements banning ozone-depleting substances, it has been calculated that the emissions of chemicals peaked in 2001 and have been declining. However, many of them have extremely long lifetimes, so it is still unknown what the long term effects of reduced ozone are on the health of those in affected regions.

#### HOLE IN THE OZONE LAYER AS OBSERVED IN AUGUST 21, 2007



Source: <http://ozonewatch.gsfc.nasa.gov/>

\* In the Arctic it can reach 30%. This phenomenon was discovered and demonstrated by Sir Gordon Dobson (G.M.B. Dobson) in 1960. He attributed this phenomenon to the extreme meteorological conditions occurring in the Antarctic.

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## CHAPTER 4

# Actions for the Protection of Health and Environment



***In this chapter only some action indicators are described. The majority are government action indicators, but actions from other sectors are also described as examples because they are interesting and representative.***

Action indicators are activities taken to remediate disease or prevent, avoid or reduce environmental exposures. Long-term, these activities can also address underlying factors, for example, alleviating poverty or improving development.<sup>1</sup>

Action indicators are the most complicated indicators to address. Difficulties arise from the narrow relationship between “action and effect”. It is not enough to know that an activity exists but also, to what level it is implemented. For example, an indicator such as “existence of energy policies” alone is not sufficient, since it does not describe its breadth nor does it indicate to what extent these policies are implemented. On the other hand, if the focus is solely on intervention, the same indicators that were used to define the problem in the first place should be used again, for example, the number of homes that burn biomass as fuel.<sup>1</sup>

Two solutions exist: develop indicators that describe, and as much as possible quantify, the degree of implementation of the action; or use indicators that describe the attributable change as a result of the application of the policy. Both concepts are used in this document.<sup>1</sup>

Action indicators are dynamic indicators. They should be identified, measured over time, comparable and related to other indicators. They must be updated periodically. Therefore one of the purposes of the *SANA Profile* is to set a reference baseline that will begin a process that should be continued and amplified over time.

Information on action indicators is found in a number of sources across a wide range of sectors, for example, government (centres of vital statistics, health statistics, social well-being, work and others), non-governmental organizations and professional associations. Developing, implementing and describing actions to protect the environment and the health of children and the community must involve a dynamic process that involves the critical sectors and stakeholders. The base of participation must be enlarged to include sectors such as the private sector (industry), commerce, production, the economic sector, infrastructure, the legal sector, as well the traditional sectors of health and environment.



# Action indicators in Argentina

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## The National Constitution: Right to a healthy environment

Argentina has enshrined the right to a healthy environment in its constitution. Article 41 of the National Constitution of Argentina (amendment, 1994) guarantees the right of all inhabitants to a healthy and balanced environment and it establishes their obligation to preserve it. The Summit of

the Ministers of Health and Environment of the Americas (HEMA), held in the City of Mar de la Plata, Argentina, 2005, considered Children's Environmental Health one of the three topics of high-priority. The Summit described the actions that are needed. (see Declarations in Appendix B).

## General children's health programs

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Argentina has a number of programs – nationally, provincially, regionally and at the municipal level – that are generally directed at protecting children's health. The programs

below are currently in force; the sequence does not imply an order of importance.

## Programs specific to children's environmental health

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### National Program on Children's Environmental Health

The National Program on Children's Environmental Health was created in 2005 by the Ministry of Health of Argentina. The purpose of the program is to ensure that Argentinean children live, grow, learn and play in a healthy environment.

The objectives of the program are to:

- promote public policy to protect children's environmental health;
- generate information to report, communicate, educate and raise awareness of decision makers and the general population, on the risks and actions to be taken; and
- implement actions to protect children from environmental threats.

The Ministry of Health of Argentina has established the Program on Children's Environmental Health with multi-sectoral participation as a priority. They have facilitated and supported a number of initiatives including the:

- creation of a Profile of Children's Environmental Health in Argentina;
- creation of Pediatric Environmental Units (PEUs);

- development of multidisciplinary teams to provide advice, research, clinical services, and community-wide interventions among other activities;
- development of agreements for the implementation of effective action;
- dissemination of information; and training in Children's Environmental Health



## Pediatric environmental units (PEUs)

Pediatric Environmental Units (PEUs) have been established throughout Argentina at the regional or provincial level. PEUs are run by multidisciplinary teams and coordinated by pediatricians and other professionals committed to the problem of children's environmental health.

Objectives of the PEUs are to sensitize and train health teams and the community; act as a center of information for the community; carry out situation diagnosis in the community; and plan actions. The PEUs are also committed to a number of future objectives – to forming an information system; acting as the link between those affected by environmental hazards and the local regulatory agencies;

developing problem solving networks; and developing interdisciplinary epidemiological research on environmental problems.

PEUs are acting to incorporate basic questions regarding environmental health into clinical histories so that children who are exposed to harmful environmental threats will be identified. They prepare information for dissemination and conduct workshops/meetings for the community at large, and for health teams. They are also implementing actions to provide children with access to clean water and air, appropriate sanitation and safe food. The PEUs promote research at the local level.

### Children's Environmental Health Program in the City of Buenos Aires

Resolution N° 2.479/2006 Ministry of Health of the Government of the City of Buenos Aires (December 2006) was implemented for the sectors dependent on the Ministry of Health of the Government of the City of Buenos Aires.

Its objective is to reduce the impact of environmental threats on the health of children and youth and to ensure their optimal growth and development.

As a result of this resolution a number of actions have been taken to direct attention to health problems of children linked to the environment:

- Health team members and the general population are being sensitized about the vulnerability of children at different stages of development, to environmental risks and to the resultant health effects.
- The registration and epidemiological surveillance of health risks associated with environmental factors is being strengthened.
- Research studies are being promoted on Children's Environmental Health.
- The existing Pediatric Environmental Units (PEUs) are being consolidated.
- The implementation of new Children's Environmental Health teams is being promoted.
- Capacity is being built among health team members on Children's Environmental Health issues.
- Intrasectoral and intersectoral networks are being supported to enable an integrated approach to the problems.
- The incorporation of an environmental pediatric clinical history into the standard clinical history of children is being encouraged.
- Technologies that do not damage the environment are being endorsed.
- Children's Environmental Health content is being incorporated into pediatric medical residency, nursing and obstetrics curricula.

# Plans and programs specifically oriented to reduce risk and/or to improve the health of children

## Immunization program

In Argentina immunization coverage is very extensive. Most children are immunized because the Ministry of Health successfully implements an immunization framework (rec-

ommended by the Society of Argentine Pediatrics) providing all children with access free of charge.

## National Immunization Schedule

AGE	BCG	ANTI-HEPATITIS B (HB)	QUADRUPLE (DTP-HIB)	SABIN (OPV)	TRIPLE VIRAL (SRP)	ANTI-HEPATITIS A (HA)	TRIPLE BACTERIAN (DTP)	DOUBLE BACTERIAN (DT)	DOUBLE VIRAL (SR)
Newborn	One dose	1 <sup>st</sup> dose							
2 months		2 <sup>nd</sup> dose	1 <sup>st</sup> dose	1 <sup>st</sup> dose					
4 months			2 <sup>nd</sup> dose	2 <sup>nd</sup> dose					
6 months		3 <sup>rd</sup> dose	3 <sup>rd</sup> dose	3 <sup>rd</sup> dose					
12 months					1 <sup>st</sup> dose	1 <sup>st</sup> dose			
18 months			4 <sup>th</sup> dose	4 <sup>th</sup> dose					
6 years				Reinforcement	2 <sup>nd</sup> dose		Reinforcement		
11 years		Initiate or complete (3 doses)			Reinforcement				
16 years								Reinforcement	
Every 10 years								Reinforcement	
Postnatal or post abortion									1 dose

*BCG Resolution, Hemorrhagic Fever Resolution,\* BCG: prenatal, + Antihepatitis B: in the first 12 hours of life. Premature new borns (under 2000 g) should receive the neonatal dose (within 12 hours of life) and 3 more doses: at 2, 4 and 6 months. If the child did not receive the vaccine at birth, a 1<sup>st</sup> dose will be given, followed by a 2<sup>nd</sup> dose 1 month after the first dose and a 3<sup>rd</sup> dose at 6 months from the first dose. If the child did not receive the vaccine during childhood, two triple viral doses or 1 triple viral dose + 1 double viral dose will be given. Pregnant women: will receive dT vaccine at 2<sup>nd</sup> trimester of pregnancy; 1<sup>st</sup>, 2<sup>nd</sup> dose, or reinforcement only when prescribed and then every 10 years. BCG: Tuberculosis, HA:Hepatitis TO, HB:Hepatitis B DTP-Hib (Quadruple) diphtheria, tetanus, pertussis, Haemophilus influenzae b, OPV (Sabin): oral poliomyelitis vaccine DTP (Triple bacterial): diphtheria, tetanus, pertussis, SRP (Triple viral): measles, rubella, parotitis, SR (Double viral): measles, rubella, dT (Double bacterial): diphtheria, tetanus*

## Anti-rubella immunization

Since 2006, all women between 15 to 39 years receive free rubella immunization in all hospitals and health centers in Argentina. Men will also be vaccinated if considered to be part of a group at risk or if they live in closed populations to reduce the circulation of the virus and its transmission in the community. The objective of this campaign is to eliminate Congenital Rubella Syndrome in Argentina, a serious illness that affects newborns of women infected with rubella,

particularly when this infection occurs during the first trimester of pregnancy. Congenital Rubella Syndrome can cause abortion, stillbirths and multiple malformations such as deafness, cataracts, blindness and congenital heart defects in developing fetuses. Immunization is the only way to prevent Rubella and Congenital Rubella Syndrome. The vaccine provides lifetime protection.

## National Maternal-Child Program

The federal government has a national maternal-child health program. This program was developed by the National Bureau of Maternal Health, Ministry of Environment of Argentina. It is framed within the concepts of civil rights in the “Convention on the elimination of all forms of discrimination for women” (1979), the “International Convention on the Rights of the Child” (1989) and the “Commitments in favor of mother and child” adopted by Argentina at the World Summit on Children (1990). All of these commitments have health equity as a fundamental goal. Three high-priority strategic axes were established for the imple-

mentation of maternal-child health policies: sexual health and responsible procreation, perinatology and child health programs.

The National Maternal-Child Program has a number of fundamental components that are critical to children’s environmental health. The program provides an infrastructure that gives women and children access to appropriate care to improve their quality of life and health, protect them from risks, and appropriately treat them if care is needed.

## National Sexual Health and Responsible Procreation Program

The National Sexual Health and Responsible Procreation Program, created by National Law N° 25.673, strives to address the serious problems of maternal mortality as a consequence of abortion of unwanted pregnancies; adolescent pregnancy; and AIDS or other sexually transmitted infections resulting from unprotected sexual relations – among other problems.

The program recognizes that the Right to Healthcare includes sexual health, and that this in turn includes the opportunity to have sexual relations without coercion and without fear of infection or undesired pregnancies. It is based on the autonomy of all people to choose an appropriate birth control method; to decide the number of children that each couple wants to have according to their convictions; and to make these decisions based on sound information and advice.

The implementation of the National Sexual Health and Responsible Procreation Program includes:

- Supplies for free distribution in Centers of Primary Care and Public Hospitals, as requested by users, with advice or specialized counseling.

- Technical support and assistance for provincial authorities to implement local programs in all provinces.
- Technical support and ongoing training for health teams (doctors, obstetricians, nurses, social workers, and health agents).
- Free distribution of related publications.



## National Perinatal Health Program

The National Perinatal Health Program, (Pregnancy and Newborn Protection Law N° 25.929) promotes the health of women of childbearing age; women during pregnancy, childbirth and the postnatal period; and of their children during the fetal and neonatal periods. It is intended to reduce the morbidity and mortality of this population group.

The general objective is to transform the model of perinatal care in order to improve the quality of services provided to women and children. In order to achieve this, the best scientific evidence and appropriate technologies are selected to develop “Practice Guidelines” and “Organization and Operation of Service Standards” to be implemented across the country. These guidelines and standards are developed

in consultation with Scientific Societies and National Services.

The National Perinatal Health Program stimulates the formation of “perinatal networks” that coordinate all levels of services for the appropriate care of healthy pregnant women, mothers and newborns, and also for those at risk and with health problems.

The program aims to have all birthing institutions capable of managing emergencies, during normal or high risk childbirth, and to have them follow the Obstetric and Essential Neonatal Standards outlined by the World Health Organization.<sup>2</sup>

## National Integrated Children’s Health Program

The National Integrated Children’s Health Program is a multistage program that provides effective care and interventions for populations with increased risk and for those groups of children in jurisdictions with poor health indicators and greater rates of illness and death.

This care and these interventions embrace the preservation and improvement of children’s health, development and well-being – to enable them to reach their full potential. As well, it encompasses the necessary actions to intervene in an effective manner to reduce the main conditions that cause illness and premature death.

Child health promotion strategies will be developed with support from a Local Programming Guide, the implementation of the “Child and Youth Health Supervision Guide”, and guides for families and health teams caring for children up to two years of age.

The program includes a strategy for the care of prevalent illnesses called the Integrated Management of Childhood Illnesses (IMCI) strategy that includes: Shortened Hospitalization for Lower Respiratory Infections Strategy, Care for Children with Diarrhea and Prevention of Sudden Infant Death Syndrome.

The program is particularly oriented toward those children who fall under the responsibility of health centres or hospitals. It works to improve health services to ensure appropriate coverage and quality of services for children under 5 years of age. The emphasis is on primary care and consultant pediatric services.

The program’s high-priority actions are: detection of children at risk due to biological and social causes; health promotion in general; encouragement of breastfeeding; implementation of the national immunization schedule; support for appropriate nutrition; supervision of growth and development; promotion of child development; social marketing aimed at the prevention of injuries; and attention to prevalent illnesses.

The National Integrated Children’s Health Program oversees the nutritional health of children and undertakes education and dissemination activities regarding adequate nutrition and hygiene. Milk fortified with iron and folic acid is distributed through the Maternal-Child Program.

## **Anemia and neural tube defects prevention**

In 2002, Law N° 25.630/2002 introduced the anemia and neural tube defects\* prevention program. The program fortifies wheat flour marketed for consumption with iron, folic

acid, thiamine, riboflavin and niacin. The exception is wheat flour destined for dietary products which may require a larger or lower proportion of these nutrients.

## **National Policy for Maternal-Child Nutrition**

The National Survey of Nutrition and Health found that one third of pregnant women and children under 2 years of age in Argentina are anemic. Only 20% of children receive milk fortified with iron.

As a result of the National Policy for Maternal-Child

Nutrition, iron is available free of charge in all health centers and hospitals throughout Argentina to complement fortified foods. This is achieved through the REMEDIAR program. The importance of prescribing ferrous sulfate is emphasized with health professionals and the community.

## **Breastfeeding**

Argentina has undertaken a number of activities to encourage breastfeeding among the population. Through Resolution N° 447/1992, of the Ministry of Health, infant formula manufacturers and distributors are prohibited from distributing free samples or formula to the public or making infant formula donations except if they are filling prescriptions ordered by hospital pharmacies. In addition, the resolution stipulates that the presentation and scientific dissemination of information on formula can be made only to health professionals.

As a result of Resolution N° 54/1997 of the Ministry of Health, the WHO's International Code of Marketing of Breast-Milk Substitutes (Geneva 1981) and all later resolutions have been accepted in Argentina. The Code is included in the law of the country in the Argentinean Codex Alimentarius.

The National Breastfeeding Advisory Commission promotes the dissemination of the Code and monitors its execution. The members of the Advisory Commission are the

Ministry of Health of Argentina; the Society of Argentine Pediatrics; the Breastfeeding Provincial Commissions; the International Baby Food Action Network; and mother support groups.

The Mother and Child Friendly Hospital Initiative and the Mother and Child Friendly Health Center Initiative, (Resolution N° 660/2002 of the Ministry of Health) accredit institutions and health professionals who strictly enforce the WHO Code. There are 52 Maternity Wards and Hospitals across the country evaluated and re-evaluated by the Ministry of Health of Argentina for this program.

In 2006, the World Health Assembly of World Health Organization renewed its commitment to the Innocenti Declaration (1990, Florence Italy) and incorporated it as Resolution N° 45.32/1990 urging governments to include and execute the Code and all its later resolutions (12 so far).

In the last two decades the numbers of women breastfeeding and the prevalence of breastfeeding in Argentina has increased.<sup>3</sup>

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\* Includes anencephaly and spina bifida

### ***Nutrition Guide for Healthy Children 0 to 2 years, Society of Argentine Pediatrics (SAP), 2001***

This publication was the result of four consensus meetings held between November 1997 and November 1999. Members of the Nutrition Committee and representatives of collaborating committees participated in the meetings.<sup>4</sup>

This guide provides the health team with updated information and recommendations to improve nutritional practices and optimize the use of available resources to promote better nutrition in children from 0–2 years of age.<sup>5</sup>

### **National Plan for Food Security**

In 2003 the Ministry of Social Development implemented the National Plan for Food Security. The focus is on families with children under 14 years of age, pregnant or malnourished women, people with disabilities and seniors living under socially unfavorable conditions or in situations of nutritional vulnerability.

The objectives of the plan are to:

- offer adequate food assistance to families who are socially vulnerable, according to the specifics and customs of each region of the country;

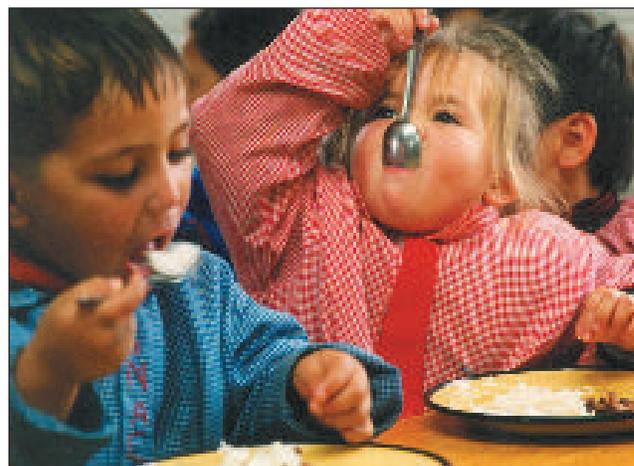
- provide incentives to facilitate food production within the home;
- carry out activities with regard to food and nutritional education; and
- undertake specific actions directed at groups at risk.

The plan promotes food assistance for families who are socially vulnerable, provides incentives to facilitate food production within the home and community, through collaborative networks.

### **Birth Plan**

In 2004, the federal government implemented the Birth Plan – a program that operates as part of the Federal Health Plan. The Birth Plan offers assistance to all pregnant women and to children under six years of age who do not have health coverage.<sup>6</sup> The total number of subscribed beneficiaries (pregnant women and children) is 432,799. These women and children live in the poorest Provinces of the country – that is, Tucumán (82,841), Chaco (65,134), Santiago del Estero (59,296) and other Provinces of the Northeast and Northwest Regions (Corrientes, Misiones, Formosa, Salta, Jujuy and Catamarca; 225,528).

The Birth Plan is a strategic tool to reduce avoidable maternal and child mortality in Argentina by increasing social inclusion and improving the quality of healthcare for the population.



## **National Program to Reduce Intestinal Parasites**

The National Program to Reduce Intestinal Parasites, offered by the Ministry of Health of Argentina is aimed at reducing the prevalence of geohelminths in children between 2 to 14 years of age by reducing fecal contamination of the environment, particularly in marginal areas where settled communities lack basic sanitary services. The fecal matter carries the eggs or larvae of the parasites.

Geohelminths are soil-transmitted parasites with a life cycle that involves no intermediate hosts or vectors: they infect many animals, including humans, and are spread by the fecal contamination of soil, food and water. Most species have juvenile forms which move inside the body of the host, but all species inhabit the intestine in their adult stages and release their eggs in the host's feces. The diseases they cause can thus be local or systemic.

The National Program to Reduce Intestinal Parasites involves provincial authorities and the REMEDIAR program. It is guided by an Expert Committee of representatives from: the National Bureau of Epidemiology, Ministry of Health of Argentina; the Society of Argentine Pediatrics; Department of Parasitology of the National Institute of

Infectious Disease, National Laboratories and Institutes of Health "Dr. Carlos Malbrán"; and from the faculties of Medicine of the national universities. Since geohelminths are not transmitted person to person, but through contaminated soil with fecal matter carrying eggs or larva, the Ministry of Health of Argentina implements the program through two different intervention strategies: it offers a massive drug treatment strategy to the target population and an education strategy to promote environmental remediation and healthy habits to improve environmental hygiene. The population is taught about the need for better sanitary facilities, but also of the importance of modifying hygienic habits that favor the dissemination of parasites.

At the present time the program is administering massive and repeated treatment in different neighborhoods of the provinces of Santa Fe, Salta, Catamarca, La Rioja, Tucumán, Entre Ríos, Formosa, Santiago del Estero, Corrientes, Chaco and the Province of Buenos Aires. In this last jurisdiction the Program runs in the municipalities of Quilmes, La Matanza, Lomas de Zamora and Tigre.

# Plans and programs to reduce risk and/or improve health with clear impacts on the health of children

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## **National Physician Program for Primary Health Care (Spanish acronym PROMAPS)**

As a result of Resolution N° 22/2003, the Ministry of Health of Argentina has created a National Physician Program for Primary Health Care. A quality system of primary health care is fundamental to enabling children to be healthy; to protect them from environmental risks; and effectively to diagnose and treat environmental health problems.

The objectives of the National Physician Program for Primary Health Care are to:

- Consolidate a national strategy of primary health care supported through local strategies to pursue common objectives.
- Improve health care coverage to the extremely poor and to those who are vulnerable socially and at risk of poor health.

- Guarantee access to health care services and basic health care to these populations.
- Achieve effective communication with other existing programs and national, provincial or municipal projects assuring effective and appropriate coordination and collaboration.
- Achieve rational use of health technology resources.
- Stimulate rational prescription of medications, through the use of a listing of essential generic medications, supported by evidence-based clinical pharmacology and medical research.
- Encourage community participation in health actions, by strengthening local networks and the operation of local advisory boards

## **National Survey on Risk Factors**

Starting in 2003, the Ministry of Health of Argentina conducted the First National Survey on Risk Factors. The first report of results was released in 2006. The Survey is a provincially representative household survey that includes 50,000 people 18 years or over from the general population. They are selected through random household sampling.

The objective of this survey is to collect current and reliable information on the magnitude of the risk factors associated with non-transmissible diseases (NTD) and to recognize the prevalence and trends over time.

The burden of NTD and the resultant mortality is increasing world wide. The main determinants of NTD include risk factors involving tobacco, alcohol, physical inactivity, high blood pressure, high cholesterol, diabetes and unhealthy nutrition.

Promotion, prevention and treatment interventions are effective in dealing with NTD and justify the action of public policy. A reduction in the number of risk factors will significantly impact NTD morbidity and mortality. To understand the disease prevalence and trends over time, an appropriate epidemic surveillance system is required. In addition, it is critical to evaluate interventions aimed at health promotion and prevention of risk factors.

The survey questionnaire consists of 14 modules: personal data and housing, work situation, social security and health coverage, general health, body weight, nutrition, smoking tobacco, alcohol, diabetes, physical activity, blood pressure, cholesterol, preventive services and injury prevention.

## REMEDIAR Program

The REMEDIAR program, offered by the Ministry of Health of Argentina, provides free medications. The objective of the program is to guarantee the population access to essential medications for the most common primary health care issues. The REMEDIAR program targets the population living under the poverty line or without social security health coverage. At the same time, the purpose of the Program is to strengthen the primary health care model and to promote health policies under participative actions.

### Action Program Against Human Retrovirus (HIV-AIDS) and Sexually Transmitted Diseases (STDs)

As a result of the Ministerial Resolution N° 111/1995 the Ministry of Health of Argentina implemented the Action Program Against Human Retrovirus (HIV-AIDS) and Sexually Transmitted Diseases (STDs) in 1995. The program is dedicated to the prevention, control and reduction of the impact of AIDS in the population.

The objectives of the program are to prevent sexual and perinatal transmission by:

- development of educational activities;
- promotion of sexual practices that imply a lower risk of acquiring sexually transmitted infections;
- promotion of the use of barrier methods for the prevention of sexually transmitted infections;

### National Program for the Control of Diabetes Mellitus

The National Program for the Control of Diabetes Mellitus runs in accordance with Law N° 23.753/1989 and Decree N° 1.271/1998. It provides coverage for medications and supplies for the control and treatment of diabetes mellitus.

The Ministry of Health of Argentina urges jurisdictions to achieve 100% insulin coverage and the supplies necessary to use it, and a progressively growing coverage of 70%+ for other elements mentioned in the Program and corresponding technical standards.



- communication efforts with diagnostic and treatment services for sexually transmitted infections;
- support activities that stimulate prenatal attention;
- and support educational activities for couples of child-bearing age.

In addition, the program strives to: prevent transmission of the virus through blood and blood derivatives, transplants and during invasive procedures; prevent infection among drug users; reduce the socio-economic impact on individuals and families; enhance surveillance; and consolidate administrative activities.

The objectives of the program are to improve the quality and life expectancy of persons with diabetes; avoid and reduce complications; and reduce direct and indirect costs through a program of prevention and control with appropriate focus on risk factors for the disease and its complications.

The high-priority activities are: the education of persons with diabetes; clinical prevention; access to insulin and oral hypoglycemic agents; and the necessary supplies for the treatment and control of diabetes.

## Ocular Health and Blindness Prevention Program

The Ocular Health and Blindness Prevention Program was created in 2006 by Resolution N° 1250/2006 of the Ministry of Health of Argentina. It is a program for the indigent population without medical coverage and scarce economic resources.

The objectives of the program are:

- Early and opportune diagnosis of ocular pathologies

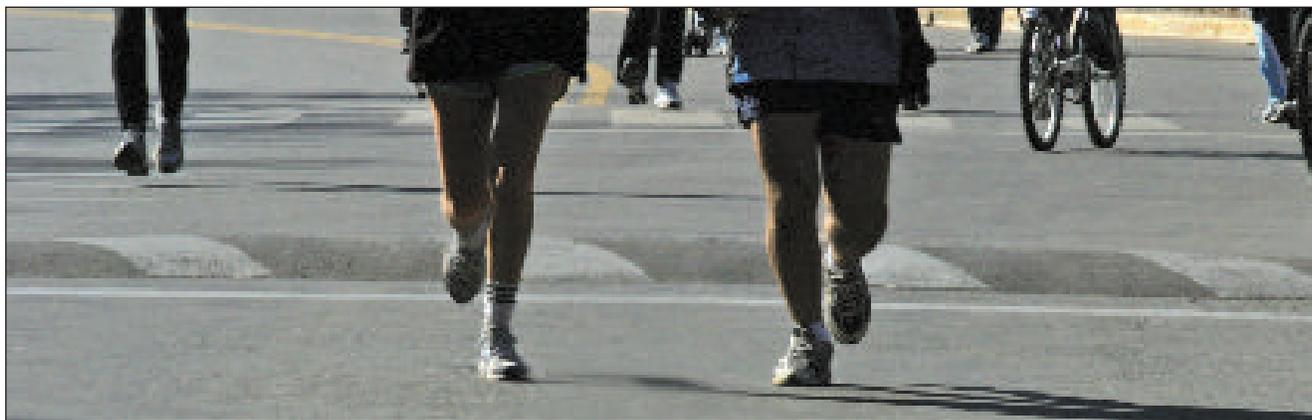
- Prevention of blindness
- Prevention of visual disabilities
- Decreasing blindness and visual disability due to cataracts
- Guaranteeing better access to treatment of ocular pathologies

## Argentina Walks National Program

Based on the results collected by the National Survey on Risk Factors, almost half of Argentines have low or very low levels of physical activity. Therefore, in 2007, the Ministry of Health implemented the Argentina Walks National Program to stimulate physical activity and to combat inactivity.

The Program aims to incorporate walking and physical activity into daily live routines of Argentines, with a frequency of at least 30 minutes a day 5 times per week.

The program supports social networks that promote behavioral changes in communities and municipalities; incorporating the use of bicycles; increasing access to public places where people can be physically active; increasing physical activity in schools; implementing programs of individual behavioral change – e.g., healthy eating and anti-tobacco campaigns; and massive communication campaigns at the community level.



## National chemical risks program

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This Program began in the mid-90s and was institutionalized by the Ministry of Health of Argentina through Resolution N° 527/2000 under the responsibility of the National Bureau of Promotion and Protection of Health.

The objectives of the program are to reduce the risk to human health at all stages of the lifecycle associated with exposure to chemical substances.

The Program includes actions to: promote adaptations of

management mechanisms for chemical substances; identify risks and situations to organize surveillance and control mechanisms; identify resources and documents for appropriate, credible and current information about risks of exposure for the community; promote inter-sectoral work facilitating communication strategies; prioritize problems by magnitude, impact, resolution and community demand; among other activities.

### Asbestos

The Ministry of Health of Argentina prohibits the production, import, commercialization and use of amphiboles asbestos fibres, and products that contain it, through

Resolution N° 845/2000 and chrysotile and products that contain it through Resolution N° 823/2001.

### Persistent organic pollutants (POPs)

Argentina ratified the Stockholm Convention for the elimination of persistent organic pollutants in 2005. Through the Convention's Support Activities Project and the creation of a National Plan of Implementation led by the Secretariat of Environment and Sustainable Development of Argentina, the country has developed dissemination and educational activities relating to persistent organic pollutants. These have been developed in cooperation with diverse sectors and with a wide participation of all stakeholders in order to facilitate the implementation of programs.

As part of the Stockholm Convention the following inventories have been prepared and updated: preliminary PCBs and POPs obsolete pesticide inventories; the dioxins

and furans inventory (2003); and the National Profile on the Management of Chemical Substances. Action programs have been prepared and presented as part of the National Plan of Implementation of the Stockholm Convention for Argentina.

Information and educational material on POPs have been developed in cooperation with a diverse group of stakeholders.

The initiative uses the capacity and experience of NGOs, professionals, the general population, the media and local governments, among other groups, in order to reach a wide range of stakeholders with the information.

### Polychlorinated biphenyls (PCBs)

The management of PCBs has been regulated through Law N° 25.670/2002 of Minimum Standards for Environmental Protection for the Management and Elimination of PCBs in Argentina. The purpose of this law is to eliminate the use of PCBs and prohibit their entry into the country and their production and commercialization.<sup>7</sup> Among other things, it includes a program for the identification or decontamination of equipment containing PCBs (completed by 2005) and their total elimination by 2010.

At the moment Argentina possesses the technology for non-thermal decontamination of equipment or oil (alkaline dechlorination based on polyethyleneglycol and ethyleneglycol) that allow for the decontamination of concentrations up to 5,000 ppm. Oil or equipment with more than 5,000 ppm of PCBs must be transferred to countries that have the appropriate technology to treat them.

## Dioxins and furans

The Municipal Law of the City of Buenos Aires, 2002, prohibits the incineration of pathological waste inside urban public land. The city of Rosario followed with a similar law in 2005. There are several municipalities that have followed this example.

**Environmental Contamination Prevention Code of the City of Buenos Aires** (Resolution N° 39.025, B.M. 17049) published in 1983 prohibits the open sky burning of solid garbage or any other types of combustible substances and the use of home incinerators for urban waste.

## Hazardous waste

The Unit of Hazardous Waste of the Secretariat of Environment and Sustainable Development of Argentina regulates the management of hazardous waste in Argentina through National Law N° 24.051/1992.

Transportation manifests are documents that describe the quantity, type, origin, transport and destination of waste. In Argentina, according to the transportation manifest registry

of 2005, 122 tons of hazardous waste were produced – 14% by weight was pathological waste and 86% by weight was industrial. An increase in the production of industrial hazardous waste and a decrease in the generation of pathological hazardous waste was observed in 2003, 2004, and 2005.

## Mercury

In recent years several neonatology, pediatric and hospital units have decided to eliminate the use of mercury thermometers and blood pressure apparatus. Although these actions have a limited impact on the total mercury released to the environment, it is an important sign that the health-

professional sector recognizes the impact of the toxic exposure to mercury, especially in children. It shows a commitment to individual, professional and institutional action that should be imitated by others. It demonstrates the importance of actions that can be taken in diverse sectors.

## Lead

Argentina has regulatory measures that limit the amount of lead in possible sources of exposure. Standards establish the maximum lead levels allowed in: air, surface gas and chimney emissions; liquid emissions; water quality for the protection of aquatic life (salt water); irrigation; water for livestock; drinking water; quality of soil for agricultural, residential, and industrial use; dental fillings; toys; food and food containers; wines; occupational environments; lead acetate dyes for hair; pesticides; gasoline; paints; adorned and enamelled containers; and drinking water. (See chart on next page.<sup>8, 9, 10</sup>)

The elimination of lead from gasoline has been shown to be a very successful approach to significantly reducing lead exposure. Research studies in the United States found a remarkable reduction in blood lead levels of children after lead elimination from gasoline. In Argentina the 1996 - Resolution N° 54/1996 of the former Department of Public Works and Services limits the maximum amount of lead contained (0.013g/L) in gasoline marketed in Argentina.<sup>11</sup>

There are other examples of regulations that limit lead in certain products. Ministerial Resolution N° 1.088/2004 of the Ministry of Health of Argentina, established the limit of lead in latex paint as 0.06g of lead per 100g or 0.06% by non-volatile paint mass. This law also regulates that containers or labels with lead content read: “less than 0.06% by non-volatile paint mass lead content.”

Provision N° 5.572/2005 of the National Drug, Food and Medical Technology Administration in Argentina (ANMAT), prohibits the use of lead acetate in cosmetic products and prohibits their marketing since January 31, 2006. In addition, the law stipulates that companies manufacturing and/or importing cosmetic products with lead acetate remove the existing products from the market.



**BANS AND RESTRICTIONS ON THE USE OF LEAD IN PRODUCTS, ACTIVITIES, RESIDUES AND THE ENVIRONMENT. ARGENTINA**

Application	Ban or restriction	Regulatory Measure
Air Quality	Establishes lead limits in air quality	Air preservation Law 20.284/73
Air Quality	Establishes lead limits for environmental contamination prevention	Buenos Aires Municipality Descreet 39.025/83
Air Quality	Establishes safety norms for the use of compressed natural gas in public transportation services	Subsecretary of energy Resolution 165/90
Residues and Environment	Establishes limits for lead and derivatives for: <ul style="list-style-type: none"> <li>- liquid emissions</li> <li>- surface as emissions</li> <li>- industrial gas emissions</li> <li>water quality for the protection of aquatic life</li> <li>- water quality for irrigation</li> <li>- water quality for cattle and farm animals</li> <li>- water quality for human consumption</li> <li>- soil for agriculture use</li> <li>- soil for residential use</li> <li>- soil for residential use</li> <li>- air quality</li> <li>- clay for sewage use</li> </ul>	(Regulatory decret on hazardous waste 831/93) Law 24.051/91
Industrial or special runoffs that contain hazardous substances of ecotoxic nature	Establishes the tolerable lead contamination limit	Ministry of Natural Resources and Environment Resolution 242/93
Vegetables	Bans the use of lead arsenate	Decreet 2.121/90
Toy safety and certification	Establishes the maximum lead leacheate limit from accesible toy parts	Ministry of Commerce and Investment Resolution 208/93 Comon Market Group Resolution 54/92 Ministry of Indusrt, Commerce and Minery Resolution 851/98
Gasoline	Lead elimination from gasoline	Ex-Ministry of Public Works and Public Services Resolution 54/96
Personal hygiene products, cosmetics and perfumes	Establishes labeling norms when using lead acetate	National Drug, Food and Medical Technology Administration Dispostion 1.110/99
Foods	Bans the use of lead in paints, decorations and ceramic glazes and in lacquers used for drinking water containers Establishes maximum lead limits for: <ul style="list-style-type: none"> <li>- paper, paperboard, cardboard</li> <li>- paper using bleached vegetal fibers treated with sulfuric acid</li> <li>- metals that come in contact with foods</li> <li>- dyes for objects made from plastics destined for food use</li> </ul>	Argentinean Alimentary Codex Law 18.284/71 Regulatory Decreet 2.126/71 and Decreet 815/99
Foods	Establishes the tolerable lead contamination limits for bivalve milluscs detined for human consumption	Ministry of Argriculture, Fsheries and Food Resolution 425/97
Wines	Modifies maximum lead limits for all wines produced prior and including 1997	National Wine Institute Resolution 18/97
Occupational environment	Establishes the maximum tolerable contamination limits for inorganic lead, tetraethylene lead and thramethylene lead	Minisrty of Work and Social Security Resolution 444/91
Occupational environment	Establishes the diagnostic criteria for lead poisoning as an occupational illness if inorganic lead is suspected	Occupational illness Law 24.557/96 And Regulatory Decreet 658/96

*Source: Children's Environmental Health and Lead in Argentina. Mexican Public Health, Vol. 45. Supplement 2, 2003. Garcia, S.I. and Mercer, R. MC, MSP.*

## Measures that regulate the management of agrochemicals

Argentina lacks a comprehensive national law that regulates the complete management of agrochemicals. Regulation is partially achieved with decrees and sector specific regulations. Standards for the production, use and disposition of agrochemicals and their containers have existed in Argentina since 1958.

For example, Resolution N° 350/1999 supplemented by Resolution N° 230/2000 of the National Sanitary Service, Agro and Food Quality (Spanish acronym SENASA), approves the procedure manual, criteria and outreach for the registration of phytosanitary products in Argentina. The resolution attempts to balance the interests of the public, the ability of SENASA to inspect manufacturing plants, along with private interest and the rights of the owners. This resolution identifies the need for research information required for the approval of chemical products, the recommended doses according to crops, the waiting period for entering fields after application and product toxicology.

Resolution N° 256/2003 from SENASA sets the tolerable maximum limits for pesticide residues in agricultural products and by-products. The resolution stipulates the maximum tolerable limits for pesticide residues in cultivated vegetables. This regulation also specifies the waiting period according to active ingredients, formulation and crop. It presents a list of banned active ingredients and restricted uses.

It is necessary to highlight that the agrochemical registry and the corresponding certifications are divided into several sections, with some overlap: agricultural, veterinary and garden chemicals are managed by SENASA and domestic, professional and sanitation chemicals are managed by the Ministry of Health of Argentina.

There are also provincial laws that regulate the management of agrochemicals. For example, in the Province of Buenos Aires Provincial Agrochemical Law N° 10.699/1988 controls all stages of manufacturing, marketing, storage, treatment and residue control of chemical compounds used in agriculture. The objective of this law is to protect human health, natural resources and agricultural production and avoid the contamination of food products and the environment through the correct and rational application of chemical products.

The Province of Santa Fe has Provincial Phytosanitary Products Law N° 11.273 which strives to: protect human health, natural resources and agricultural production through the correct and rational use of phytosanitary resources; to avoid the contamination of food products and the environment; and promote their correct use by means of educational and planned information.

Resolution N° 145/1996 of SENASA sets the format, type and distribution of information in agrochemical product labels. The standards of labeling are governed by the guidelines set by the Food and Agriculture Organization (FAO) of the United Nations adopted from the pesticide classification system according to risk, developed by the WHO. Different color bands are included in labels indicating different toxicological categories.

National Provision N° 11/1985 of SENASA sets the rules for packaging, sealing, adaptation, capacity and materials for containers of agrochemicals. It is prohibited to package, transport, market or store agrochemicals in containers of capacity and materials different from those that the law requires.

### Public training campaigns on the responsible use of agrochemicals and health effects

Most of the existing agricultural campaigns are focused on issues of production and yield. A few are geared

toward the responsible use of agrochemicals and the health effects.

## National Program on Health and Rural Work Safety

This Program was developed in 2002 by the Occupational Risk Superintendence (Spanish acronym SOR) jointly with the Argentine Union of Rural and Dock Workers (Spanish acronym UATRE), under the General Coordination of the Institute of Labour and Training.<sup>12</sup> It conducts train-the-

trainer workshops for rural workers. The objective is to contribute to the promotion and improvement of the tasks performed by rural workers, reducing the incidence of occupational disease, accidents and their effects.

### Youth Leadership Skill Formation Program by the Institute of Labour and Training

This Youth Program was developed by UATRE in 2005. The purpose of the program is to build capacity

and practical abilities in participating youth groups so they can assume leadership roles in their region. Implemented across the country, the program promotes the creation of a National Network of Rural Youth.

## Poison Prevention and Control Program

The objectives of the Poisoning Prevention and Control Program, run by the Ministry of Health of Argentina are to:

- reduce the risk to the health of humans across the life cycle due to chemical substances;
- enhance epidemiological study of situations and standardize preventive actions;
- provide diagnosis, treatment and surveillance;
- optimize toxicological information interchange and operation of the clinical toxicology assistance units in the country; and
- promote training in clinical toxicology and applied epidemiology.

## Argentinean Toxicology Network (REDARTOX)

The REDARTOX originated in April 1999 as a part of the Poison Prevention and Control Program of the Ministry of Health of Argentina. The Network brings together the Centers of Information, Advice and Assistance in Toxicology (CIAATs) and Laboratories of Toxicological Clinical Analysis (LACTs) of Argentina.

There are 23 CIAATs in nine provinces of Argentina. These centers have specialized personnel to advise on the treatment and prevention of poisonings and to disseminate information on medications, pesticides, poisonous plants and animals, consumer products and chemical substances used at work.

The CIAATs and LACTs operate in a variety of institutions such as hospitals, universities and/or municipal, provincial or national public health services. Most are sustained by public funds, although some operate privately.

The objectives of REDARTOX are to:

- improve the exchange of information;
- contribute to the harmonization of data collection, clinical history taking and data analysis;
- improve the notification of poisonings and optimize toxic-surveillance;
- standardize CIAATs and LACTs activities;

- promote the expansion of the network to jurisdictions where centers and specialized laboratories do not exist;
- develop multi-centre research, training and prevention activities and analytic quality control programs; and
- create virtual banks of poison medication and laboratory standards, to improve the handling of risk derived from contact with poisons of natural or anthropogenic origin, as well as the treatment of affected people.

The fundamental focus of REDARTOX is the Poison Prevention and Control Program of the National Bureau of Promotion and Protection of Health, Ministry of Health of Argentina. The Argentinean Toxicology Association (ATA) participates in this Program as a non-governmental counterpart. ATA is a scientific entity that gathers toxicologists from all disciplines – including doctors, biochemists, pharmacists, biologists, chemists, veterinarians and others.



## Food risks

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### National Food Code (NFC)

The National Food Code was established by Law N° 18.284/1969 with some later modifications and adaptations. This code establishes the characteristics of food quality for the consumption, manufacture, marketing, distribution, storage, transport, expenditure, import and export of condiments, drinks, raw materials and food additives. In June 2007, a modification that included the tolerable limit on

chemical organic pollutants as outlined at the Stockholm Convention was added for pesticides, benzene, industrial chemicals, among others.

Chapter 12 of the National Food Code establishes the quality characteristics for drinks, water and carbonated beverages.

### Pesticide residues in food

In Argentina since 1969 there have been national regulations that set maximum limits for pesticide residues in agricultural products and by-products. Tolerance limits have been established related to waiting periods and regulating the presence of chemicals in food that can affect human health (Law N° 18.073/969 on chlorinated chemicals and Law N° 20.418/1973 on tolerance limits for pesticide residues, among others).

Resolution N° 20/1995 of National Secretariat of Agriculture, Livestock, Fisheries and Food of Argentina set the maximum limits for the presence of pesticide residues in products and vegetable by-products (onion, rice, apples, pears, potatoes, garlic, strawberries and tomatoes) and is based on Resolutions N° 23/1994 and N° 74/1994 MERCOSUR, for interborder traffic.



## Organic farming and food

Accreditation Agencies organized by the National Bureau of Agricultural Inspection, National Bureau of Agricultural Quality and Coordination of Ecological Products of the National Sanitary Service, Agro and Food Quality (SENASA) released the Report, “Organic Production Situation in Argentina during 2006” in March, 2007.<sup>13</sup>

The report states that:

- Exports of certified organic agricultural products and the amount of area under cultivation used for organic agriculture increased by 29% between 2005 and 2006.
- The export of organic animal products increased between 2005 and 2006. However, the amount of surface area used to raise organic animals and the number of animal stocks have decreased.
- The number of beehives and of honey exports increased between 2005 and 2006.

In 2006, in Argentina:

- The area under cultivation increased. This was a result primarily of the amount of grains and oleaginous products (organic soy and wheat) and industrial crops (organic sugar cane, olive tree and grapevine) produced.

- The largest harvested areas under cultivation for fruit were for pears and apples. Onions and beans comprised the largest organic vegetable and legume services.
- The area devoted to organic cattle farming decreased by almost 6%.
- Importance was placed on products that provide the greatest yield for export such as grains and oleaginous products (soy, wheat, flax and rice), fruits (pears and apples), vegetables (onion), and industrialized products (sugar, grape juice, wines, soy flour, juices and oils).
- The largest export increases were fruits: lemon, apple and pear juice concentrates; grape juice, along with sunflower and olive oil; and wines. Among grains and oleaginous products exports increased in soy, wheat and rice. Among fruits, increasing amounts of pears and apples were exported. Among exports of animal origin, the most plentiful were honey and beef.
- The predominance of organic exports was to European Union countries.

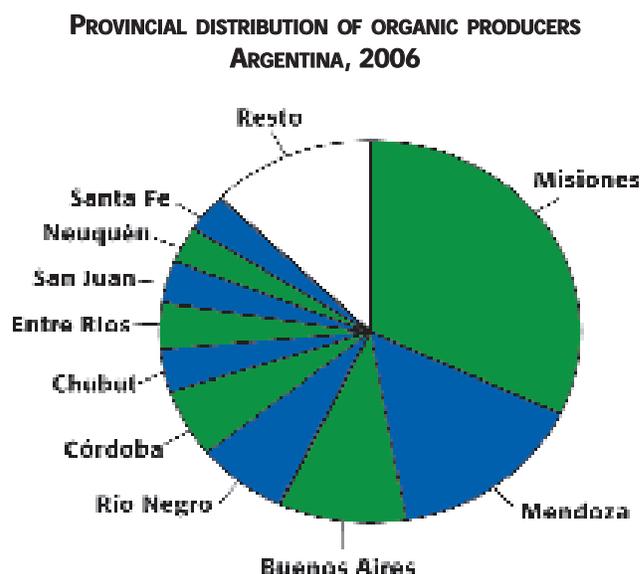


## Provincial distribution of organic operations

The Province of Misiones has the largest proportion of all of the organic production in the country (32% of units produced in 2006), and this has remained steady since 2005. The province has a large number of small cooperatives with an average of 38 hectares (0.7% of the national ecological surface). Mendoza has 15% of the number of small organic cooperatives with an average size of 47 hectares – accounting for 0.4% of the national ecological surface area.

The Patagonia Provinces of Chubut, Santa Cruz and Tierra del Fuego have large areas of organic sheep farming. The region has 74% of the national ecological surface area used for organic sheep farming, with just 5% of the domestic operations. More than 59,000 hectares in Santa Cruz, more than 46,000 in Tierra del Fuego and 15,000 hectares in Chubut are used for organic sheep farming.

The provinces differ with regard to their degree of organic crop specialization. It is important to consider that the characteristics of each crop demands specific soil conditions for their growth.



Source: SENASA 2006. Based on information provided by Accreditation Agencies.

Among grains and oils seeds, wheat (24%), soy (24%) and flax (10%) contribute the largest area under cultivation in 2006. These three crops were grown mainly in the Province of Buenos Aires.

For fruit-bearing crops the largest areas under cultivation were for pears (28%), apples (22%), and lemons (13%). Pears and apples were mostly grown in the Provinces of Río Negro, San Juan, Mendoza and Neuquén; lemons were grown in the Provinces of Tucumán and Corrientes.

Sugar cane (37%); olive trees (33%) and grapevines (21%) were the largest organic industrial crops. Organic sugar cane was grown in the Provinces of Misiones, Salta and Jujuy. Olive trees were primarily grown in the Provinces of Córdoba and La Rioja; and grapevine was primarily grown in the Province of Mendoza.

The most important organic vegetables and legumes grown in 2006 were beans (35%) and onion (20%). Beans were grown in Salta and onions were grown in Buenos Aires, Mendoza and San Juan.

**HARVESTED ORGANIC SURFACE. PROVINCIAL DISTRIBUTION BY CROP (%) YEAR 2006**

Province	Cerals and Oils	Industrial Crops	Aromatic	Legumes and Vegetables	Fruits	Total
Buenos Aires	95	2	0	2	0	100
Catamarca	0	100	0	0	0	100
Chubut	21	0	7	17	54	100
Cordoba	40	60	0	0	0	100
Corrientes	7	59	0	0	34	100
Entre Rios	96	0	0	0	4	100
Formosa	0	100	0	0	0	100
Jujuy	12	87	0	1	0	100
La Pampa	70	0	2	27	1	100
La Rioja	0	97	0	3	0	100
Mendoza	4	54	0	12	29	100
Misiones	0	100	0	0	0	100
Neuquén	0	0	0	6	94	100
Rio Negro	55	1	0	1	43	100
Salta	48	38	0	14	0	100
San Juan	3	45	3	28	20	100
San Luis	100	0	0	0	0	100
Santa Cruz	0	0	0	0	100	100
Santa Fe	95	0	4	1	0	100
Tucuman	0	0	0	5	95	100
<b>TOTAL</b>	<b>63</b>	<b>25</b>	<b>0</b>	<b>4</b>	<b>7</b>	<b>100</b>

Source: SENASA 2006. Based on information provided by Accreditation Agencies



## National consumption of organic food

According to the Report “Organic Production Situation in Argentina during 2006”<sup>13</sup> published by the National Bureau of Agricultural Inspection, the majority of organic products grown in Argentina are destined for export.

The internal market of organic products continues to have minimal impact (2% of total production) and it continues to be restricted primarily to vegetables and legumes.

In 2006, 266 tons of products of vegetable origin were consumed domestically. Most of these were vegetables. Among products of animal origin, in 2006 70,128 kg of organic honey were marketed domestically. While this seems like a small volume it was an increase over 2005.

## Risks transmitted through air

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### National Program for Tobacco Control

This Program of the Ministry of Health of Argentina established “free of smoke spaces” and currently lists 380 companies and institutions that are “100% tobacco free.” Some cities such as Buenos Aires and Bahia Blanca have also been declared “Cities Free of Smoke.”

There are provincial laws that prohibit smoking in public places (for example in the Province of Santa Fe). There is also a toll-free line (0800) for counselling and a section in the Ministry of Health’s website offering information,

posters, pamphlets and other materials to support campaigns and individual, community, municipal and provincial actions.

Although Argentina does not follow WHO’s Framework Convention on Tobacco Control, it has launched a successful national program parallel to this international framework that has reduced the number of adult smokers from 40% in 1999 to 33.5% in 2005.

### National Law for the Preservation of Air Resources, N° 20.284/1973

This Law addresses potential air pollutants from mobile sources (e.g., automobiles) as well as fixed sources (e.g., industry). Although this Law has never been regulated since its approval in 1973 it contains clauses and operative annexes that provide the technical information and necessary framework for the development of prevention mechanisms for air contamination.

### National Traffic Law, N° 24.449

This law monitors vehicles that exceed the allowed noise limits.

### Surface ozone

There are three measurement devices from the National Weather Service. Another from Atmospheric Processes for the Global Environment, Catholic University of Argentina (Spanish acronym PEPAG) has been repaired and will be operational in the near future. These devices will allow the observation of ozone (O<sub>3</sub>) precursors in the troposphere\* but none of the equipment is currently in operation.



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\* The lowest layer of the Earth’s atmosphere, within which the weather is active because of the continual motion of the air and a steadily decreasing temperature with height.

To monitor the ozone layer there are Dobson spectrophotometers operated by the National Weather Service in the Central Observatory of the cities of Buenos Aires (Villa Ortúzar), Comodoro Rivadavia, Ushuaia and in the

Argentinean Antarctica Base “Marambio”. There are also Bauer spectrophotometers\* in the city of Ushuaia and in two of the Argentinean Antarctica Bases “Marambio” and “Belgrano” that monitor the ozone layer.

### Ultraviolet radiation measurements

The National Weather Service (SMN) has a Solar Radiation Center in the Central Observatory of the City of Buenos Aires, where different solar, space and terrestrial radiation ranges are measured. To monitor the UVB range, GUV511 equipment is operated in the cities of La Quiaca, Buenos Aires (Central Observatory) Rawson and Ushuaia. A high resolution spectrophotometer is operated in the CONICET Center, in the city of Ushuaia.

To determine the effect of ultraviolet radiation on skin, spectrometers\*\* are operated in the integrated UV band, of erythemic effect, in the cities of La Quiaca, Pilar (Córdoba), Rosario, Mendoza, Buenos Aires (Central Observatory), Comodoro Rivadavia, San Julián, Ushuaia and Base “Marambio” in the Argentinean Antarctica.

The Physics Institute of Rosario has mobile equipment that carries out sporadic observations.

### Public information on the intensity of ultraviolet radiation

The National Weather Service provides daily information on the intensity of UV radiation. This is particularly important during the summer. This information is communicated through their website, by telephone and through the media including newspaper, radio and television\*\*\*.

During the summer public campaigns take place to increase awareness of the times of day when exposure is highest and

should be avoided and the importance of protecting small children from exposure. The information given includes danger of sunburn and the long term consequences for the health of the skin. Also through this campaign, the public is informed that sunscreen is an inadequate source of protection against UV radiation for young children and recommends keeping them out of the sun.

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\* A spectrophotometer is a photometer (a device for measuring light intensity) that can measure intensity as a function of the color, or more specifically, the wavelength of light.

\*\* A spectrometer is an instrument used to measure properties of light or of intensities of ions.

\*\*\* Information compiled by Professor Dr. Osvaldo F. Canziani, Buenos Aires, April 2007.



## **CITY OF BUENOS AIRES PROGRAMS FOR THE PROTECTION OF THE ENVIRONMENT**

*The Constitution of the City of Buenos Aires* includes the protection of the environment. This mandate of the Constitution is reflected in different programs.

### **Clean Air Program of the City of Buenos Aires**

The General Direction of Policy and Environmental Evaluation of the City of Buenos Aires has instituted the Clean Air Program of the City of Buenos Aires. The Program oversees the following: policies to monitor air and noise quality in the City of Buenos Aires and mechanisms for setting standards; policies to preserve air quality, level of noise and control of emissions from fixed and mobile sources; and policies related to Conventions and International Treaties.

As expressed in the Document “Air Policy Proposals”

from the Clean Air Program of the City of Buenos Aires: “The purpose of the program is to measure air pollutants (gases or particulate matter), noise intensity, traffic density and the physical condition of the atmosphere.”

Air contamination control from fixed and mobile sources is detailed in municipal resolutions that regulate air quality. Air sampling stations from the Municipality of the City of Buenos Aires screen for nitrogen monoxide, nitrogen dioxide, carbon monoxide and particulate matter.

### **Acoustic Contamination Control Law, N° 1540/2004**

This Law was approved in 2004 by the Buenos Aires Legislature. The law oversees “any public or private activity and, in general, any acoustic source that creates noise contamination and/or vibrations that affect the population or the environment and are located or

exercised within the territory of the city...” The law outlines the classification of acoustic sensitive areas and the levels of emission of noises and vibrations produced by acoustic sources using IRAM’s standards as a reference.

### **Resolution N° 39.025 of the City of Buenos Aires**

This resolution establishes the levels of noise allowed according to areas and schedules authorized by authorities and activities (dancing, music and other business and industrial activities that can produce noise).

In turn, Resolution N° 44.959 sanctions the emission of noise in the street and/or adjacent properties. Resolution N° 44.811 measures vehicle levels of noise according to the static method, using the norm IRAM-CETIA 9 C-1.

# Risk from vector transmitted diseases

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The Ministry of Health of Argentina implements the following programs:

## National Chagas Program

The mission of this Program is to develop an integrated strategy based on prevention, promotion and self-care.

The objectives are to: reestablish the problem of Chagas as part of government agendas; implement a multidisciplinary strategy; optimize political-technical coordination; increase the effectiveness of management capacity; strengthen the work of health teams; and implement actions for vector control.

Beginning in 1991, Argentina, Bolivia, Brazil, Chile, Paraguay and Uruguay implemented the INCOSUR/CHAGAS initiative with the main objective to end Chagas disease by controlling transmission through vector-blood.

The impact of the Program is measured with indicators of infection in humans. One indicator is the prevalence of *Trypanosoma cruzi* infection in children under 14 years in endemic rural areas. Among a population of 569,033 children in one study, the prevalence was reduced from 6.3% in 1992 to 1.82% in 2001. The prevalence of infection in pregnant women decreased from 11.84% in 1994 to 5.7% in 2001.

In Argentina, the National Blood Program of the Ministry of Health routinely screens 100% of blood donors for diseases such as Chagas. The sero-prevalence of infection has decreased from 9.21% in 1987 to 4.5% in 2001.<sup>14</sup>

## Dengue: “Together we can prevent it”

This is a permanent dissemination campaign aimed at raising awareness among the population to take action to control the vector regarding dengue fever.

## National Malaria Control Program

This Program of the Ministry of Health of Argentina conducts epidemiological surveillance of malaria cases, treatment, and follow-up of infected cases.

## National Leishmaniasis Program

This Ministry of Health of Argentina, through Resolution N° 386/2004, has produced a Leishmaniasis\* Procedures Manual for managerial and professional levels. The manual is incorporated into the National Program of Guaranteed Quality Medical Care.



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\* An infection caused by any of the flagellate protozoans of the genus *Leishmania*, transmitted to humans and animals by bloodsucking sand flies.

## Risk from solid urban waste

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The National Strategy for the Integrated Management of Solid Urban Waste (Spanish acronym ENGIRSU) developed by the Secretariat of Environment and Sustainable Development of Argentina. This strategy is to be implemented across the country on a short, medium and long term basis between 2007 and 2026. The short-term goal (2007–2008) is that two to three provinces implement Plans for the Integrated Management of Solid Urban Waste (Spanish acronym RSU). The medium-term goal (2008–2016) is that eight to ten provinces have such a plan and, long-term (2016–2026) that all provinces have an Integrated Management System of Solid Urban Waste (Spanish acronym RSU).

The generation of solid urban waste has been increasing, corresponding with an increase in purchasing power in Argentina and an increase in consumption. The resulting increase in solid urban waste creates a need for the necessary surface area for disposal and a potential increase in pollutants. This creates an important challenge for the integral management of national solid urban waste. The program must contribute to minimizing the generation of waste through recovering, reusing and recycling.



# Plans and programs to reduce nonintentional injuries

## National Traffic Law N° 24.449

This National Traffic Law has a number of clauses that are directed at injury prevention.

Article 48 states that: “It is forbidden to drive with physical or psychological impediments, without a corresponding special license; and having consumed narcotics or medications that diminish the ability to drive. It is forbidden to drive any type of vehicle with an alcohol level greater than 500 mg/L of blood. For those who drive motorcycles it is forbidden to do so with an alcohol level greater than 200 mg/L of blood. For public transport vehicles, including children’s transportation and cargo, it is forbidden to drive with any concentration of alcohol in the blood. The authorities will carry out respective control measures by means of approved appropriate methods to such an end.” All vehicle

passengers are required to wear seat belts (Article 40).

All bicycles must have reflective elements on pedals and wheels and a white light in front and a red light in the rear to be visible during the night (Article 41 section g 4). It is also advisable that cyclists use light coloured clothes. The use of helmets for cyclists is not obligatory in Argentina but it is strongly advised.

It is forbidden to drive “using headphones and communication systems requiring continuous manual operation such as cellular telephones” (Article 48 section y).

Youth under “18 years of age” are not allowed to drive motorized bicycles (mopeds) in areas of heavy vehicle concentration or in highways (Article 48, section e).

## National Plan on Road Safety

There is a campaign for the obligatory use of helmets directed at youth in the City of Buenos Aires. This is combined with restriction of the sale of alcohol to

minors. Recently, these campaigns have been intensified. They are aimed at increasing the quality of life in public spaces and protecting the health of the population.

The Secretariat of Transportation of the Ministry of Federal Planning, Public Investment and Services of Argentina, implements the National Plan on Road Safety. It coordinates activity work plans with the provinces through the Federal Council of Road Safety to implement the National Traffic Law N° 24.449 that includes the following activities:

- National Highway Security Campaign – including the dissemination of information and permanent application of measures and standards to prevent speeding (Article 72) and alcohol and drug related incidents (Article 73).
- The National Campaign for implementation of seat belt use (Article 40).

- Road safety education at the kindergarten, primary and secondary levels. (Article 9).
- Driver training and training for authorized teachers and application and control authorities (police and control personnel). (Article 10).
- Required vehicle technical review. (Article 34)
- Road infrastructure and standardization of signage. (Article 21).

## Seat belt installation and correct use

A number of regulations stipulate that vehicles should meet a series of technical requirements in accordance with national laws. The installation and use of seat belts is included. (Resolution MERCOSUR/GMC N° 29/1994 Article 13, Asunción Treaty; Article 10; Decision N° /1991;

Common Market Council, Resolutions N° 9/1991 and N° 91/1993; Common Market Council; and Recommendation N° 1/1994, Labour Sub-group N° 3 “Technical Standards”).

## Bicycle pathways

In several cities of Argentina, special pathways have been established for bicycling, running or walking. The city of Rosario, with a population of 908,163 inhabitants (Census 2001, INDEC) also has an important network of bicycle pathways.



*Bicycle pathways in the City of Buenos Aires.<sup>15</sup>*

## Risk from non-ionizing radiation (NIR)

The Argentinean normative framework on maximum non-ionizing radiation (NIR) levels is based on current recommendations by the World Health Organization on the maximum limits of human exposure to protect the population from NIR. (WHO in turn refers to the International Commission for Non-Ionizing Radiation Protection [ICNIRP]).<sup>16</sup>

There are a number of Resolutions that are a part of this framework. For example:

- Resolution N° 202/1995, Ministry of Health of Argentina establishes the maximum safe levels for population exposure (MPE) to NIR using the WHO reference levels.<sup>16</sup>
- Resolution N° 530/2000. Secretary of Communications of Argentina establishes maximum safe levels for popu-

lation exposure using the Ministry of Health reference levels. It is mandatory for all Radioelectric Systems and/or Communication Services to follow these guidelines.<sup>16</sup>

- Resolution N° 3690/2004, National Communications Commission, provides guidelines for all users of the spectrum regarding diverse Radioelectric Systems and/or Services that emit NRI. This is in accord with the limits imposed by the Ministry of Health of Argentina and adopted by the National Secretariat of Communications.

The framework establishes Measurement Protocols to be applied by technicians and professionals across the country and allows them to determine the amount of power emitted and the distance of radiating systems.<sup>16</sup>



## Infrastructure safety

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### Construction safety regulations

There are local building regulations, codes and standards that specify the minimum safety requirements for the protection of lives and building contents.

As an example, one of the current normative instruments is National Law N° 19587/1972 on Occupational Hygiene and Safety that establishes guidelines (including fire protection) for banks, hotels, public places and places of work.

### Recreation areas: nightclubs

In order to prevent injuries in recreation areas, including nightclubs, there are standards that dictate curfews for minors, zoning, building safety conditions and alcohol sale. These are established at the municipal level. Some cities possess Codes for recreation areas. As an example of munic-

ipal guidelines, Buenos Aires Legislature approved safety standards for local nightclubs on February 25, 2005. These regulations stipulate building materials and curfews – i.e., youth under 18 years can only be in nightclubs from 4 p.m. to 12 a.m. Closing time is 6 a.m.

### Safety in schools

### Use of carbon monoxide and smoke detectors



# Infrastructure plans and programs with health impacts

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The Ministry of Federal Planning, Public Investment and Services implements several plans focused on expanding the provision of water for human consumption and for sanitary infrastructure. Some are listed below:

## **National Entity of Basic Sanitation and Hydric Resources (Spanish acronym ENHOSA)**

In Argentina, ENHOSA was created by Law N° 24.583/1995. ENHOSA organizes, administers and executes the Infrastructure Development Programs for Drinking Water and Basic Sanitation across the country.

In agreement with the Millennium Development Goals for 2015, the main objective of ENHOSA is to achieve 90% coverage of the population with safe drinking water and 75% with sewage systems to reduce waterborne illnesses (diarrheal disease, parasitosis, hepatitis, and others).<sup>17</sup>

## **National Neighborhood Improvement Program (Spanish acronym PROMEBA)**

This is a social program that provides basic infrastructure and land ownership to strengthen community organization. It provides financial and project support for safe drinking water, sanitation, gas, electricity, access roads and street lighting, transportation and pedestrian networks, among other improvements.

## **Minor Sanitation Initiatives Program (Spanish acronym PROMES)**

This Program provides financial assistance for small sanitation projects.

## **Sanitation Program for Communities in Need (Spanish acronym PROSAC)**

This program provides financial assistance to small communities and identified areas within urban centres that are in need. Its purpose is to promote basic sanitation services to reduce the spreading of waterborne diseases

## **Social Development Program in Border Areas of the Northwest and Northeast Regions (Spanish acronym PROSOFA)**

This program develops projects on health, sanitation, drinking water, education, community center use and training in these two regions.

## **Water, Sanitation and Social Development Program (Spanish acronym PROPASA)**

This program provides safe drinking water and sewage system services for rural communities (concentrated or scattered) or in outlying urban centers in need or contingency risk.

## **National Program on Water Quality from the National Institute of Water (Spanish acronym INA)**

This program promotes and coordinates research studies related to the sustainable management of water quality, development and implementation of monitoring systems.

## International agreements

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Argentina has signed and participated in the development of a number of international agreements to protect children's environmental health.

### **United Nations Convention on the Rights of the Child (1989)**

The Convention stipulates that the right to health and a healthy environment are basic rights of children. Argentina co-signed this convention.

### **International Agreements on Border Waters**

There are a number of international agreements on border waters aimed at protecting water resources.

### **Uruguay River Administrating Commission (Spanish acronym CARU)**

This Commission is responsible for the preservation and management of the resources of the Uruguay River, including the evaluation of water quality.

### **Mixed Commission of the Paraná River (Spanish acronym COMIP, Argentinean-Paraguayan)**

This Commission is responsible for carrying out studies on the use of Paraná River resources. Since 1989 this Commission has been responsible for monitoring water quality control and water species.

### **Binational Commission for the Development of the High Basin of the Bermejo River and the Tartija Grande River (Spanish acronym COBINABE)**

This Commission works to force sustainable development in their area of influence, optimize the use of natural resources to generate socioeconomic development and to allow the rational and equal management of water resources.



### **Stockholm Convention on Persistent Organic Pollutants (POPs)**

This International Treaty is aimed at eliminating the anthropogenic production and use of substances recognized as toxic and associated with multiple health effects and fertility issues. It was adopted on May 23, 2001 and has been in effect since May 17, 2004. Argentina approved the convention as Law 26.011/2004, December 2004, ratified it on January 25, 2005 and has been a country member since April 25, 2005. Argentina presented its National Plan of Action on April 25, 2007.

### **Basel Convention on the Control Transboundary Movements of Hazardous Wastes and their Disposal**

This Convention has been in effect since May 1992. Argentina has been a country member since 1992. Not all subsequent amendments to the Convention have gone into effect. The authority responsible for upholding this Convention in Argentina is the National Bureau of Hazardous Waste of the Secretariat of Environment and Sustainable Development of Argentina.

### **The Kyoto Protocol on chemicals that affect global warming:**

Governments agreed in 1997 on the Kyoto Protocol from the UN Framework Agreement on Climate Change (UNFCCC). The Protocol entered into effect in 2005, after 55 nations (that add a total of 55% of the greenhouse gas emissions to the environment) ratified it.

The objective of the Kyoto Protocol is to reduce the levels of greenhouse gas emissions set in 1990 by 5.2% for the period 2008–2012. This is the only international mechanism set to deal with climate change and to minimize its impact. The Protocol includes legally binding objectives so that industrialized countries reduce the emissions of the 6 greenhouse gases produced by human sources such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O), and three industrial source fluorinated gases:

hydrofluorocarbons (HFC), perfluorocarbons (PFC) and sulfur hexafluoride (SF<sub>6</sub>). Argentina ratified the Kyoto Protocol on July 13, 2001 through National Law N° 25.438.

### **Montreal Protocol on chemicals that affect the ozone layer**

After the discovery of the hole in the ozone layer in the Antarctic at the end of 1985, governments recognized the necessity to adopt stricter measures to reduce the production and consumption of a series of CFCs (CFC 11, 12, 113, 114 and 115) and several halogens (1211, 1301, 2402).

The Montreal Protocol refers to substances that deplete the ozone layer. It was conceived so that agendas could be revised on elimination of substances based on scientific and technological evaluations. After the evaluations, the Protocol was adjusted to accelerate the elimination schedules, to introduce other types of control measures, and to add new controlled substances to the list.

The protocol was adopted on September 16, 1987 in Montreal and went into effect January 1, 1989, when it was ratified by 29 countries and the European Union. Since then several additional countries have joined.

For Argentina, the CFC timeline, according to the Montreal Protocol, includes freezing consumption starting in 1999, in reference to the baseline of Argentina (1995–1997), 50% reduction by 2005, 85% reduction by 2007 and total elimination by 2010.

Argentina has fulfilled the goals set up to 2005.

### **Rotterdam Convention Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade**

This Convention was adopted on September 1998 and entered in force on February 24, 2004. Argentina approved it through Law N° 25.678/2000. It was ratified by the United Nations in June 2004 and Argentina has been a country member since September 2004.

# Dissemination of information on children's environmental health

Groups from many sectors have joined together to develop education and information initiatives in Children's Environmental Health (CEH). This optimizes capacities of diverse stakeholders.

Since 2001, Asociación Argentina de Médicos por el Medio Ambiente (AAMMA) and the Society of Argentine Pediatrics (SAP), together with the Ministry of Health and

the Secretariat of Environment and Sustainable Development of Argentina, have undertaken many education and dissemination activities on CEH. These activities have reflected the importance that the topic has gained in Argentina and also in the region – e.g., Uruguay, Paraguay and Chile.

## Society of Argentine Pediatrics (SAP)

SAP actively participates in the promotion and development of education and communication activities on CEH for its members and the community. SAP undertakes these activities in cooperation with national and local governments and non-governmental organizations. Among SAP's numerous subcommittees and work

groups to protect and promote the health of children are the Sub Commissions on: Children's Health and Environment; Breastfeeding; Injury Prevention; and Work Groups on Addiction and on the Rights of the Child. All of these groups' activities are closely linked with CEH1.

## Asociación Argentina de Médicos por el Medio Ambiente (AAMMA)

In 1998 AAMMA started working on children's environmental health in Argentina in the southern cone, and in the north Andean region of South America. As a result of their activities, AAMMA has published the following resources in Spanish:

- Translation and publication of the Spanish version of the book "In Harm's Way" (2001),
- Editing and Publication of the booklet *"The Child and the Environment: Actions to Protect Children from Environmental Threats"* (2004),
- In collaboration with the Inter-governmental Forum on Chemical Safety (IFCS): "Recommendations to Protect Children from Chemical Threats" (2004),
- Translation of the book *"Children and Pesticides"* published by United Nations Environmental Program (UNEP), UNEP Chemicals (2007), among others.

AAMMA's initiatives in the area of education include participation in expert working groups of WHO to develop the WHO CEH Training Modules for Health Care Professionals. AAMMA has contributed to the content of these modules and was responsible for the

adaptation of the modules to Spanish. AAMMA organizes, coordinates and develops professional training and conferences on children's environmental health in Argentina and other countries in the southern cone.

Together with the Canadian Institute of Child Health (CICH), (both members of the International Network on Children's Health, Environment and Safety- INCHES), AAMMA has led the Project "Measuring the Environmental Impact on Children's Health in the Southern Cone", funded by the Canadian International Development Agency. CICH and AAMMA have also conducted training activities related to building capacity in children's environmental health among health care professionals in Argentina, Canada, Uruguay, Paraguay and Chile, funded by the United States Environmental Protection Agency, (USAEPA).

AAMMA is responsible for coordinating the International Secretariat of the International Society for Doctors of the Environment (ISDE). Through this Secretariat, AAMMA coordinated, at the request of the IFCS President, a working group that provided recommendations to protect children from chemical threats. These recommendations were approved by all governments during the 4th Meeting of IFSC in 2003. AAMMA was also responsible for developing the Spanish version of these recommendations.

## National expenditures

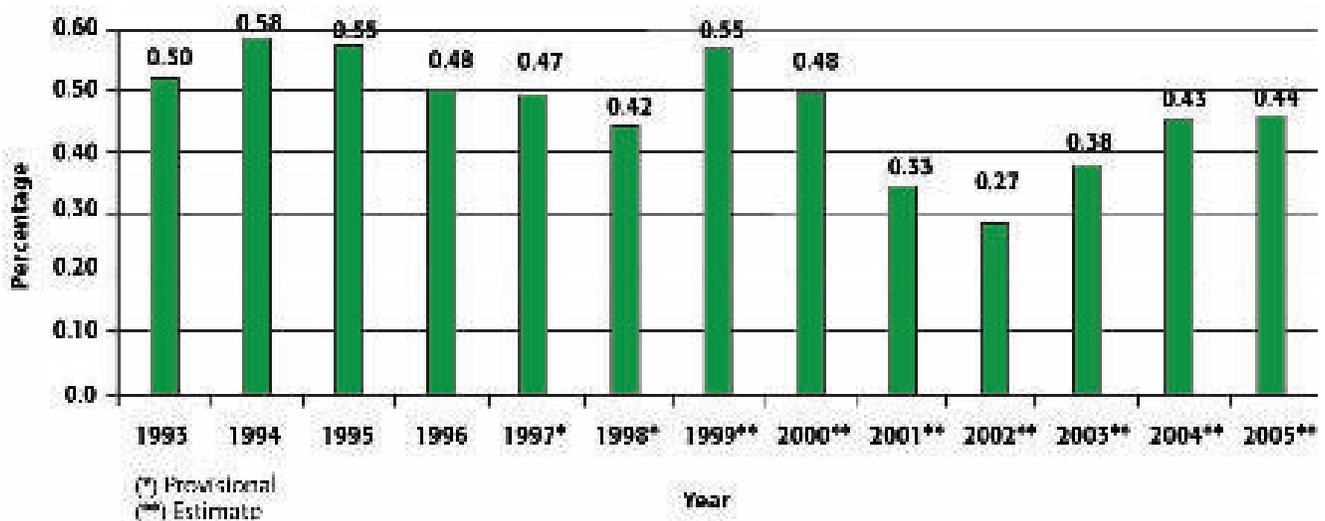
This indicator shows the extent to which the State is committed to protection of the environment. Spending or investment by the State is important to attain sustainable development. These investments include strengthening legal capacity, which defines concrete actions that promote the protection of natural resources. Reporting of this indicator over time is important.

### Public expense in ecology and environment

The consolidated public expense in ecology and environment represents the expenditures of the national, provincial and municipal public non-financial sector in the protection of the environment, in relation to the consolidated total public expense.

Expenditures related to the environment have held constant through time in Argentina, with minimal variation. During 2001 and 2002 a marked reduction was seen as a result of the national socioeconomic crisis. Since 2003 spending has recovered – a trend that has been maintained to 2005.

PUBLIC EXPENDITURE IN ECOLOGY AND ENVIRONMENT



Source: Bureau of Public Expenditure Analysis and Social Programs. Secretariat of Economic Policy, Ministry of Economy and Production of Argentina.

This indicator can be related to the Gross Domestic Product (GDP), as a way of visualizing the growth of the economy and the percentage of expenses that are dedicated to the environment. An evaluation of this indicator through time in relation to other indicators of the social and environmental subsystem will allow the State to guide public expenses in environment.

The participation of different social stakeholders influences the public discussion as it highlights new demands on the State. The State responds by establishing high-priority topics in its agenda, actions or policies that are reflected in social expense, public expense in ecology and environment, among others.<sup>18</sup>

## Actions to eradicate child labour

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In Argentina, laws related to child and adolescent labour are part of the National Constitution on Labor. They are reflected in federal and provincial agreements as well as specific regulations. Argentina has undertaken a number of initiatives to address the issue of child labour.

Argentina ratified the Convention on the Rights of the Child (1991) as well as the International Labour Organization's (ILO) Conventions N° 38/1996 on the Eradication of Child Labour (ratified by Argentina in 1996) and N° 182/2000 on the Worst Forms of Child Labour (ratified by Argentina on 2000).

Argentina participates in the Southern Common Market MERCOSUR – a consortia of countries in South America that promote free trade between participating countries. MERCOSUR also makes reference to child labour as part of their Social Labour Declarations and in the Presidential Declaration for the Eradication of Child Labour.

On May 7, 1997 the National Commission for the Eradication of Child Labour (Spanish acronym CONAETI) was created in Argentina, and formalized on August 25, 2000 by Decree N° 719/2000. CONAETI was created under the Ministry of Labour, Employment and Human Resource Formation (Spanish acronym MTEyFRH) with the objective of coordination, evaluation and follow-up of all efforts favourable to the detection and eradication of child labour.

In April 2001, CONAETI, with financial support from the International Program for the Eradication of Child Labour (IPEC) of the International Labour Organization (ILO), initiated projects with the objective of developing strategies and implementing campaigns on the phenomenon of child labour, to map and diagnose child labour activities and design eradication policies.

### **An example of respect for the environment: The Medical Education and Clinical Research Centre (Spanish acronym CEMIC)**

The Medical Education and Clinical Research Centre (Spanish acronym CEMIC) is an Argentinean Institution that considers health and the environment as inseparable. As a result, CEMIC has increased the capacity on their personnel to implement and document ISO 14001 norms, an environmental management standard. In 2005, CEMIC became the first hospital in the country to become ISO 14001 certified.

Among the CEMIC's many activities, it is the first hospital in the City of Buenos Aires that systematically sends pathological waste to a fixed plant with a sterilization treatment process. Through the process of sterilization the unnecessary generation of dioxins and furans common to incineration systems is avoided. In addition, CEMIC began the eradication of mercury from equipment such as thermometers, tensiometers and other identified hospital uses, replacing them with suitable alternatives. CEMIC also eradicated asbestos in all of its facilities and analyzed its power transformers to assure the absence of PCBs (polychlorinated biphenyls). CEMIC is a smoke-free environment – and has been credited as such by the Ministry of Health of Argentina.

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*NOTES*

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## CHAPTER 5

# Linking Context, Health Outcomes, Environmental Exposure and Action Indicators



***This chapter discusses the importance of using an indicator framework to develop a comprehensive approach, emerging linkages between indicators, examples from Argentina where relationships between indicators were examined to identify problems, and includes strategies and tools to collect and analyze information in a way that will contribute to filling in indicator frameworks and provide concrete direction for moving forward.***

The previous four chapters of this book have examined the context of where Argentinean children live, their health outcomes, environmental exposures that affect them and actions aimed at protecting them. Each area is very important for describing the impact of the environment on children's health. With this information we can begin to map trends and connections.

Information on each of the indicator areas has been collected for many years, however linking them together is a relatively new phenomenon. By connecting indicators we can start to see causal relationships between indicators, address areas where more information is needed and begin evaluating the effectiveness of policies and programs. In all cases it is important to collect information on the indicators we selected. Examining the relationships between indicators is necessary if we are to describe the health outcomes that children experience as a result of their environment.

By collecting and comparing indicators we can also bring together stakeholders who have not traditionally worked together to protect the health of children. Given the intersectoral nature of children's environmental health, the environment, water, sanitation, agriculture, economics, social welfare, energy, labour and education, among others all have important contributions to make. Efforts should be made to involve these stakeholders when selecting indicators to be collected, gathering the data in frameworks, and reporting results.

The linkages presented in this document, along with the strategies and tools to better collect and analyze information, are a starting point. We hope that the ideas presented will stimulate stakeholders to examine additional relationships between indicators.



## Linking indicators to provide a complete picture

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Indicators give countries a credible and useful way to assess the status of children's environmental health and to monitor the success or failure of interventions to address the problems.<sup>1</sup>

Children's environmental health indicators are effective tools for:<sup>1</sup>

- Understanding the status of children's environmental health in countries;
- Monitoring trends in the environment in order to identify potential risks to health;
- Monitoring trends in health resulting from exposures to environmental hazards;
- Investigating potential connections between environmental conditions and health outcomes;
- Raising awareness about environmental health issues across stakeholder groups;
- Producing data to establish baselines, share best practices, and measure progress toward stated goals;
- Informing policy at all levels of government; and
- Targeting actions where they are most needed.

The Multiple Exposure – Multiple Effect (MEME) Model<sup>2</sup> is a widely recognized framework in which to structure the collection of indicators for children. It puts the child at the centre and considers children's environmental health based on their development, lives and experiences.

The MEME framework organizes children's environmental health indicators into four categories: context, exposure, health outcomes and action indicators. This framework was used to structure the collection of indicators in this book (the MEME Model is described in detail in the Introductory Chapter).

Children's environmental health indicators help to fill the gap between information on environment and information on health, putting into focus the special vulnerabilities of children in order to guide environmental, health, and development policy. Indicators by themselves are not a solution to the environmental health risks children face in their everyday lives. They do, however, provide valuable information to policy-makers and others whose decisions

determine the state of the environment and its potential effects on health. Children's environmental health indicators are a powerful tool to prioritize action and to monitor the effectiveness of interventions as well as to identify geographical hotspots and particularly vulnerable populations.<sup>3</sup>

We learn from the indicator framework the importance of taking into consideration all four indicators as each one on its own does not tell a complete story. However each needs to be considered for the following reasons:

- By understanding the context of where children live, learn, play and work we can better determine the influences on their physical and mental health.
- By understanding health outcomes we can examine the health status of children and youth, what is affecting them and what is increasing or decreasing.
- By understanding the sources of environmental exposure in our lives we can better understand the influences on child health and the actions we need to reduce or eliminate them.
- By considering all the actions we can better understand commitments being made by governments and partners to protect children, influence stakeholders and increase enforcement.

There is an urgent need for more and better environmental health indicators and measures. Without this information it will be increasingly difficult to assess the extent to which environmental factors are impacting the health of children and how best to address these through policy changes.

The following discussion illustrates how this model helps to frame two common children's environmental health issues – respiratory illness and childhood diarrhea.<sup>4</sup> The document can be accessed at [www.who.int/ceh/publications/cehcall-foraction/en/index.html](http://www.who.int/ceh/publications/cehcall-foraction/en/index.html)

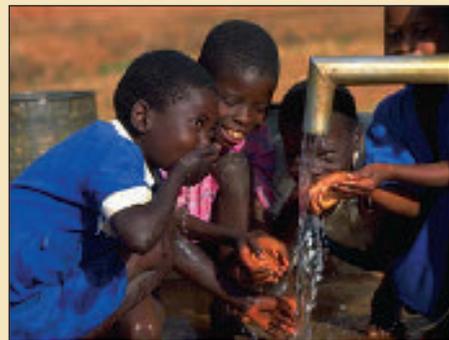
## *Unsafe Drinking Water and Childhood Diarrhea*

**Environment and Exposure:** Childhood diarrhea is closely associated with insufficient water supply, inadequate sanitation, water contaminated with communicable disease agents, and poor hygiene practices.

Approximately 1.1 billion people do not have access to clean and safe water supplies, and about 2.4 billion people lack sanitation facilities. Children are especially vulnerable to the resulting exposure to biological contaminants.

**Health Outcomes:** Diarrheal disease can result in poor nutrition, anemia, retarded growth, and death due to acute dehydration or more chronic medical consequences. Diarrhea accounts for 17 percent of childhood mortality, and despite improvements in the past decade, diarrhea is still responsible for nearly 2 million child deaths every year.

**Actions:** Countering the ravages of childhood diarrhea calls for immediate action. Interventions to prevent diarrhea – such as increased access to drinking water and sanitation, handwashing, use of hygienic latrines, safe water storage at home, and water treatment at home – are well known and have been shown to be effective.



### Developing Indicators as a Policy Tool – Using diarrhea as an example

Children’s environmental health indicators can help guide efficient data collection, track progress, and give early warning on possible outbreaks of epidemics.

Changes in child morbidity and mortality from diarrhea demonstrate the effectiveness or failure of preventive or remedial actions.

#### Environment & Exposure

- What are the concentrations of biological contaminants in drinking water?
- What percentage of the population lacks access to safe drinking water and/or sanitation facilities?
- What percentage of the population has access to methods for safe storage of water in the home?
- What percentage of the population has access to sufficient water to permit adequate hygiene, access to soap or other hand cleaning methods?

#### Health Outcomes

- What are the diarrhea morbidity and mortality rates for children?
- Are outbreaks of key diseases, such as cholera, occurring?



#### Preventive:

- Source water protection (improved water supply and sanitation)
- Water disinfection and safe storage
- Promotion of improved hygiene practices
- Access to soap/hand cleaning methods
- Public education to encourage breast feeding

### ACTIONS

#### Remedial:

- Use of oral rehydration therapy (ORT)
- Access to health facilities or health providers

## *Air Pollution and Respiratory Illness*

**Environment and Exposure:** Air pollution, both indoor and outdoor, is a primary environmental health threat to children. Approximately 2.5 billion people worldwide rely on biomass fuels and coal for cooking and heating needs. In crowded and poorly ventilated settings, these fuels lead to dangerously high levels of indoor air pollution. Another important source of indoor air pollution is tobacco smoke. Outdoor air pollutants such as particulate matter and ozone are additional exposure risks to children, especially in urban settings.



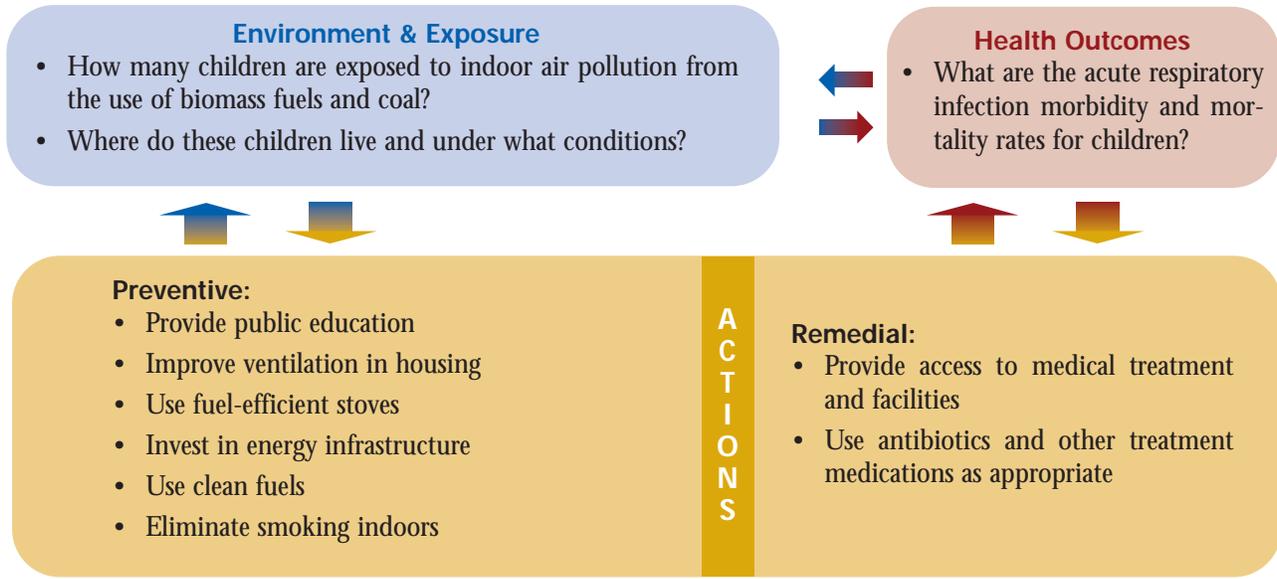
**Health Outcomes:** Acute respiratory infections, (ARIs) such as pneumonia, kill approximately 2 million children annually. As much as 60 percent of ARIs worldwide are related to environmental conditions. Exposure to tobacco smoke is tied to both chronic and acute respiratory illnesses. Indoor air pollution from open fires and inefficient stoves is single greatest cause of ill health from all forms of air pollution worldwide. Outdoor air pollutants can exacerbate both asthma and ARI in children.

**Actions:** Exposure source, preventive interventions and the commitment of resources are likely to differ by country and location. Major differences may exist between rural and urban poor populations. Effective measures (for example well ventilated, fuel-efficient stoves) are needed to lessen the burden of ARI and asthma.

### Developing Indicators as a Policy Tool – Using ARI as an Example

A country concerned about the status of its children’s health, specifically acute respiratory infections and their known association with indoor air pollution. Children’s environmental health indicators would help guide the

collection of necessary data and strengthen the information needed for taking appropriate action. Indicators could also be used to evaluate the impact of interventions.



# Indicator linkages in Argentina

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To get to the root of the child health issue it is important to take into consideration where children live, the health outcomes they are facing, the environmental hazards to which they are exposed and the action that has been taken.

## Findings from this document

Context, health outcome and environmental exposure information contained in this document is for the most part presented using time trends. By presenting data this way it allows us to see changes or discrepancies in the data, allowing us to question why it occurred and what caused the change. The following are some of the main areas where relationships between indicators can be seen.

### *Impact of the 2001/2002 Economic Crisis in Argentina*

Throughout chapters 1, 2 and 3 we can see examples of significant change in Argentina in 2001 and 2002. Something that crosses all these issues and could be the cause for these changes is the socio-economic crisis that the country experienced starting in December 2001. This crisis increased the unemployment rate, putting many families in situations where they could no longer provide healthy environments for their families making children in these situations particularly vulnerable. The socio-economic problems that affected the country had a direct correlation with the environments that surrounded the children, their health and quality of life.

### *Geographic disparity*

In this document, national, regional and local information is presented. When a children's environmental health indicator framework is created at a national level, regional observations and comparisons are possible, discrepancy among regions can be seen and opportunities for analysis arise. By presenting data in this way it becomes apparent that certain regions of Argentina are faring better than others in aspects that impact children such as nutrition, education, access to housing and sanitary infrastructure, recreation, health care, transportation and others. These regions are typically areas with high poverty levels, limited access to services and poor environmental conditions. By presenting information in this way it is possible to prioritize the development of programs and policies that will protect children living in vulnerable situations.

Below are examples that have been identified in the development of this document as well as recent studies that have started to link indicators.

### *Income and social status*

The impact of low income and socio-economic status affects the health of families. Family income has an enormous impact on where children live and the opportunities available to them. As would be expected, poorer regions of Argentina have higher mortality rates and sub-standard housing. In every region, poorer families tend to live in more polluted areas, consume cheaper and more toxic forms of energy and have limited access to clean water and sanitary infrastructure. These families have increased exposure to environmental contaminants and poorer health outcomes. Addressing poverty and environmental inequities would help all Argentinean children to access a healthy environment.

### *Impacts of climate change*

Global warming affects the distribution, activity and behaviour of insects and parasites because it causes changes in the temperature and humidity. Parasite and vector born diseases have increased, although medical treatments have helped to reduce mortality. With global warming we are seeing extreme temperatures and as a result certain insects and parasites that traditionally exist in warmer climates are migrating to previously colder areas. We need to be aware of these changes and prepare to treat more illnesses traditionally associated with other geographic areas, including dedicating more resources toward prevention.

### *Built environments*

With the growth of cities and populations, the built environment is having more of an impact on the health of children than ever before. Higher traffic emissions are contributing to increasing respiratory diseases. The increased volume of traffic is resulting in more traffic and pedestrian injuries. Noise also has an impact on the quality of life. Addressing issues related to the built environment will greatly improve health outcomes for children constantly exposed to these unhealthy environments.

## Studies Linking Indicators

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Measuring biological contamination markers (biomarkers\*) such as heavy metals (lead, mercury) or the presence of extraneous organic chemicals (such as pesticides) in blood can reveal exposures to environmental toxicants. By correlating the presence of contaminants in the body with the emergent clinical information, we can provide important information to advance children's environmental health.

### **Blood lead levels in school aged children in two schools located in Zárate, Province of Buenos Aires**

As part of the project "Measuring the Environmental Impact on Children's Health in the Southern Cone"\*\*\* a study was developed to measure blood lead levels in school aged children in two schools located in Zárate's industrial park.

Zárate is located next to the Paraná de Las Palmas River. This area includes the towns of Zárate, Lima and Escalada. It occupies a surface area of 1,202 km<sup>2</sup> and has a population of 101,271.<sup>4</sup> The city of Zárate itself has a population of 86,686, 28% of whom are under 15 years of age; the population density is 76.4 people/km<sup>2</sup>.

Zárate has an industrial park with 72 industrial companies whose activities include: treatment, incineration and final disposal of industrial waste; chemical recovery (solvents, other); treatment and preservation of wood; pesticide and other agrochemical production, asphalt and insulation emulsions, chemicals to treat leather; production of lead batteries and plaques; automobile manufacturers; cement plants; paper plants; and a power plant, among others.

In 2004, a lead smelter and recovery plant in the Industrial Park was closed because several lead poisoning cases were detected among factory workers.<sup>5</sup> Later that year, the Secretary of Health of the Municipality of Zárate detected an increase in blood lead levels in some children and teachers attending a local school 300 meters from the closed fac-

Research in this area is emerging but we do have a few examples from Argentina that help to illustrate what is possible when indicators are correlated. The purpose of presenting the following examples is to demonstrate what is possible and encourage comprehensive research in children's environmental health.

tory (School N° 19). The school was closed and children and staff were sent to other schools. Most of them were relocated to School N° 8, about 3,000 meters from the closed factory, but still inside the perimeter of the industrial park.

In 2005, the Municipality of Zárate expressed interested in carrying out a study to measure blood lead levels of children attending schools located inside the perimeter of the Industrial Park of the city Zárate. With consent and approval of the parents, the Municipality of Zárate through the non-governmental organization "Todos por la Vida" approached AAMMA to collaborate in developing the study.

The study was carried out with the collaboration of many sectors including: professionals from the Faculty of Biochemistry and Biological Sciences of the National University of Litoral; the National Institute of Technology Development for the Chemical Industry (UNL/CON-ICET)<sup>6</sup>; the National Institute of Respiratory Diseases "Emilio Coni" (INER); and the active participation of the Municipality of Zárate, the NGO "Todos por la Vida", Zárate's school district and Schools N° 12 and N° 8. The Project was also declared to be of educational interest by the Ministry of Education of the Province of Buenos Aires.

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\* Biomarkers are found in cells, tissues, organs or fluids that can suggest or serve to indicate the presence of disease or susceptibility to disease. Definition based on: nydailynews.healthology.com/nydailynews/15836.htm, www.cdc.gov/niosh/2001-1330.html

\*\* Coordinated by the Society of Argentine Pediatrics (SAP); Ministry of Health and Environment; Secretariat of Environment and Sustainable Development; Argentine Society of Doctors for the Environment (AAMMA); Health Canada; University of Ottawa and the Canadian Institute of Child Health (CICH). With the participation of the National University of Litoral (UNL) and the National Institute of Respiratory Diseases "Emilio Coni" and support from the government of Canada through the Canadian International Development Agency (CIDA-ACDI). Ethical review of study design provided by University of Ottawa.

All students from both schools were invited to participate in the descriptive cross-sectional study. Those who accepted formed a non-random, convenient sample. Participation in the study was voluntary, anonymous and free of charge. The sample included 291 boys and girls, 4 to 16 years of age. 129 attended School N° 8 (69 females and 60 males) and 162 attended School N° 12 (86 females and 76 males). The majority of students in both schools were from homes with unsatisfied basic necessities (UBN): unsafe housing, non-functioning bathrooms, overcrowding, incomplete schooling, and under employment. In general they lived in neighborhoods with unpaved streets, no sewers, restricted access to drinking water and limited waste collection services.

To determine the context, related health outcomes and potential sources of environmental exposures, information about the children was collected via questionnaire, including: school attended; personal data; last year of school completed by parent or guardian; whether or not parents/relatives were or are exposed to lead; whether parents/relatives work in contact with lead; whether the child is involved in any work-related activities; whether the family home is near a landfill or waste disposal site; if the child has repeated one or more school levels/grades; and specific health information on the child including symptoms and illnesses. Additional information was collected through blood sampling using LeadCare®, a device that measures lead levels in blood.

**Study conclusions**

- The concentration of lead in blood from 291 students from Schools N° 8 and N° 12 located in Zárate’s industrial park had a mean of 6.3 µg/dL, standard deviation of 6.0 µg/dL, median of 4.3 µg/dL and mode of 1.8 µg/dL.
- Forty-two of 291 children (14.4%) had blood lead levels ≥ 10.0 µg/dL. Eleven children (3.8%) had blood lead levels ≥ 20.0 µg/dL.
- School No 8 had a significantly higher percentage of children with blood lead levels of ≥ 10 µg/dL (19.4% vs 10.5%,  $\chi^2=3.90$ ,  $p=0.048$ ).
- Children age 4 to 9 had significantly higher mean blood lead levels compared to children age 10 to 16 (7.0 µg/dL vs 5.6 µg/dL,  $\chi^2=12.7$ ,  $p<0.001$ ).

- More children with blood lead levels ≥ 10 µg/dL had repeated grade levels in school compared to those with lower lead levels (46% vs 28%).
- Lower education levels of parents or guardians were also an important indicator for higher child blood lead levels with 48% of children with lead levels 10 µg/dL having at least one parent or guardian with incomplete primary education compared to 29% for children with lower lead levels.
- Significantly more males had blood lead levels ≥ 20 µg/dL compared to females (10 males; 1 female;  $\chi^2=9.12$ ,  $p=0.01$ ).

**Remedial actions taken**

- Children with blood lead levels greater than 10 µg/dL\* were followed up according to the actions recommended by the U.S. Centers for Disease Control (see below) with some modifications.<sup>7</sup> Children with blood lead levels of 9.5 to 9.9 were also included in the follow-up group.

**BLOOD LEAD LEVELS AND RECOMMENDED ACTION**

Blood Lead Level, µg/dl	Recommended Action
10–14	Repeat testing in 3 months Evaluate sources of lead contamination Educate: clean hands and mouth
15–19	Repeat testing within 2 months Evaluate sources of lead contamination Educate: clean hands and mouth Refer to health care
20–44	Repeat testing within 1 month Evaluate sources of lead contamination Educate: clean hands and mouth Refer to health care
45–69	Repeat testing within 1 month Evaluate sources of lead contamination Educate: clean hands and mouth Refer to health care Chelation treatment
70 or higher	IMMEDIATE HOSPITALIZATION Chelation with two drugs

Source: Centers for Disease Control and Prevention, U.S. Dept. of Health and Human Services. *Elevated Blood Lead Levels Among Young Children: Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention. 2002.*  
[www.cdc.gov/nceh/lead/casemanagement/caseManage\\_chap3.htm](http://www.cdc.gov/nceh/lead/casemanagement/caseManage_chap3.htm)

\* Maximum blood lead level recommended by the World Health Organization. WHO.

Parents of children with blood lead levels 9.5 µg/dL or greater participated in a second follow-up interview. During this interview, blood lead level results were given to the families in a sealed envelope, results were explained and additional questions about the potential sources of lead exposure were asked. Information was provided to the parents on how to protect their children from lead exposure including recommendations related to personal hygiene, home cleaning, water and food preparation methods. It was recommended that these children remain under medical supervision after the conclusion of the study. If there were other children in the family who did not participate in the study it was recommended that their blood lead levels be tested by a doctor.

Further information about possible lead exposure was obtained at the second interview. More than half of the parents 58.8% (30/51) reported that children were involved in the collection of metal and other types of waste materials; 25.5% (13/51) said they lived near landfills where waste is burned in the open regularly; 9.8% (5/51) responded that they worked in automobile machine shops located in their own homes and that children collaborated in the tasks of the shop. Of the 3 remaining parents (5.9%), one was a plumber, another manipulated different metals and the third lived with relatives in a house next to a car battery factory that was closed.

- In addition to the second follow-up parent interview and discussion session carried out for all children with blood lead levels 9.5 µg/dL or greater, children with blood lead levels of 20 µg/dL or greater were asked to provide a second blood sample for lead analysis approximately 30 days after the original blood test was carried out. All but one of the 11 children complied with a second blood test. For the 10 children completing the second round of blood testing, 5 had decreased blood lead levels, 4 increased and one showed no change. No child had follow-up levels less than 10 µg/dL and only 2 out of 10 had decreased to levels below 20 µg/dL.

#### ***Preventive actions taken***

- Study results were disseminated to all parents, teachers and school administrators from the schools involved, authorities of the Municipality of Zárate and Ministry of Education of the Province of Buenos Aires.
- A re-usable sticker was developed that graphically highlighted the top 10 ways to reduce exposure to lead. These stickers were distributed to all children in the schools.
- Incorporation of lead contamination information into the educational curriculum of both schools was recommended.
- Incorporation of information on lead contamination, environmental exposures and child labour as part of community meetings was recommended.

For a copy of the complete study report please go to: [www.aamma.org](http://www.aamma.org)

## Evaluation of organophosphate pesticide exposure in the children of tobacco growers

As part of the project “Measuring the Environmental Impact on Children’s Health in the Southern Cone\*” a study was developed to evaluate organophosphate pesticide exposure in children living in a community of tobacco growers.

This study was conducted in the Municipality of Colonia Aurora, Department of 25 de Mayo in the Province of Misiones.<sup>4</sup> In 2001 the total population of the Municipality was 8,776 and 44.2% of the Municipality’s population met some or several characteristics classified as Unsatisfied Basic Necessities\*\*. A large proportion of the population had completed primary education (62.9%) and 15.3% were illiterate. Of the dwellings in the Municipality 86.6% were type “B”, presenting at least one of the following characteristics: no water access (pipes) inside the home, no flushing toilet, soil or other material used for flooring not including ceramic, tile, mosaic, wood, carpets, plastic, cement or fixed brick.<sup>8</sup>

The objectives of the study were: to evaluate the level of exposure to organophosphate pesticides in the children of tobacco growers from the Municipality of Colonia Aurora, Province of Misiones; and, to compare levels of cholinesterase in the same individuals during the periods of low and high organophosphate pesticide exposure from the cultivation of tobacco. Cholinesterase is necessary for proper functioning of the nervous system. These pesticides interfere with its action and can lead to muscle spasms, mental disturbance and in severe cases to death.

All students from area schools were invited to participate in the study. Participation in the study was voluntary, anonymous and free of charge. The distribution and collection of questionnaires, blood sampling and presentation of results were carried out at the schools.

To determine the child’s context, related health outcomes and potential sources of environmental exposure informa-

tion was collected via questionnaire, including: school attended, personal data, place of residence, type of agricultural activity performed and specific health information on the child including symptoms and illnesses.

In addition to the questionnaire, pesticide exposure level was determined by measuring biomarkers in blood. Organophosphate pesticides have the capacity to irreversibly inhibit cholinesterase enzymes. Therefore, for convenience and ease of analysis, the inhibition of cholinesterase enzymes was used as a marker of organophosphate exposure in this study with acetylcholine and butyrylcholine used as substrates for the determination of acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) respectively. Limitations exist to the use of cholinesterases as biomarkers of exposure to organophosphates because accepted values that are considered normal vary a lot within a population and can present alterations as a result of diet or hepatic disease. For this reason it was decided to compare the values obtained in the same individuals at both a time of high exposure and a time of low exposure.

A 15% to 29% decrease in cholinesterase activity at a time of high exposure compared to low exposure in the same individual is considered as an indicator of organophosphate pesticide exposure. A decrease of 30% or more is considered as an indication of more serious exposure. It is recommended that children with a 30% decrease in cholinesterase activity be followed for at least 6 months by a medical professional. This is according to the World Health Organization and is based on the categorization below.<sup>9</sup>

### INTERPRETATION OF THE TYPE OF POISONING ACCORDING TO AChE AND BChE VALUES

Type of poisoning	AChE	BChE
Light or recent poisoning	Low if any decrease at all	Extremely decreased
Poisoning due to repeat dose (chronic)	Extremely decreased	Low if any decrease at all
Serious and recent poisoning	Extremely decreased	Extremely decreased

\* Coordinated by the Society of Argentine Pediatrics (SAP); Ministry of Health and Environment; Secretariat of Environment and Sustainable Development; Argentine Society of Doctors for the Environment (AAMMA); Health Canada; University of Ottawa and the Canadian Institute of Child Health (CIH). With the participation of the National University of Misiones, the National Institute of Respiratory Diseases “Emilio Coni” and support from the government of Canada through the Canadian International Development Agency (CIDA-ACDI). Ethical Review of study design provided by University of Ottawa.

\*\* Unsatisfied basic necessities (UBN) are divided into 5 categories: overcrowding, type of dwelling, sewage, schooling and subsistence capacity.

Three time periods were used for obtaining blood samples in Colonia Aurora for AchE and BchE analysis: October 2004, a time of high exposure to organophosphate pesticides; May 2005, a time of low exposure; and October 2005, a time of high exposure. Children were categorized into groups depending on their high and low sample time period. Group A contained a total of 31 paired samples (15 girls and 16 boys) sampled in October 2004 and May 2005. Group B contained a total of 34 paired samples (20 girls and 14 boys) sampled in May 2005 and October 2005.

### ***Study conclusions***

Group A had a significantly lower mean AChE value during the high organophosphate exposure period compared to the mean during the low exposure period (8845 IU/l vs 10439 IU/l,  $\chi^2=9.46$ ,  $p=0.002$ ). The mean value obtained during October 2004 was 15.3% lower than May 2005 for Group A. On the other hand, there were no differences observed in the mean values obtained during May 2005 and October 2005 for Group B. The difference between Group A and B in relation to the AChE values could be accounted for by increased education and awareness activities that began with the study population and their families in 2004.

There were no statistically significant differences between BChE levels between high and low exposure times for October 2004 and May 2005 (Group A) or May 2005 to October 2005 (Group B).

### ***Acetylcholinesterase (AChE) inhibition***

- In Group A, 13 out of 31 children showed a 15% inhibition or greater between low exposure period and high exposure period and in Group B 11 out of 34 children had a 15% inhibition or greater.
- In Group A, 6 out of 31 children had 30% inhibition or greater between low exposure period and high exposure periods and in Group B 5 out of 34 children had a 30% inhibition or greater.
- In Group A, 2 out of 31 children had values below the normal reference range (<7120 IU/l) at the high exposure period and in Group B 1 out of 34 children had values below 7120 IU/l at the high exposure period.

- In Group A, 2 out of 31 children had values below the normal reference range (<7120 IU/l) at the low exposure period and in Group B 2 out of 34 children had values below 7120 IU/l at the low exposure period.

### ***Butyrylcholinesterase (BChE) inhibition***

- In Group A, 2 out of 29 children had a 15% inhibition or greater in BchE between low exposure and high exposure periods and in Group B, 3 out of 32 children had a 15% inhibition or greater.
- In Group A, 0 out of 29 children had a 30% inhibition or greater in BchE and in Group B 2 out of 32 children had a 30% inhibition or greater.
- In Group A, 2 out of 29 children had values for BchE below the normal reference range (<3650 IU/l) at the high exposure time and in Group B, 1 out of 33 children had values less than 3650 IU/l at the high exposure time.
- In Group A, 0 out of 31 children had values for BchE less than 3650 IU/l at the low exposure time and in Group B 1 out of 33 children had values less than 3650 IU/l at the low exposure time.

### ***Preventive actions taken***

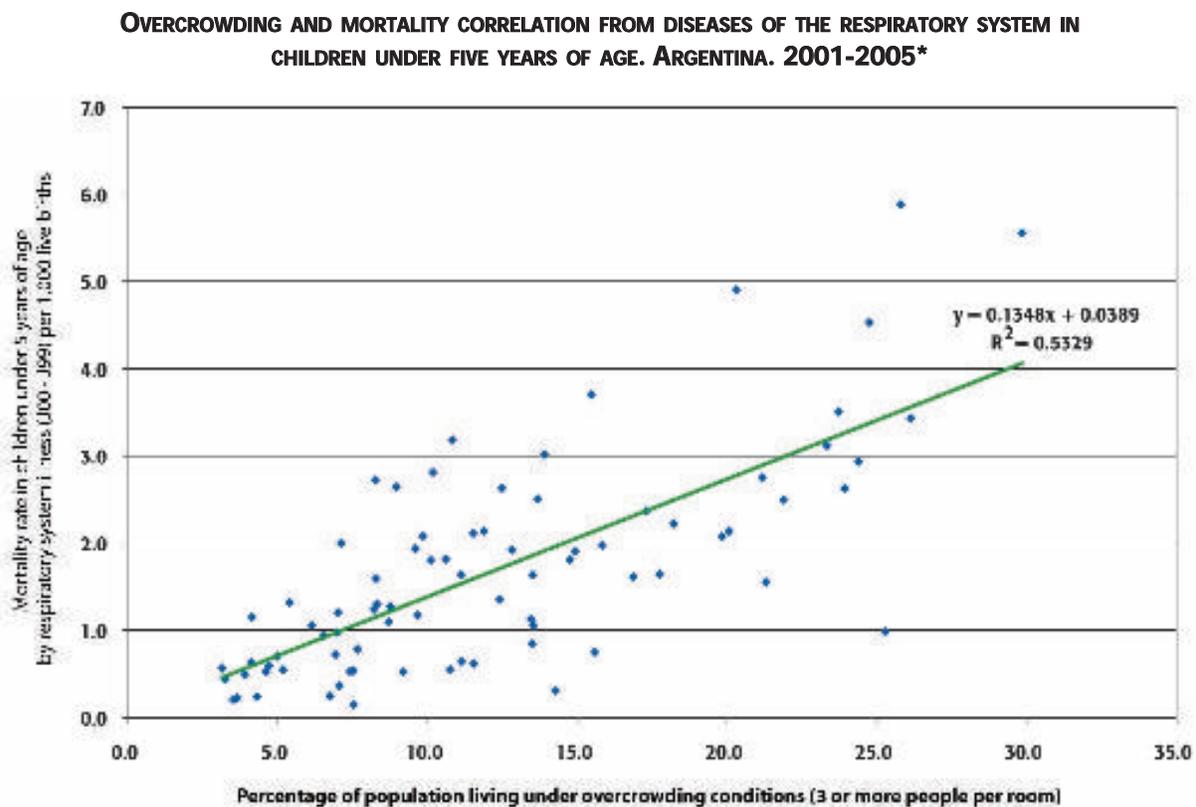
- Information on how to avoid/reduce personal and family exposure to pesticides was incorporated by teachers into the educational curriculum of schools.
- Information on how to avoid/reduce personal and family exposure to pesticides was incorporated by groups of farmers and groups of mothers into their regular community meetings and training sessions.
- In 2005, tobacco companies of the region began suggesting to the producers modifications to current agricultural practices to reduce the use of pesticides. A new “technology package” called Integral Management for Plagues and Diseases was introduced. The objective was to apply smaller quantities of pesticides and use less hazardous compounds, replacing organophosphate pesticides with neonicotinoids pesticides.

For a copy of the complete study report please go to: [www.aamma.org](http://www.aamma.org)

## Overcrowding and mortality from diseases of the respiratory system in children under five years of age in some departments of Argentina. 2001–2005

Mortality from diseases of the respiratory system in children under five years of age in 80 departments of Argentina was analyzed (2001–2005). Mortality was correlated with overcrowding (3 people or more by dwelling) based on data from the National Population and Household Survey (from the beginning of that period – 2001).

By correlating this information an association was found between overcrowding and the rate of mortality from diseases of the respiratory system in children under five years of age (correlation coefficient = 0.53).



\*Eighty departments were selected with a population of 10,000 or more and at least one death due to respiratory disease (J00-J99) in children under 5 years of age during 2001-2005 in Argentina.

Source: National Institute of Respiratory Disease "Emilio Coni"; based on information given by the National Bureau of Statistics and Health Information, Ministry of Health of Argentina, 2007.

## Strategies

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Strategies and activities have been implemented in Argentina based on “collaborative actions” among the different sectors to:

- Introduce children’s environmental health issues
- Identify partners
- Build alliances among the sectors
- Build projects with participation of all stakeholders
- Build a profile of children’s environmental health that serves as a baseline
- Develop and promote policies to protect children from environmental hazards.

This is being done through:

- Education and capacity building of all stakeholders
- Research on existing problems
- Positioning children’s environmental health issues in strategic government and non-government areas (national, regional and international)
- Promoting permanent quality control of children’s environmental health at all levels
- Promoting actions to better understand the environment/health relationship and protection of community environments where children live, grow, play, learn and work.

Health care professionals, especially pediatricians, family doctors, nurses and public health experts have been identified as a priority group for education and training efforts as they can:

- Recognize parental exposures that affect the health of children from the moment of conception
- Identify threats in the environments where children and youth spend their time
- Recognize signs and symptoms of disease related to the environment
- Recognize that children sometimes remain hospitalized for long periods of time or undergo medical treatments that expose them to environmental hazards

- Promote the application of corrective and preventive environmental intervention measures
- Implement measures to develop sustainable and healthy environments.

By training these “front-line” professionals as a first step it is believed that:

- understanding about the influence of environmental factors on children’s health will be increased;
- diagnosis and management of health and developmental effects will be improved;
- capacity to discuss environmental risks with patients, parents, educators and the media will be increased;
- advocacy skills for sensitizing decision-makers about high priority issues for action will be improved.

Professionals who care for children need to be educated in all areas that impact child health outcomes, including the environment. This includes preventive actions to protect children from environmental hazards.

Identifying and collecting information on children’s environmental health is sometimes difficult. To assist researchers, governments, organizations and professionals a number of tools have been recently developed.

These tools have been used in Argentina to promote the identification and collection of information to fill in context, health outcome, environmental exposure and action indicator frameworks. The tools can be modified to meet the needs of the group using them, providing a baseline on which to start and a regular process to report on information that will advance children’s environmental health initiatives.

## Children's Health and Environment – Survey to Pediatrician Members of the Society of Argentine Pediatrics (SAP) on Children's Environmental Health

As part of the project “Measuring the Environmental Impact on Children's Health in the Southern Cone\*”, the “Children's Health and Environment” survey was designed to:

- evaluate Argentinean pediatricians' level of understanding on the environment as a determinant of children's health;
- learn about the perception pediatricians and their communities have on the issue;
- collect information on pediatricians' perceptions of the main environmental factors and related diseases affecting children's health in Argentina;
- learn the sources of information pediatricians receive on CEH;
- evaluate pediatricians' interest in increasing their knowledge of the issue;
- identify pediatricians' interest in participating in a network to take action to protect and improve children's environment and their health.

This survey is the first of its kind and has since been modified to collect information from pediatricians in Uruguay, Paraguay and Chile as well as multi-disciplinary health professionals in Canada. The World Health Organization has also shared this survey with members working in Europe (Italy and Cyprus) and the United States. In these cases the survey was used to provide baseline data on the knowledge and interests of pediatricians and health professionals in order to structure appropriate capacity building initiatives. The complete survey can be found in Appendix A. Any group is welcome to use and modify it providing they provide appropriate credit.

### *Results of the survey in Argentina*

In September 2004, SAP had 13,509 members: 9,010 (66.7%) female and 4,499 (33.3%) male. By July 31<sup>st</sup> 2005,

the survey had been answered by 835 pediatricians who are members of SAP, representing 6.2% of the total SAP membership.

The survey was descriptive and cross-sectional. All members of SAP were invited to participate. The responses were voluntary and confidential. In order to complement the epidemiological data, voluntary demographic information was also requested.

Both closed and open-ended questions were included. The respondents had the option of checking different answers on a printed and electronic version of the questionnaire as “closed” questions; blank space was also provided where they could provide their opinion on an issue in “open” questions. The “open” answers, corresponding to each question, were analyzed qualitatively, grouped and reported according to common themes.

### *Conclusions and recommendations*

The following information highlights the main conclusions and recommendations of this survey in Argentina. The full report is available at: [www.aamma.org](http://www.aamma.org)

- Pediatrician knowledge and awareness of the role that the environment plays in child health is low. *Recommended action:* a) build capacity among health care professionals on children's environmental health at Universities; b) for pediatricians who are members of SAP, continue their training during Pediatric Residence years, and after certification, through group activities related to the National Program of Continuous Education in Pediatrics (PRONAP<sup>10</sup>, Educ@SAP<sup>11</sup>, Certification Maintenance Program, as in congresses, lectures, and others); c) continue to train and educate future instructors in children's environmental health.

\* Coordinated by the Argentine Society of Pediatrics (SAP); Ministry of Health and Environment; Secretariat of Environment and Sustainable Development; Argentine Society of Doctors for the Environment (AAMMA); Health Canada; University of Ottawa and the Canadian Institute of Child Health (CICH). With the participation of the National University of Misiones, the National Institute of Respiratory Diseases “Emilio Coni” and support from the government of Canada through the Canadian International Development Agency (CIDA-ACDI). Ethical Review of study design provided by University of Ottawa.

- Most pediatricians considered that the main environmental factors that affected the health of children in Argentina were related with indoor air quality (tobacco, combustion products, pesticides), water (bacteria, virus, parasites, pesticides, industrial chemical contamination, arsenic), and outdoor air (combustion products generated by traffic, industry, open burning of garbage, pesticides). Among the illnesses related to these environmental threats, most pediatricians mentioned respiratory disease, chemical poisonings, skin problems, cancer, accidents (non-intentional injuries) and diarrheas. *Recommended action:* build capacity around the environmental factors that were not frequently mentioned by pediatricians when talking about environmental information received (e.g., ionizing and non-ionizing radiation, mercury, lead

### **Tools to diagnosis the child's environment**

In Argentina tools were developed to facilitate the diagnosis of the child's environment. These tools are: *The Green Page*, *the Environmental Component of the WHO Integrated Management of Childhood Illness* (IMCI) strategy and the

### **The Green Page: a component of the Pediatric Environmental History**

The *Green Page* is a new tool that forms part of the clinical history and can be used with symptomatic and asymptomatic patients. It adds new elements: a description of the environment that surrounds the child, exposure characteristics (real or potential) and its possible effects. In addition, it allows medical personnel to become aware of the environment that children live in, and that of the mothers, fathers, families and communities. This kind of information improves clinical service, builds the capacity of health-care professionals responsible for the well-being of children and alerts the authorities about those environmental situations that need to be corrected or remediated. The *Green Page* also emphasizes the value of positive environmental factors, where environmental quality contributes to the children's well-being, health and development.

The *Green Page* is an instrument for the harmonious recording of information about the child's environmental conditions in all the places where children develop. It allows the health professional to carry out an environmental diagnosis to characterize positive or negative factors and to detect the most vulnerable individuals or groups. In case of

and noise).

- Most pediatricians responded that the information they receive on children's environmental health comes from articles and scientific magazines.

*Recommended action:* use these modes to communicate information and encourage pediatricians to seek information on children's environmental health through other means such as the internet or through workshops.

- The majority of those who completed the survey chose not to remain anonymous and agreed to be part of a children's environmental health network.

*Recommended action:* develop a network and continue communicating to advance capacity around children's environmental health issues.

Spanish translation of the WHO Training Package on Children's Environmental Health for Health Care Providers.

disease or faced with certain signs and symptoms, the documentation of the environmental condition provides the elements to suggest or establish, if present, an environmental etiology.

The *Green Page* allows for a longitudinal follow-up of the environmental history of the child and together with the clinical elements contributes to the construction of environmental indicators of disease. These environmental diagnostic records will allow – in retrospective – the identification of possible antecedents and emergent clinical causes that can be expressed later in life.

The *Green Page* can be completed, in an individual or preferably in a shared way, by family doctors, general practitioners, pediatricians, nurses and other health care professionals and/or health care personnel or personnel from environmental and social sectors who have received education on children's environmental health.

The WHO *Green Page* along with the guidance materials can be found in Appendix A.

## ***Integrated Management of Childhood Illness (IMCI) Strategy***

The *Integrated Management of Childhood Illness* (IMCI) strategy was created in 1996 by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) to improve child health.<sup>12</sup> The Strategy's focus is on the health status of children under 5 years of age rather than on diseases that occasionally affect them. The objective is to increase detection and treatment of disease that can pass undetected by parents and healthcare personnel, increasing risks and potentially presenting complications in the long run.

The implementation of the *IMCI* Strategy includes the participation of health services, community and family. It has three main components: 1) improving the prevention of childhood disease and its treatment by health personnel, 2) improving the organization and operation of health services to offer quality care; and, 3) improving family and community practices of child care and treatment.

The IMCI Strategy integrates all available measures for the prevention of disease and health problems during childhood, including early detection, effective treatment and promotion of healthy lifestyle habits for families and the community. The Strategy can be applied by health personnel or by others responsible for the care of children under 5 years of age, including parents.

The Strategy provides information on developing forms that will assist in evaluating the health status of children and detecting diseases or problems that affect them more frequently, according to the region. From this evaluation, the IMCI Strategy offers clear instructions for the classification of disease and the treatment that should be administered. The Strategy also contains information on how to control the treatment's evolution, setting and applying preventative measures, as well as on informing and educating parents on the prevention of illness and promotion of children's health.

The *IMCI* Strategy is efficient in reducing the burden of disease and disability in the population, and contributes to growth and healthy development during the first 5 years of life.

### ***IMCI Strategy's environmental component***

Based on the focus and objectives of the *IMCI* Strategy, experts from the Instituto Emilio Coni and AAMMA/ISDE Latin America, under the supervision of WHO, proposed the inclusion of a cross cutting environmental component as a supplement to the Strategy.

The environmental component, with new specific procedures, was developed and finalized by a group of experts in May 2004, with new procedure charts that:

- Evaluate the environmental risks for the health of children associated with water.
- Evaluate the environmental risks for the health of children associated with air.
- Evaluate the environmental risks for the health of children associated with sewage disposal.
- Evaluate the environmental risks for the health of children associated with waste disposal.
- Evaluate the environmental risks for the health of children associated with food.
- Evaluate the environmental risks for the health of children associated with soil.
- Evaluate the environmental risks for the health of children associated with exposure to chemicals.

The *IMCI* Strategy charts to evaluate environmental risks for children's health can be found in Appendix A.

From March to October 2005 the procedures for the detection and prevention of childhood environmental risks associated with air were applied as part of an IMCI Strategy field study. The evaluation was performed by doctors qualified in the application of the IMCI Strategy and on procedures for the detection and prevention of environmental risks. The results of this field study, *Identification of Environmental Risk Factors Associated with a Greater Frequency and Severity of Childhood Respiratory Disease\** can also be found in Appendix A.

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\* Work performed as part of the Internship in Clinical, Epidemiological and Operative Aspects of respiratory childhood disease, National Institute of Respiratory Diseases (INER) "Emilio Coni", Ministry of Health of Argentina, 2005.

## WHO Training Package on Children's Environmental Health for Health Care Providers

Pediatricians, family doctors, nurses, primary and other health care workers should be trained on the relationships between children's health and the environment through the use of harmonized training materials that are adapted to the specific needs of countries and professional groups.

The WHO Training Package for Children's Environmental Health for Health Care Providers is a collection of over 40 modules with internationally harmonized information and peer-reviewed materials to enable health care workers to be trained, and also to become trainers of their peers (train-the-trainer) and colleagues. The modules include extensive notes and references, case studies and self-evaluation tools supported by manuals and guidelines. A selected team of experienced children's environmental health professionals from over 15 countries collaborated with WHO in the development of the modules.

The modules cover the following areas:

- The special vulnerability of children to physical, chemical and biological environmental threats.
- The health and developmental effects of specific chemical, physical and biological hazards.
- Sources, routes and mechanisms of exposure to environmental agents.



The modules were created to accelerate the inclusion of children's environmental health issues in diverse sectors and among different stakeholders. The modules are geared, in general, towards healthcare professionals (nurses, doctors, medical assistants); however they can be adapted and used by others due to the great variety of options and information provided. For example they can be applied in sectors that deal with children and youth on a daily basis such as educators (university, primary, secondary, urban, rural and agrotechnical schools), or professionals in other sectors (agriculture, lawyers, engineers, urban planners, and others).

The Spanish version of the modules used in Argentina have been translated and adapted to the needs of the region by AAMMA-ISDE.Latinamerica. Argentina's successful train-the-trainer program using the WHO Modules has been delivered through a partnership between the Asociación Argentina de Medicos por el Medio Ambiente (AAMMA), Society of Argentine Pediatrics (SAP) and the Children's Environmental Health Program of the Ministry of Health and Environment of Argentina. Financial assistance from the U.S. Environmental Protection Agency (U.S. EPA), has made it possible for AAMMA-ISDE Latin-American and the Canadian Institute of Child Health (CICH) to adapt and deliver train-the-trainer sessions and workshops based on the Modules in Chile, Paraguay, Uruguay and Canada. These workshops have helped to initiate the development of further children's environmental health workshops, training and education among diverse stakeholders throughout Argentina, the Southern Cone and in Canada.

The linkages presented in this document along with the strategies and tools to better collect and analyze information are just a starting point. We are hopeful that the ideas presented will stimulate stakeholders to examine additional relationships between indicators.

It is important to highlight the increasing importance of children's environmental health in Argentina and the subsequent investment of resources by the Ministry of Health of Argentina through the creation of a Children's Environmental Health National Program, on-going training activities and the creation of Pediatric Environmental Health Units (PEHU's).

The Ministry of Health of Argentina and the Society of Argentine Pediatrics have made commitments to address issues on children's environmental health. This commitment is reflected in documents produced during the Meeting of Health and Environment Ministers of the Americas (HEMA) in 2005, and in the Declaration of the Pediatric Societies of the Southern Cone and Peru (2003). These documents will ensure that children's environmental health remains high on their agendas for years to come.



## NOTES

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1. *Using indicators to measure progress on children's environmental health. A call to action. INCHES, ISDE, PSR, UNICEF, UNEP, WHO. 2002.*
2. *Briggs. Making a difference: Indicators to improve children's environmental health. WHO; 2003.*
3. *World Health Organization. From Theory to Action: Implementing the WSSD Global Initiative on Children's Environmental Health Indicators. 2004.*
4. *INDEC. National Census of Homes and Households. 1991 and 2001. Report N° 4.*
5. *Department of Environmental Policy of the Municipality of Zarate, Resolution N° 495/04. 2007.*
6. *National Council for Scientific and Technical Research. CONICET. 2007.*
7. *Centers for Disease Control and Prevention, US Dept. of Health and Human Services. Managing Elevated Blood Lead Levels Among Young Children. Atlanta, GA.; 2002.*
8. *Statistics Information and Support for Municipalities Program (PRINEM). 2007.*
9. *World Health Organization. Field surveys of exposure to pesticides. Standard Protocol. DOCUMENT VBC/82.1. Geneva; 1982.*
10. *National Program of Pediatric Actualization. Long distance education program. 2007.*
11. *Educ@SAP. Long distance education program on informatic basis. Virtual classroom. 2007.*
12. *World Health Organization. <http://www.paho.org/spanish/ad/dpc/cd/aiepi-imci.htm>*



## CHAPTER 6

# Considerations and Recommendations



## Considerations and Recommendations

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There is much we can do as a society to protect children from environmental hazards. It is important for governments, non governmental organizations and the general public to recognize that children are different and have special needs that should be considered when developing programs, policies, strategies, interventions and research.

The issues presented in this chapter are broad in nature but have positive recommendations that would increase opportunities for Argentinean children to live healthy and productive lives.

### The Convention on the Rights of the Child

The Convention on the Rights of the Child, adopted by the United Nations in 1989, spells out the basic human rights to which children everywhere are entitled. It has been ratified by governments world-wide, with Argentina ratifying the Convention in 1991.

The Convention outlines children's rights including: the right to survival; the right to develop to the fullest; the right to protection from harmful influences, abuse and exploitation; and, the right to participate fully in family, cultural and social life. Every right spelled out in the Convention is inherent to the human dignity and harmonious development of the child.

The Convention is clear in its commitment to children's environmental health. It specifies that States shall take the appropriate measures to:

“Combat disease and malnutrition, including within the framework of primary health care, through, inter alia, the application of readily available technology and through the provision of adequate nutritious foods and clean drinking-water, taking into consideration the dangers and risks of environmental pollution.” (Article 24, Section c)

“Ensure that all segments of society, in particular parents and children, are informed, have access to education and are supported in the use of basic knowledge of child health and nutrition, the advantages of breastfeeding, hygiene and environmental sanitation and the prevention of accidents.” (Article 24, Section e)

A healthy environment is a fundamental right of all children. It is essential that decision-makers, institutions and

communities recognize this right when programs, policies and strategies are being developed. Of particular concern are children and families that confront additional challenges such as disabilities, low socio-economic status, sub-standard living conditions, and a lack of access to health services, clean water and sanitation. These children are particularly vulnerable and their specific needs and circumstances should be considered when programs, policies and interventions are developed.

By putting children at the centre, all programs developed for children should have high priority on the finances of a country. The situation observed in Argentina during the crisis of 2001/2002 showed that children were the most affected by lack of access to basic rights defined in the Convention such as health, food, water, education and healthy environments. Countries should take into account that programs to protect children are not privileges that should only be in place when times are good, they should also be respected and reinforced even in times of crisis and unrest.

Since Argentina has ratified the Convention, it is committed to protecting and ensuring children's rights by developing and undertaking actions and policies that take into account the best interests of the child. Argentina is required to report periodically to the United Nations Committee on the Rights of the Child on their progress with regards to the implementation of the Convention and the status of child rights in their country. It is important that Argentina include the good work being done to protect children from environmental hazards in its reports to showcase Argentina as a leader in this area and ensure this important issue becomes a priority for countries world-wide.

## Windows of Vulnerability

It is essential that everyone working to protect children understands child development and the important windows of vulnerability children experience as their bodies, systems and organs grow and develop. These windows of vulnerability are brief and unique; children pass through them quickly. Environmental exposures during these critical periods can have long-term consequences as children are growing and developing rapidly. Their minds are like sponges, but so are their bodies. It is the responsibility of society to protect children from these hazards.

Environmental exposure begins even before children are born, with exposures from both the mother and father being passed on to the child during conception. The cells and control pathways of a growing embryo and fetus multiply rapidly. When the child is born and more crucially, from the mother during gestation the growing fetus is

exposed to the external world through contact with air, water, food, breast milk and objects in their surroundings. Growth and physical changes continue throughout childhood and adolescence with the body not being fully mature until early adulthood, around 18–20 years of age.

Children are at greater risk for absorbing and ingesting toxins than are adults. They are less capable of resisting and eliminating toxins from their bodies. Additionally they interact differently with their physical environment, being closer to the ground and having more hand to mouth activity. They also lack the mental maturity to understand the risks around them and how to avoid exposure. It is for these reasons that adults have a responsibility to educate and protect children from environmental hazards. Toxins affect the health of all living things but none more than in a growing child.

## Determinants of Health

When examining children's health it is important to consider the social and physical environments where they live, learn, play and work. Addressing these determinants is important if a country is to protect its most vulnerable citizens.

The following determinants of health, as defined by the WHO, are considered to have a profound impact on health status: income and social status; social support networks; education and literacy; employment/working conditions; social environments; physical environments; personal health practices and coping skills; healthy child development; biology and genetic endowment; health services; gender and culture. Although all the determinants are important and essential for health, some have a greater impact than others when considering children's environmental health.

Income and social status has an enormous impact on where a child lives and the opportunities available to them. Children living in poverty have a greater possibility of being exposed to environmental toxins. Therefore it is important that children's environmental health interventions focus first on this vulnerable group, protecting both children and their families.

Education and literacy are important determinants that we must also consider. Many people, including those who work with and for children and families, are not aware of the impact of environmental hazards on health. We have a responsibility to educate these groups about hazards and teach them how to protect children. The way this information is communicated is also important as we need to empower the population, not frighten them.

The physical environment is another important determinant. It is one that we all live in and interact with and it is constantly changing. The physical environment includes the natural environment – air and water, for example. However, it also includes the built environment. Changes we make to the built environment have an effect on health. Increased traffic congestion, noise, lack of sidewalks, sub-standard housing, overcrowding and inadequate waste removal systems are just some of the things that exist in our physical environments that should be addressed if we are going to improve the health of our communities. It should also be noted that people with lower incomes tend to be the most affected by these poor physical environments, since

housing near contaminated, busy areas tends to be more affordable.

Addressing children's environmental health issues using a determinants of health approach will require the partner-

ship of stakeholders from a number of sectors. The results of coordinated action could make a significant impact on the health of children and the environments where they live.

## Evidence-Based Decision Making

The information contained in the *Profile of Children's Environmental Health in Argentina* has come from a variety of credible sources, involving a number of different sectors, government departments and non-governmental organizations. The amount of data that Argentina collects is significant; however if we are to better understand the environmental impacts on child health it will be important to expand the information collected. The need to have comprehensive, authoritative information is essential for making decisions and guiding action.

The *Profile* identifies a number of areas where data are needed; those areas are indicated in the tables by a "question mark". These tables show the places where data were not found, but was considered important – e.g., child asthma and diabetes. Identifying and collecting information in these areas will help paint a more complete picture of how the environment is impacting the health of children. Now is the time to integrate questions related to environmental health into existing surveys to start collecting new information for the next *Profile*.

Another area where more data are needed is morbidity. There is a great deal of information on mortality – which is important, however morbidity data would help us measure the burden of illness and map trends that could be influenced by environmental factors.

The information being collected in Argentina is essential for everyone, therefore coordination and sharing of data between sectors is very important. This will enable us to explore possible correlations that will ultimately provide decision-makers from all sectors with the tools to develop policies, programs and interventions that better protect

children from environmental hazards. Through the development of the *Profile*, a considerable amount of data has been assembled. It is our hope that collaborations between sectors will continue to grow in years to come.

As environmental health is an emerging area it is important that we continue to assemble and report on evidence-based findings. This will enable those working in the area to speak with confidence about what they know to be true and encourage additional research in areas where less is known. Presenting evidence-based information will give decision makers the tools they need to develop appropriate, effective actions that will protect children from environmental hazards.



## Precautionary Principle

Principle 15 (Agenda 21) of the Rio Declaration on Environment and Development was agreed to by participating governments in 1992. “In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”<sup>1</sup>

In 1998 a group of scientists, philosophers, lawyers and environmental activists reached agreement on the necessity of the Precautionary Principle in public health and environmental decision-making. This was called the Wingspread Statement. According to the Wingspread Statement on the

Precautionary Principle, when evidence suggests an activity may threaten the environment or human health and well-being, precautionary measures should be taken even if cause and effect relationships are not fully established scientifically.<sup>2</sup>

Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation. Since children are especially vulnerable to environmental hazards, it is imperative that the Precautionary Principle underlie our actions. Waiting for definitive cause and effect information can place a generation at risk.

## Multi-sectoral Partnerships

To make an impact on children’s environmental health it is important to work across sectors. All players contribute a piece to the puzzle and have a role to play. Each sector is a specialist in their area and their expertise needs to be shared to advance programs, policies and interventions. Those working in environmental monitoring need to share their information with those working on health outcomes to identify correlations. Those working in the social services examining behavioural issues, poverty indices and housing need to share their information with other sectors to better understand increases or decreases in health status or environmental changes. Those working in research need to share their findings so everyone can learn and expand their knowledge; this goes far beyond publishing in journals. Scientific information needs to be communicated in a way that is easy to understand and accessible to everyone. Finally, it is necessary to involve children and families in the information gathering processes as they are able to tell us what they need and what will make a difference for them. Giving children and their families a voice will greatly advance any agenda designed for them.

All levels of government have the responsibility to develop policies and programs that contribute to sustainability and promote healthy environments for children. Policies that

improve work, life, employment, production, health, education, childcare, transportation, housing and other issues should be developed and implemented with the participation of all sectors. At each level of policy development, governments need to consider and include measures to protect children’s health and quality of life, ensuring positive impacts for families and avoiding negative impacts on the environment.

Argentina has many policies related to health and environment but enforcement is less than perfect. Enforcement needs to become a priority if we are to protect the environment and those who live in it. Industries, communities and individuals need to understand that there are consequences for damage to the environment by being responsible and accountable.

It is important to continue to work together and expand collaboration within and between sectors and jurisdictions. Governments, non-governmental organizations, industry, professionals, families and researchers can do more if they work together. Everyone has a role to play and brings to the table an important perspective that will help advance action to protect children from environmental hazards where they live, learn, play and work.

## Looking Forward

The commitment to children's environmental health and interest in moving forward on initiatives to protect children from environmental hazards in Argentina is being seen at all levels. More tools are needed to increase the knowledge base and implement action, but Argentina is definitely on the right path to make this happen in the short and long term.

The dedication of WHO/PAHO and their vision on children's environmental health, including technical and logistical support should be commended as it has allowed Argentina and other countries in the region to increase activity in this area.

The Canadian International Development Agency and the U.S. Environmental Protection Agency have supported

projects in the region and beneficial results have been achieved. The *Profile* experience, including the development of this document, implementation of case studies and coordination of a survey for pediatricians are examples of the benefits that result from these investments to strengthen efforts that will lead to sustainable long-term success.

Promoting dialogue among and across sectors is central for success. It is sometimes difficult due to the complexity of children's environmental health issues. Many sectors have a key role to play and need to be interconnected to better understand and take action to protect children in Argentina from environmental hazards that impact their health and the health of the generations to come.



## *NOTES*

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1. *Rio de Janeiro Declaration on Environment and Development.* <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm> 1992.
2. *Wingspread Statement on the Precautionary Principle.* [www.sehn.org/wing.html](http://www.sehn.org/wing.html). *Wingspread Conference Centre; 1998.*



## APPENDIX A

# Tools and Resources

## **A Pediatric Perspective on Environment and Child Health in Argentina**

### **SECTION I. KNOWLEDGE ON CHILDREN'S HEALTH AND ENVIRONMENT**

**1. What information do you have on children's environmental health issues?**

- Much information
- Some information
- Little or no information
- Not aware of children's environmental health issues

**1.1. If you selected, much or some, which way(s) did you receive it? (please check all that apply)**

- 1.1.1. Courses/workshops
- 1.1.2. Congresses
- 1.1.3. Distance classes
- 1.1.4. Articles
- 1.1.5. Magazines
- 1.1.6. Internet
- 1.1.7. Other (please specify): .....

**1.2. If you selected much or some, on what issues did you receive information? (please check all that apply)**

- 1.2.1. Indoor air quality (wood, tobacco smoke and others)
  - 1.2.2. Outdoor air quality (waste burn, incinerators, smoke, dust and others)
  - 1.2.3. Waste disposal
  - 1.2.4. Water pollution (biologic and chemical)
  - 1.2.5. Ground pollutants
  - 1.2.6. Industrial pollutants
  - 1.2.7. Lead
  - 1.2.8. Mercury
  - 1.2.9. Use of pesticides
  - 1.2.10. Electromagnetic fields
  - 1.2.11. Noise
  - 1.2.12. Nuclear pollution
  - 1.2.13. Food contamination
  - 1.2.14. Other (please specify): .....
-

**2. When conducting a clinical history, do you gather information about the environment where the child lives, grows, plays and studies?**

- Frequently
- Occasionally
- Never

**3. How frequently in your medical practice, do you receive questions from parents regarding the following children's health and environmental issues.**

*(please indicate 3= often, 2= sometimes, 1= never and 0= I don't know)*

- 3.1. Indoor air quality (wood, tobacco smoke and others)
- 3.2. Outdoor air quality (waste burn, incinerators, smoke, dust and others)
- 3.3. Waste disposal
- 3.4. Water pollution (biologic and chemical)
- 3.5. Ground pollutants
- 3.6. Industrial pollutants
- 3.7. Lead
- 3.8. Mercury
- 3.9. Use of pesticides
- 3.10. Electromagnetic fields
- 3.11. Noise
- 3.12. Nuclear pollution
- 3.13. Soil contamination
- 3.14. Other (please specify): .....

**4. Based on your medical practice, which of the following health problems affecting boys and girls could be associated with negative environmental factors?**

*(please indicate 3= very much, 2= sometimes, 1= never and 0= I don't know)*

	Boys	Girls
4.1. Respiratory illnesses	<input type="checkbox"/>	<input type="checkbox"/>
4.2. Pre-mature birth	<input type="checkbox"/>	<input type="checkbox"/>
4.3. Learning disabilities and neurological problems	<input type="checkbox"/>	<input type="checkbox"/>
4.4. Developmental problems	<input type="checkbox"/>	<input type="checkbox"/>
4.5. Skin problems	<input type="checkbox"/>	<input type="checkbox"/>
4.6. Cancer, lymphoma, leukemia	<input type="checkbox"/>	<input type="checkbox"/>

**Appendix A | Tools and Resources**

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	Boys	Girls
4.7. Poisonings	<input type="text"/>	<input type="text"/>
4.8. Endocrine disruptions	<input type="text"/>	<input type="text"/>
4.9. Genetic malformations	<input type="text"/>	<input type="text"/>
4.10. Nutritional problems	<input type="text"/>	<input type="text"/>
4.11. Unintentional injuries (accidents)	<input type="text"/>	<input type="text"/>
4.12. Others (please specify):	.....	

**5. Based on your medical practice, where are boys and girls most likely to be exposed to chemical environmental hazards?**

*(please indicate 3= often, 2= sometimes, 1= never and 0= I don't know)*

	Boys	Girls
5.1. Home	<input type="text"/>	<input type="text"/>
5.2. Streets	<input type="text"/>	<input type="text"/>
5.3. Recreational areas	<input type="text"/>	<input type="text"/>
5.4. School	<input type="text"/>	<input type="text"/>
5.5. Rural areas/farms	<input type="text"/>	<input type="text"/>
5.6. Parent's work place	<input type="text"/>	<input type="text"/>
5.7. Child's work place	<input type="text"/>	<input type="text"/>
5.8. Others (please specify):	.....	

**6. Based on your medical practice, which of the following indoor air pollutants have an impact on children's health?**

*(please indicate 3= often, 2= sometimes, 1= never and 0= I don't know)*

6.1. Combustion products, (gas, wood and others)

6.2. Volatile compounds from household products and solvents

6.3. Construction materials (asbestos, dust and others)

6.4. Pesticides (insecticides, fungicides, herbicides and rodenticides)

6.5. Tobacco smoke

6.6. Others, specify: .....

**7. Based on your medical practice, which of the following outdoor air pollutants have an impact on children's health?**

*(please indicate 3= very much, 2= some, 1= none and 0= I don't know)*

- 7.1. Combustion products from traffic (particle matter and exhaust)
- 7.2. Pollutants from industrial activities (heavy metals, volatile chemicals, etc.)
- 7.3. Particles and dust (silos, building material, demolitions and others)
- 7.4. Open Burning of Garbage
- 7.5. Pesticides (insecticides, fungicides, herbicides and rat poison)
- 7.6. Others (please specify): \_\_\_\_\_  
\_\_\_\_\_

**8. Based on your medical practice, which of the following pollutants related to water that is for human use, have an impact on children's health?**

*(please indicate 3= very much, 2= sometimes, 1= never and 0= I don't know)*

- 8.1. Biologic contaminants (parasites, bacteria, viruses)
- 8.2. Natural chemical pollution (arsenic and others)
- 8.3. Industrial chemical pollution (mining, chemical waste and others)
- 8.4. Agrochemicals (pesticides and fertilizers)
- 8.5. Others (please specify): \_\_\_\_\_  
\_\_\_\_\_

**9. Based on your medical practice, which of the following actions are relevant in protecting children from environmental hazards?**

*(please indicate 3= very relevant, 2= relevant, 1= not relevant and 0= I don't know)*

- 9.1. Revealing the type and magnitude of specific environmental problems
- 9.2. Developing epidemiological environmental studies
- 9.3. Providing professional training in children's environmental health
- 9.4. Developing Spanish materials
- 9.5. Encouraging Government Advocacy
- 9.6. Improving community awareness through information and communication activities
- 9.7. Including the topic as part of the school curriculum
- 9.8. Encouraging cooperative interdisciplinary and participative intersectoral networks
- 9.9. Others (please specify): \_\_\_\_\_  
\_\_\_\_\_

**10. Based on your medical practice, which of the following actions could be applied by your Regional Society of Pediatrics, and with what level of importance?**

*(please indicate 3= very important, 2= important, 1= not important and 0= I don't know)*

- 10.1. Revealing the type and magnitude of specific environmental problems
- 10.2. Developing epidemiological environmental studies
- 10.3. Providing professional training in children's environmental health
- 10.4. Developing Spanish materials
- 10.5. Encouraging Government Advocacy
- 10.6. Improving community awareness through information and communication activities
- 10.7. Including the topic as part of the school curriculum
- 10.8. Encouraging cooperative interdisciplinary and participative intersectoral networks
- 10.9. Others (please specify): \_\_\_\_\_

**11. Do you know of any activities that are being carried out in your region concerning the environment and children's health?**

- YES  NO

If Yes, please provide a description of the activity and contact information below:

\_\_\_\_\_

\_\_\_\_\_

## **SECTION II: PEDIATRICIAN PROFILE**

12. Age: \_\_\_\_ years

13. Sex:  Male  Female

14. Do you have a Paediatric subspecialty?  YES  NO

15. How many years have you been practicing Pediatric medicine: \_\_\_\_\_ years

16. Major Area of Practice:  Urban  Rural

17. Province where you live: \_\_\_\_\_

Buenos Aires, C. de Buenos Aires, Catamarca, Córdoba, Corrientes, Chaco, Chubut, Entre Ríos, Formosa, Jujuy, La Pampa, La Rioja, Mendoza, Misiones, Neuquén, Río Negro, Salta, San Juan, San Luis, Santa Cruz, Santa Fe, Santiago del Estero, Tierra del Fuego, Tucumán

**18. Where do you work the majority of the time:**

- Private (offices, clinics, house calls, etc.)
- Public (government hospitals, centers of primary attention, etc.)

**19. Where do you treat the majority of your patients?**     In hospital     Outside of the hospital (ambulatory)

**20. From where are the majority of your patients referred?**     Hospitals     Primary Health Centres

**21. Within which age group do the majority of you patients fall:**

- <1 year
- 1-5 years
- 6-12 years
- 13-18 years
- All ages
- I don't know

**22. How would you describe the majority of your patients in terms of socioeconomic background?**

- Low
- Middle
- High

**23. Regional Society of Pediatrics Affiliation:** .....

**24. Would you like to be part of a SAP network on children's health and environment:**

- YES     NO

If you would like to be part of this network, please contact:  
Argentine Society of Pediatrics:  
• By e-mail: *saludambiental@sap.org.ar*  
• By mail: Subcomisión Salud Ambiental Infantil  
Av. Coronel Díaz 1971/75  
(C1425DQF) – Ciudad de Buenos Aires  
Or to your nearest Regional Society of Pediatrics Affiliation

## CHILDREN'S ENVIRONMENTAL INFORMATION GREEN PAGE (DRAFT 2 - S - NOV 06)

I

Patient's name:		Address:	Date .../.../...	Case record (number):
Sex:	Date of birth:		Professional recording data (name & position):	
With whom does the child live?		Living environment:  - Rural - Urban - Peri-Urban	Other data:	
Is he/she working?				

II

Does the mother/care giver express concerns about the environment? Which ones? Why?
Are there any known environmental risk factors in the area? Which ones?
Mother's and father's occupation? Describe
Is there overcrowding? (more than 3 persons per bedroom)
Are there pet/animals at home and in the surroundings? Which ones?
Are there vectors of disease? Which ones?
Has the child suffered traffic-related injuries? Describe
Has the child suffered fire-related injuries or other? Describe

Has the child been exposed to chemical incidents? Describe
Has the child had poisoning due to chemical and/or food poisoning? Describe
Is there exposure to venomous/poisonous animals?
Is there exposure to extreme temperatures? Describe
Observations (other relevant information)

III

ABC OF THE CHILD'S ENVIRONMENTS			HOME	SCHOOL OR CARE CENTRE	RECREATION AREA	WORKPLACE	COMMUNITY
BUILDING							
A. Excellent	B. Average	C. Poor					
GEOGRAPHICAL AREA							
A. Low risk	B. Medium Risk	C. High risk					
FOOD (quality & supply)							
A. Appropriate	B. Uncertain	C. Contaminated					
AIR							
			Indoor				
A. Clean	B. Uncertain	C. Contaminated	Outdoor				
WATER							
			Drinking				
A. Potable	B. Uncertain	C. Contaminated	Other Uses				
SOIL/FLOOR							
A. Clean	B. Uncertain	C. Contaminated					
SEWAGE DISPOSAL							
A. Appropriate	B. Uncertain	C. Inappropriate					
WASTE DISPOSAL							
A. Appropriate	B. Uncertain	C. Inappropriate					
NOISE							
A. Low	B. Medium	C. High					
CHEMICAL EXPOSURE							
A. Low risk	B. Medium risk	C. High risk					
TRAFFIC							
A. Low	B. Medium	C. High					

**IV**

PUBLIC SERVICES AVAILABLE:	Housing	School	Community
ELECTRICITY			
COMMUNICATION (phone, radio, other)			
WASTE COLLECTION			
FINAL WASTE DISPOSAL			
PUBLIC TRANSPORTATION			
PUBLIC LIGHTING			
HEALTH CARE CENTRE			
SEWAGE TREATMENT PLANT			
SEWAGE SYSTEM			
WATER SUPPLY			

COMMENTS (date):

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SUGGESTIONS (date):

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## GUIDE AND INSTRUCTIONS FOR THE IMPLEMENTATION OF THE GREEN PAGE ENVIRONMENTAL HEALTH DIAGNOSTICS

### 1. Introduction and Justification

Environmental factors determine health, quality of life, growth and development of children and at the same time impact the health of adolescents and of future adults. Children and adolescents are exposed to positive and negative environmental factors. The embryo, the fetus and the young child are particularly vulnerable to these environmental factors, many of which (regardless of their nature) act synergistically.

According to the World Health Organization (WHO), more than 40% of the world's burden of infant morbidity can be attributable to environmental risk factors and affect children younger than five years old, a group that represents approximately 10% of the world's population. Every year more than 3,000,000 children younger than five years old die worldwide – especially in underdeveloped zones – due to causes and afflictions related to the environment. (Descriptive note WHO/284, January 2005)

The identification of the negative environmental factors that can compromise health from the moment of gestation, infancy and/or later in adult life is essential for the implementation of adequate preventive and curative measures: mitigate exposure, inform parents, improve the environment and improve medical attention.

Environmental risks can be of different nature: physical, chemical, biological and social. These present themselves in diverse media (water, air, soil, food and objects), can be present anywhere (home, school, rural areas, street, community and others) and can be related to children's different activities (play, learning, recreation, work and others).

#### What is the Green Page?

The Green Page is a new tool that forms part of the clinical history. It adds a new element: a description of the environment that surrounds the child, exposure characteristics (real or potential) and its possible effects. In addition, it allows medical personnel to become aware of the environment that children live in, and that of the mothers, fathers, families and communities. This kind of information improves clinical service, builds the capacity of healthcare

professionals responsible for the well-being of children and alerts the authorities about those environmental situations that need to be corrected or remediated.

On a different note, the Green Page manifests the value of positive environmental factors where environmental quality contributes to the child's well-being, health and development.

### 3. Purpose

The Green Page is an instrument for the harmonized recording of information about the child's environmental situation.

The Green Page allows for an approximation of environmental diagnostics to characterize positive or negative factors and to detect the most vulnerable individuals or groups (for example, children living in poverty who live in marginalized zones or in settlements with no basic sanitation infrastructure).

In case of disease or faced with certain signs and symptoms, the documentation of the environmental situation provides the elements to establish, if present, an environmental etiology.

The periodical repetition of environmental diagnostics (transversal cut) allows for a longitudinal follow-up of the environmental history of people and the development of environmental indicators of disease.

These environmental diagnostic records will allow – in retrospective – the identification of possible antecedents and emergent clinical causes for symptoms that can emerge later, during adolescence, adult stages or throughout life.

### 4. Guidelines to complete the Green Page

The Green Page can be completed by family doctors, general practitioners, paediatricians, nurses and other health care professionals and/or health care personnel or personnel from environmental and social sectors who have received training in Children's Environmental Health.

### Section I

Patient's name:		Address:	Date .../.../...	Case record (number):
Sex:	Date of birth:		Professional recording data (name & position):	
With whom does the child live?		Living environment: - Rural - Urban - Peri-Urban	Other data:	
Is he/she working?				

Collection of three kinds of information:

- Identification: Patient's name (surname and name), sex (F or M), date of birth (day/month/year), and complete address (street and number, phone number, email, neighbourhood, location, province and country).
- Service Information: Date of visit (day/month/year), clinical history number (same as in patient's records), professional evaluator (name, surname and title of the person taking the information).
- Special Information: Who does the child live with? (note the number of people living with the child and their relationship), Does the child work? (note yes or no and the type of work, for example, car washing, street vendor, rural/field worker, helps parents or siblings in their workplace, household tasks and others), Where does the child live? (note if it is rural, urban or suburban), other information (note any relevant information with relation to these items).

## Section II

Does the mother/care giver express concerns about the environment? Which ones? Why?
Are there any well-known environmental risk factors in the area? Which ones?
Mother's and father's occupation? Describe
Is there overcrowding? (more than 3 persons per bedroom)
Are there pets/animals at home and in the surroundings? Which ones?
Are there vectors of disease? Which ones?
Has the child suffered traffic-related injuries? Describe
Has the child suffered fire-related injuries or other? Describe
Has the child been exposed to chemical incidents? Describe
Has the child had poisoning due to chemical and/or food poisoning? Describe
Is there exposure to venomous/poisonous animals?
Is there exposure to extreme temperatures? Describe
Observations (other relevant information)

## Section II

This section registers the perception of environmental risk by the next of kin or the responsible adult that accompanies the child to the medical visit; it establishes the main present environmental situation and past history, evaluating the different situations that can occur at home, in the community, in the workplace, as well as past exposure history or risk behaviour and “accidents”.

In the spaces provided following the questions, brief notes on the responses by the mothers or next of kin must be recorded. The majority of the questions are self-explanatory, although it has to be taken into account the way the questions are relayed to the families so as to facilitate their comprehension and allow for harmonized collection of information.

There is also space to note any observations that are considered relevant.

### Section III - ABC's of Environmental Risk

This double entry table allows for the recording and visualization of the principal environmental variables listed in the first column with relation to the most common places where the child lives, learns, plays, works or develops. Given that this table allows for subjective interpretation, here are some directions for guidance. It is possible to

assign a numerical value for every variable and to approximate the level of environmental risk from 5 (low risk) to 15 (high risk). The classification of every parameter will vary according to the place (home, school, recreation area, workplace and community).

ABC OF THE CHILD'S ENVIRONMENTS		HOME	SCHOOL OR CARE CENTRE	RECREATION AREA	WORKPLACE	COMMUNITY
BUILDING						
A. Excellent	B. Average C. Poor					
GEOGRAPHICAL AREA						
A. Low risk	B. Medium Risk C. High risk					
FOOD (quality & supply)						
A. Appropriate	B. Uncertain C. Contaminated					
AIR		Indoor				
		Outdoor				
WATER		Drinking				
		Other Uses				
SOIL/FLOOR						
A. Clean	B. Uncertain C. Contaminated					
SEWAGE DISPOSAL						
A. Appropriate	B. Uncertain C. Inappropriate					
WASTE DISPOSAL						
A. Appropriate	B. Uncertain C. Inappropriate					
NOISE						
A. Low	B. Medium C. High					
CHEMICAL EXPOSURE						
A. Low risk	B. Medium risk C. High risk					
TRAFFIC						
A. Low	B. Medium C. High					

### Building Construction

1. *EXCELLENT*: is made from good quality building materials. It offers protection from pollutants, climate factors and the transmission of disease (for example: door screens against mosquitoes). The building materials are resistant, have insulated floors (material), installed bathrooms (no urinals) and have basic services (electricity, sewage and access to drinking water).
2. *AVERAGE*: provides essential protection, but is not sufficient and/or lacks basic services (evaluate for example: urinals, black water wells, soil floors, humidity, others) that make it habitable but without fulfilling adequate sanitation requirements.
3. (*PRIMITIVE*) *PRECARIOUS*: built with low quality materials (for example: sheet metal, cardboard, plastics and others); is primitive, lacks basic services and does not comply with general conditions for protection and/or sanitation.

### Geographical zone:

Evaluate the risk of flooding, drought, deforestation, earthquakes, hurricanes, natural disasters, dispute or even social violence or war (with reference to the security of the zone).

1. *LOW RISK*: geographical zone without any identifiable environmental threats, not a zone of violence.
2. *MEDIUM RISK*: geographical zone where there exist some of the previously mentioned adverse environmental risks (or others).
3. *HIGH RISK*: geographical zone in a state of great environmental deterioration.

### Food

The origin and the quality of the food needs to be considered, as well as handling and preparation methods and the conservation and storage conditions in the home and places where the foods were obtained (refrigeration network).

1. *ADEQUATE*: those that are produced, expended, utilized and stored under strict bromatological control or within the general norms of sanitation and hygiene.
2. *UNCERTAIN*: those where suspicions arise or can be identified, such as: contact with chemical or biological contaminants, low quality home manufacture, poor hygiene during preparation (no hand washing, non-potable water

used for cooking, dish washing) and inadequate storage.

3. *CONTAMINATED*: those where there is the certainty of their poor quality and storage and/or knowledge of the lack of sanitation during their handling.

### Air

The classification is divided into indoor air (homes or local) or outdoor air. (Note: To adequately rate the air quality, there are tests and measures required that might not be available. If this quantitative information is available it is of interest and should be recorded in the Green Page under "Observations").

1. *CLEAN*: clear and breathable, no smells or smoke, free of particulate matter, dust and other biological contaminants

2. *UNCERTAIN*: sometimes smells are present, particulate matter and biological contaminants (see contaminated description below)

3. *CONTAMINATED*: smells, smoke and particulate matter. Indoors: dust mites, mould, cigarette smoke and interior combustion of biomass fuels, without a fireplace.

It is important to inquire about their perception of the air quality (for example: smells) and daily practices (smoking habits, cooking and home heating with coal or wood without appropriate ventilation, others). In addition, their proximity to industrial facilities, silos, massive pesticide application sites, open sky garbage burning sites, depots or intense traffic sites.

### Water

The classification is divided in two: drinking water and water for other uses (hygiene and recreational). Its availability and origin (potable water, well water, others) is described in the table as "available services".

For this classification, there is a need to analyze the perception about the quality of the drinking water and its uses: is there a sufficient water supply for all its uses or if for example, personal hygiene practices are carried out with non-potable water or the origin of the water used for watering domestic vegetable gardens, among others. It is also important to investigate and to take into consideration its

collection and storage (used containers, rain water), its recreational use (the use of chlorine in indoor swimming pools, swimming in contaminated rivers, others) and its proximity to possible sources of toxic emissions (agricultural, industrial zones).

1. *POTABLE*: of physical, biological and chemical quality (it fulfills the norms of the codex alimentarius). It does not affect health status, originates from certified sources and undergoes periodical quality control. Its supply is sufficient and adequate.

2. *UNCERTAIN*: it is suspected to be contaminated but there are no measurements about the degree of contamination.

3. *CONTAMINATED*: when there are measurements and parameters available that indicate physical, chemical or biological contamination or when its quality is obvious.

### Soil/floors

For characterization purposes, it is necessary to inquire about the composition, the quality and the cleanliness of the soil/floor. The lack of hygienic practices, humidity, the use of pesticides, the presence of insects or animals, the proximity to tool deposits, work areas or loading and unloading areas, raising of animals, the use of machinery or any other situation that could be considered as a source of contamination and represents a hazard to the health or the integrity of the child.

In addition, it is important to consider the past uses of the soil/floors (dumping sites, industrial soils, etc.).

1. *ADEQUATE*: the soil/floor is made of quality materials, clean.

2. *UNCERTAIN*: the soil/floor is made of low quality materials, with some identified risk factors.

3. *INADEQUATE*: the soil/floor is of poor quality (or earth) with high risk factors identified.

### Sewage disposal

Inquire about the existent sanitation infrastructure of the home (bathroom, urinal, others), septic tanks (controlled), sewage systems, waste disposal (with or without waste disposal services, open sky disposal, burial). It has to be taken into account that there could be sewage disposal or inadequate waste water disposal close to sources of drinking water, especially in communities, homes or settlements near water systems (oceans, rivers, lakes and others) where there is sewage disposal without previous treatment. Also, consider in this case, the use of the land and water (for example, fishing practices) in the proximity of the sewage disposal sites.

1. *ADEQUATE*: installed bathroom(s), hygienic and accessible, with sewage connections, sewage disposal and sanitation; bathtub and shower for personal hygiene.

2. *UNCERTAIN*: bathroom is far or incomplete, with poor hygienic conditions.

3. *INADEQUATE*: no bathroom and/or sewage system, lack of sanitation and lack of personal hygiene facilities.

### Waste disposal

Inquire about the management of waste in the home, school, recreational areas and community (origin, storage, collection services, handling, transportation, treatment, final disposal of leftovers and waste).

Explore the consequences of poor waste handling (smells, contamination or proximity to water sources), soil or air contamination, insects or rodents as disease vectors (typhoid, gastrointestinal diseases, parasites, others).

1. *ADEQUATE*: waste disposal collection system is functional and effective.

2. *UNCERTAIN*: poor waste handling, discontinuous waste collection.

3. *INADEQUATE*: no waste disposal collection, open sky burning of garbage and proximity to dumpsites.

## Noise

The term “noise” refers to sounds that are not desired, that interfere with communication between individuals and can cause damage to their health and affect their well-being.

The classification (low, medium, high) will vary according to the place (home, school, recreation areas, workplace and community) and will depend on the perception of the person taking care of the child.

Care should be taken to identify the most common sources of noise: traffic due to proximity to highways and worksites, loud music, machinery, aerial traffic, trains, construction sites, others. It is important to investigate noise of short duration but of great importance (pneumatic hammers, sirens, fireworks, explosions, telephone in some circumstances) that can originate from toys or caused during child play, or in the case of adolescents listening to loud music and in hospitals (incubators, ventilators).

*LOW*: minimal or barely perceptible, is not bothersome or has any effect.

*MEDIUM*: bothersome, persistent and sporadic, it is harmful, results in loss of concentration and is uncomfortable (proximity to heavy traffic, train routes, factories, discotheques).

*HIGH*: of great magnitude, causes pain and is harmful (proximity to airports, rock concerts, sirens, fireworks, firearms, others).

## Chemical exposure

The perception of possible chemical exposure has to be analyzed (smells, smoke, others), and can include the use of pesticides, recent renovations, housework, rural work areas in contact with pesticides, consumption of foods that have been recently sprayed with pesticides, others.

In addition, consider the proximity to contaminated sites, rural zones that have been sprayed with pesticides, industry, open burning of garbage, contaminated water sources, industrial deposits or industrial treatment plants, others.

*LOW RISK*: there is no constant or sporadic exposure to smoke, smells or chemical substances.

*MODERATE RISK*: sporadic exposure to smoke, smells and chemical substances.

*ELEVATED RISK*: constant and repetitive exposure to smoke, intense smells, pesticides, solvents, contaminants and industrial by-products (dump sites, industrial contamination, agricultural zones, incinerators, others).

## Traffic

The effects associated with traffic are noise, air contamination and the possibility of traffic accidents.

There is a need to investigate the relation to traffic zones where children live and develop: rural areas (for example, situations where children drive tractors or agricultural machinery) or urban areas (proximity to highways and avenues) or the quality of transportation systems (during rush hour, in vehicles not appropriate for the transportation of people).

*LOW*: scarce, no air pollution and no noise.

*MODERATE*: moderate and sporadic traffic, air pollution and noise.

*INTENSE*: proximity to zones of high automobile circulation and heavy traffic areas with heavy air pollution and heavy noise.

**Section IV - Available Services**

PUBLIC SERVICES AVAILABLE:	Housing	School	Community
ELECTRICITY			
COMMUNICATION (phone, radio, other)			
WASTE COLLECTION			
FINAL WASTE DISPOSAL			
PUBLIC TRANSPORTATION			
PUBLIC LIGHTING			
HEALTH CARE CENTRE			
SEWAGE TREATMENT PLANT			
SEWAGE SYSTEM			
WATER SUPPLY			

Listed in this double entry table and in the first column, are basic services that enhance environmental quality and the quality of life (available services) with relation to the most common places where children grow and develop in the second, third and fourth columns.

Note YES or NO upon the presence or absence (respectively) of each basic service.

This information will allow making a quick environmental diagnostic by evaluating the availability and access to basic services.

EVALUATE THE IMPACT OF ENVIRONMENTAL RISKS ON THE HEALTH OF CHILDREN

Evaluate environmental risks associated with water

<p><b>ASK:</b></p> <ul style="list-style-type: none"> <li>Does the child show signs or symptoms of digestive illness (nausea, vomiting, abdominal pain)?</li> <li>Does the child have repeated episodes of diarrhea or digestive symptoms (at least one per month), parasitosis (two in the last six months)?</li> </ul> <p>Ask the following questions with respect to the place where the child lives, plays and learns:</p> <ul style="list-style-type: none"> <li>Where does the water that the child uses for drinking, food preparation and personal hygiene come from (public system, well at home or at school)?</li> <li>If water comes from a public system, is the supply continuous or not?</li> <li>If not, how is the water transported into the home?</li> <li>How and where is water stored?</li> <li>How and with what is water served?</li> <li>What aspect, colour, odour and taste does the water have?</li> <li>If the water is filtered or disinfected before use, how is this done?</li> <li>Of what material are the home's plumbing/pipes?</li> <li>Does the child play in potentially contaminated water?</li> </ul>	<p><b>OBSERVE AND DETERMINE:</b></p> <ul style="list-style-type: none"> <li>Digestive and/or abdominal problems, signs and symptoms.</li> </ul>	<p style="text-align: center;"><b>CLASSIFY ENVIRONMENTAL RISKS</b></p>	<ul style="list-style-type: none"> <li>The child was classified as having diarrhea and/or showed symptoms of digestive illness and:             <ul style="list-style-type: none"> <li>The water used for drinking, bathing and food preparation is not safe; or</li> <li>The water is transported, stored or prepared with risk of contamination; or</li> <li>The water used for recreation is polluted.</li> </ul> </li> </ul>	<p style="text-align: center;"><b>ENVIRONMENTAL RISK ASSOCIATED WITH SYMPTOMS</b></p>	<ul style="list-style-type: none"> <li>Coordinate a home visit with the mother in the next three days for an additional evaluation and organize an immediate on-site diagnosis to improve the situation.</li> <li>Make sure that the mother can provide safe water for drinking, bathing and food preparation:             <ul style="list-style-type: none"> <li>Arrange for the best way to provide safe drinking water;</li> <li>Arrange water transportation and storage to avoid biological contamination.</li> </ul> </li> <li>Immediately inform the health and/or environmental authorities about the detected risk.</li> <li>Have a follow up consultation after two days, or before, if the child worsens.</li> <li>If chemical contamination is suspected evaluate chemical intoxication risks.</li> </ul>
<ul style="list-style-type: none"> <li>The child was not classified as having diarrhea and did not show symptoms of digestive illness and:             <ul style="list-style-type: none"> <li>The water used for drinking, bathing and food preparation is not safe for drinking; or</li> <li>The water is transported, stored or served with a risk of contamination.</li> </ul> </li> </ul>			<ul style="list-style-type: none"> <li>The child was not classified as having diarrhea and did not show symptoms of digestive illness and:             <ul style="list-style-type: none"> <li>The water used for drinking, bathing and food preparation is not safe for drinking; or</li> <li>The water is transported, stored or served with a risk of contamination.</li> </ul> </li> </ul>	<p style="text-align: center;"><b>ENVIRONMENTAL RISK</b></p>	<ul style="list-style-type: none"> <li>Advise the mother so that safe water is used for drinking, bathing and food preparation:             <ul style="list-style-type: none"> <li>Advise on the best ways to provide safe drinking water;</li> <li>Advise on water transportation and storage methods to avoid biological contamination.</li> </ul> </li> <li>Immediately inform the health and/or environmental authorities about the detected risk.</li> <li>Have a follow up consultation after two weeks, or before, if the child presents symptoms.</li> <li>If chemical contamination is suspected evaluate chemical intoxication risks.</li> </ul>
<ul style="list-style-type: none"> <li>The child was not classified as having diarrhea and did not show symptoms of digestive illness and:             <ul style="list-style-type: none"> <li>The water that is used for drinking, bathing and food preparation is safe; or</li> <li>The water is transported, stored or served without risk of contamination.</li> </ul> </li> </ul>			<ul style="list-style-type: none"> <li>The child was not classified as having diarrhea and did not show symptoms of digestive illness and:             <ul style="list-style-type: none"> <li>The water that is used for drinking, bathing and food preparation is safe; or</li> <li>The water is transported, stored or served without risk of contamination.</li> </ul> </li> </ul>	<p style="text-align: center;"><b>NO DETECTABLE ENVIRONMENTAL RISK</b></p>	<ul style="list-style-type: none"> <li>Congratulate the mother</li> <li>Advise the mother to promote a safe environment for the child.</li> </ul>

Evaluate environmental risks associated with air

<p><b>ASK:</b></p> <p><b>About indoor air where the child spends most of the time:</b></p> <ul style="list-style-type: none"> <li>• Does anyone smoke?</li> <li>• Are stoves or kitchens using bio-solids as fuel (carbon, wood, dung, waste, others) or liquids (kerosene, gasoline, others)?</li> <li>• If these types of kitchens or stoves are used:                             <ul style="list-style-type: none"> <li>– Does smoke accumulate indoors?</li> <li>– Is there good ventilation?</li> </ul> </li> <li>• Are there carpets, stuffed toys, other materials around the home?</li> <li>• Are there animals, pets?</li> <li>• Are there cockroaches or other insects in the home?</li> <li>• Is there humidity or visible mould on the walls?</li> <li>• Is there adequate ventilation or hygienic practices?</li> <li>• Are aerosols used?</li> <li>• Are pesticides or disinfectants used?</li> <li>• Are solvents, paints, glues, ammonia, other cleaners or any other substances that produce strong odours used?</li> </ul> <p><b>About outdoor air where the child spends most of the time:</b></p> <ul style="list-style-type: none"> <li>• Are there any odours or smells? (burning of garbage, industry, depots, parking lots, gas stations, others)</li> <li>• Is there smoke? (industry, burning of garbage, burning of fields, other)?</li> <li>• Smoke from automobiles or traffic?</li> <li>• Dust? (ashes, cement, silos, dirt, other)</li> <li>• Are pesticides used in the garden or surrounding areas (waste dumps, areas, cultivars, others)?</li> </ul>	<p><b>OBSERVE AND DETERMINE:</b></p> <p><b>Review charts and/or ask mother to determine if child:</b></p> <ul style="list-style-type: none"> <li>• Has had repeated wheezing or respiratory disease episodes such as bronchial spasms, bronchitis, cough, others?</li> <li>• Has had acute episodes such as convulsions, unconsciousness, loss of coordination related to the above-mentioned symptoms?</li> <li>• Has had headaches, dizziness, drowsiness or sweating spells?</li> <li>• Has teary eyes, edema or ocular, nasal or skin irritation?</li> <li>• Has allergic reaction episodes?</li> <li>• Has digestive illness episodes or others related to odours, smoke, dust?</li> </ul> <p>If toxic contamination is detected, go to chemicals chart.</p>	<p><b>CLASSIFY ENVIRONMENTAL RISKS</b></p> <ul style="list-style-type: none"> <li>• The child was classified as having a respiratory disease and/or showed other symptoms, and:                             <ul style="list-style-type: none"> <li>– One or more people smoke indoors; or</li> <li>– Smoke, odours and dust accumulate indoors; or</li> <li>– Humidity, mould and insects or lack of hygienic conditions in bedrooms; or</li> <li>– Smoke, odours and dust, or pesticide use outside the home.</li> </ul> </li> </ul>	<p><b>ENVIRONMENTAL RISK ASSOCIATED WITH SYMPTOMS</b></p>	<ul style="list-style-type: none"> <li>• Coordinate a home visit with the mother in the next three days for an additional evaluation and organize an immediate on-site diagnosis to improve the situation.</li> <li>• If the child has severe symptoms, organize an evaluation consultation with a specialist.</li> <li>• Make sure the mother can reduce the child's exposure to air contaminants in places where time is spent, and that:                             <ul style="list-style-type: none"> <li>– Smoking around the child is prohibited;</li> <li>– The child is not exposed to smoke, odours and dust;</li> <li>– Ensure good ventilation and hygienic practices to eliminate humidity, mould and insects.</li> <li>– Eliminate elements where dust and dust mites can accumulate.</li> <li>– Prevent exposure to smoke, odours and dust coming from outdoors.</li> </ul> </li> <li>• If it is impossible for the parent to prevent air contaminants, organize with the mother for the child to stay/be in a healthy environment.</li> <li>• Immediately inform the health and/or environmental authorities about the detected risk.</li> <li>• Have a follow up consultation after two days, or before, if the child's condition worsens.</li> </ul>
		<ul style="list-style-type: none"> <li>• The child was not classified as having a respiratory disease and/or never showed other symptoms, and:                             <ul style="list-style-type: none"> <li>– One or more people smoke indoors; or</li> <li>– Smoke, odours, dust accumulate indoors; or</li> <li>– There is humidity, mould, insects or lack of hygiene in the bedroom; or</li> <li>– There is smoke, odours or dust, or pesticides are used outdoors.</li> </ul> </li> </ul>	<p><b>ENVIRONMENTAL RISK</b></p>	<ul style="list-style-type: none"> <li>• Make sure the mother can reduce the child's exposure to air contaminants in places where time is spent, and that:                             <ul style="list-style-type: none"> <li>– Smoking around the child is prohibited;</li> <li>– The child is not exposed to smoke, odours and dust;</li> <li>– Ensure good ventilation and hygienic practices to eliminate humidity, mould and insects.</li> <li>– Eliminate elements where dust and dust mites can accumulate.</li> <li>– Prevent exposure to smoke, odours and dust coming from outdoors.</li> </ul> </li> <li>• If it is impossible for the mother to prevent air contaminants, organize a visit within 5 days for an evaluation and to organize actions to improve the situation.</li> <li>• Immediately inform the health and/or environmental authorities about the detected risk.</li> <li>• Have a follow up consultation after two weeks, or before, if the child shows symptoms.</li> </ul>
		<ul style="list-style-type: none"> <li>• The child was not classified as having a respiratory disease and/or never showed other symptoms, and</li> <li>• There is no evidence of environmental risks associated with air.</li> </ul>	<p><b>NO DETECTABLE ENVIRONMENTAL RISK</b></p>	<ul style="list-style-type: none"> <li>• Congratulate the mother</li> <li>• Advise the mother to promote a safe environment for the child.</li> </ul>

Evaluate environmental risks associated with sewage

<p><b>ASK:</b> Ask the following questions with respect to the place where the child lives, plays and learns:</p> <ul style="list-style-type: none"> <li>• Is there an indoor bathroom with a toilet with proper sewage disposal or septic tank?</li> <li>• Is there an outdoor latrine?</li> <li>• Are there latrines at school or separate bathrooms for boys and girls?</li> <li>• What system is used for the disposal of human waste?</li> <li>• Is open defecation practiced?</li> <li>• How is diaper waste disposed of?</li> <li>• Is the bathroom or latrine cleaned? How often?</li> <li>• If there is a septic tank:             <ul style="list-style-type: none"> <li>– Is it emptied before it overflows or smells?</li> <li>– Is it protected from rain water or floods?</li> </ul> </li> <li>• If there is a latrine:             <ul style="list-style-type: none"> <li>– Where is it located, what distance from the home and how was it built?</li> <li>– Is it protected from animals and insects?</li> </ul> </li> <li>• How is the latrine treated once it is full?</li> <li>• Is there water available for hand washing near the latrine or toilet?</li> <li>• Are adults and children washing their hands after using the latrine or toilet?</li> </ul>	<p><b>OBSERVE AND DETERMINE:</b> Review charts and/or ask mother to determine if child:</p> <ul style="list-style-type: none"> <li>• Does the child have repeated episodes of diarrhea (at least once a month)?</li> <li>• Does the child have repeated episodes of parasitosis (at least twice in the last six months)?</li> <li>• Digestive and/or abdominal signs or symptoms.</li> <li>• Look closely at the hands and nails of the mother and child.</li> </ul>	<p style="text-align: center;"><b>CLASSIFY ENVIRONMENTAL RISKS</b></p>	<ul style="list-style-type: none"> <li>• The child was classified as having diarrhea and/or showed symptoms of digestive illness or is having repeated episodes of diarrhea and/or parasitosis, and:             <ul style="list-style-type: none"> <li>– Adults and children do not wash their hands after using the latrine or toilet; or</li> <li>– The septic tank overflows or is emptied only when it begins to smell; or</li> <li>– The latrine is not built or maintained correctly, or</li> <li>– Inadequate hygiene practices are used around the latrine, or</li> <li>– Human waste is not disposed of correctly.</li> </ul> </li> </ul>	<p style="text-align: center;"><b>ENVIRONMENTAL RISK ASSOCIATED WITH SYMPTOMS</b></p>	<ul style="list-style-type: none"> <li>• Coordinate a home visit with the mother in the next three days for an additional evaluation and organize immediate action for the correct disposal of human waste and home hygiene practices.</li> <li>• Advise family on:             <ul style="list-style-type: none"> <li>– The importance of washing hands after using the latrine for children and adults.</li> <li>– Proper maintenance of septic tanks and periodic emptying.</li> <li>– Latrine maintenance, proper construction and hygiene.</li> <li>– Proper way to handle human waste.</li> </ul> </li> <li>• Immediately inform the health and/or environmental authorities if necessary.</li> <li>• Have a follow up consultation five days later, or before, if the child's symptoms worsen.</li> </ul>
<ul style="list-style-type: none"> <li>• The child was not classified as having repeated episodes of diarrhea or showed symptoms of digestive illness and/or parasitosis and:             <ul style="list-style-type: none"> <li>– Adults and children do not wash their hands after using the latrine or toilet; or</li> <li>– The septic tank overflows or is emptied only when it begins to smell; or</li> <li>– The latrine is not built or maintained correctly, or</li> <li>– Inadequate hygienic practices are used around the latrine, or</li> <li>– Human waste is not disposed of correctly.</li> </ul> </li> </ul>	<p style="text-align: center;"><b>ENVIRONMENTAL RISK</b></p>	<ul style="list-style-type: none"> <li>• Advise family on:             <ul style="list-style-type: none"> <li>– The importance of washing hands after using the latrine for children and adults</li> <li>– Proper maintenance of septic tanks and periodic emptying</li> <li>– Latrine maintenance, proper construction and hygiene.</li> <li>– Proper way to handle human waste.</li> </ul> </li> <li>• Immediately inform the health and/or environmental authorities if necessary.</li> <li>• Have a follow up consultation after 30 days or before, if the child presents symptoms.</li> </ul>	<ul style="list-style-type: none"> <li>• The child was not classified as having repeated episodes of diarrhea and did not show symptoms of digestive illness and/or parasitosis and:             <ul style="list-style-type: none"> <li>– Adults and children do wash their hands after using the latrine or toilet; and</li> <li>– Human waste is disposed of correctly.</li> </ul> </li> </ul>	<p style="text-align: center;"><b>NO DETECTABLE ENVIRONMENTAL RISK</b></p>	<ul style="list-style-type: none"> <li>• Congratulate the mother on hygiene practices and proper way to dispose of human waste.</li> <li>• Advise the mother to promote a safe environment for the child.</li> </ul>

### Evaluate environmental risks associated with food

#### ASK:

Ask the following questions with respect to the place where the child lives, plays and learns:

- How are foods selected and purchased?
  - Are they purchased in a market? Do you know if these meet current sanitary regulations?
  - Is there control regarding packaging: making sure packages are closed, meet current sanitary regulations, have no broken seals, purchased within the best before date, others?
  - Are products being refrigerated as soon as possible after being purchased (meat, dairy, others)?
- With respect to food preparation:
  - People who prepare food: Do they wash their hands prior to preparing foods and after handling raw products?
  - Are fruits and vegetables washed thoroughly with safe water prior to consumption?
  - Are foods consumed (meats, fish or eggs) raw or undercooked?
  - Are foods grown in the home garden treated with agrochemicals?
  - Are all pots and pans, cutlery and plates washed with safe water prior to food preparation and consumption?
  - Are raw and cooked foods carefully kept separate (to avoid cross contamination)?
- With respect to food consumption following preparation:
  - Are hands being washed prior to food consumption?
  - Are foods being consumed immediately after preparation?
  - Are foods refrigerated if not consumed immediately after preparation?
  - If cooked foods are consumed, are these reheated by reaching the boiling point?
  - Are foods prepared at home being consumed? (sausages, cheeses, preserves or candy): if so, are sterilization or conservation methods used? Are food additives or preservatives added?
- How is food kept and stored?
  - Are dry foods kept in closed containers? Are they placed in hard to reach places?
  - Are meats, dairy and eggs kept refrigerated?
  - Are cleaning products (detergents, cleaners, oven cleaners, abrasives, soaps, wax) or disinfectant products in contact with foods?
  - Are chemical products (cleaners, pesticides, others) stored or kept far from foods and clearly labelled, identified and in closed containers?
  - Are pesticides being used or kept in the kitchen?
  - Are packaging containers from insecticides or cleaning products reused for food storage?

#### OBSERVE AND DETERMINE:

Review charts and/or ask mother to determine:

- Does the child have repeated episodes of diarrhea (at least once a month)?
- Does the child have repeated episodes of parasitosis (at least twice in the last six months)?
- Digestive and/or abdominal signs or symptoms: skin allergic reactions: other food poisoning symptoms.
- Look closely at the hands and nails of the mother and child.
- If a risk of toxic contamination (food, preparation, food smoking, etc.) is suspected go to chemicals chart.

CLASSIFY ENVIRONMENTAL RISKS



Evaluate environmental risks associated with food (continued)

<ul style="list-style-type: none"> <li>The child was classified as having diarrhea or respiratory illness or showed symptoms of digestive illness or parasitosis, and:             <ul style="list-style-type: none"> <li>Foods are not being prepared adequately; or</li> <li>Possible risk of food contamination is suspected; or</li> <li>Food conservation and storage are inadequate; or</li> <li>Food selection and purchase are inadequate or from unknown origin; or</li> <li>Foods produced at home are consumed and unsafe production practices were followed and/or, additives (colouring, preservatives, flavour enhancers, others) were used.</li> </ul> </li> </ul>	<p style="text-align: center;"><b>ENVIRONMENTAL RISK ASSOCIATED WITH SYMPTOMS</b></p>	<ul style="list-style-type: none"> <li>Coordinate a home visit with the mother in the next three days for an additional evaluation and organize an immediate on-site diagnosis to improve the situation.</li> <li>Coordinate with the mother a practical observation on food preparation, consumption, preservation and selection, if possible at the same place where these practices occur.</li> <li>Advise family on:             <ul style="list-style-type: none"> <li>Preventing exposure when there is a life-threatening risk;</li> <li>Measures to reduce a child's exposure to chemical risks that cannot be immediately controlled, when there is no life-threatening risk;</li> <li>Personal hygiene;</li> <li>Proper food selection and purchase;</li> <li>Proper and hygienic food preparation methods;</li> <li>Proper ventilation and food cooking methods;</li> <li>Proper food preservation and storage;</li> <li>Strict sanitary measures when foods are being manufactured at home;</li> <li>Dangers from use or storage of chemicals in the home (see chemicals chart);</li> <li>Proper disposal of contaminated products.</li> </ul> </li> <li>Hold a follow up consultation.</li> <li>Immediately inform the health and/or environmental authorities if necessary.</li> </ul>
<ul style="list-style-type: none"> <li>The child does not present symptoms, but:             <ul style="list-style-type: none"> <li>Some answers suggest inadequate hygiene or food contamination during food preparation or handling.</li> </ul> </li> </ul>	<p style="text-align: center;"><b>ENVIRONMENTAL RISK</b></p>	<ul style="list-style-type: none"> <li>Advise family as above.</li> <li>Follow up consultation after 30 days</li> <li>Immediately inform the health and/or environmental authorities if necessary.</li> </ul>
<ul style="list-style-type: none"> <li>The child does not present symptoms and,             <ul style="list-style-type: none"> <li>Answers do not suggest inadequate hygiene or food contamination during food preparation or handling.</li> </ul> </li> </ul>	<p style="text-align: center;"><b>NO DETECTABLE ENVIRONMENTAL RISK</b></p>	<ul style="list-style-type: none"> <li>Congratulate the mother for employing hygienic food preparation, consumption and storage methods.</li> <li>Advise family as above.</li> </ul>



## Evaluate environmental risks associated with garbage disposal

 <b>CLASSIFY ENVIRONMENTAL RISKS</b>	
<p><b>ASK:</b> Ask the following questions with respect to the place where the child lives, plays and learns:</p> <ul style="list-style-type: none"> <li>• What types of waste are being disposed of? (food residues, medicine, insecticide cans, solvents, paints, or others)</li> <li>• Is there a garbage can with a bag inside the home? Is it covered?</li> <li>• Is there garbage throughout the home or in surrounding areas or are there waste disposal sites near the home?</li> <li>• Are there rats or cockroaches in the home or near the home?</li> <li>• Is there a garbage collection service available? Periodic?</li> <li>• If there is no garbage collection service, how is waste disposed of? (buried, burned, other)</li> </ul>	<p><b>OBSERVE AND DETERMINE:</b> Review charts and/or ask mother to determine if child:</p> <ul style="list-style-type: none"> <li>• Does the child have an illness or health problems associated with garbage?                             <ul style="list-style-type: none"> <li>– Fevers or repeated infections; or</li> <li>– Skin problems (rashes, eczemas, others.) or bites; or</li> <li>– Repeated episodes of digestive illness (at least once per month); or</li> <li>– Repeated respiratory problems (bronchial spasms, obstructive bronchitis), at least once per month or every two months; or</li> <li>– Neurological symptoms or changes in behaviour.</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• The child has an illness or health problem associated with garbage and:                             <ul style="list-style-type: none"> <li>– Garbage is inadequately disposed of inside the home; or</li> <li>– There is garbage throughout the home or in surrounding areas or places where the child plays; or</li> <li>– There is an adjacent waste disposal site; or</li> <li>– Garbage is being burned near the home or is disposed of in open wells; or</li> <li>– There are rats or cockroaches in the home; or</li> <li>– Chemical products are disposed of together with organic waste.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• The child does not have an illness or health problem associated with garbage and:                             <ul style="list-style-type: none"> <li>– Garbage is inadequately disposed of inside the home; or</li> <li>– There is garbage throughout the home or in surrounding areas or places where the child plays; or</li> <li>– There is an adjacent waste disposal site; or</li> <li>– Garbage is being burned near the home or is disposed of in open wells; or</li> <li>– There are rats or cockroaches in the home; or</li> <li>– Chemical products are disposed of together with organic waste.</li> </ul> </li> </ul>
<b>ENVIRONMENTAL RISK ASSOCIATED WITH SYMPTOMS</b>	<b>ENVIRONMENTAL RISK</b>
<ul style="list-style-type: none"> <li>• Coordinate a home visit with the mother in the next three days for an additional evaluation and organize an immediate on-site diagnosis to improve the situation.</li> <li>• Advise family on:                             <ul style="list-style-type: none"> <li>– Proper waste disposal inside and outside the home.</li> <li>– Keeping home clean, animals away from areas where the child plays and discourage child from playing with objects found in the garbage.</li> <li>– Correct final garbage disposal by burying and covering with soil.</li> <li>– Dangers associated with garbage burning indoors, outdoors or at waste disposal sites.</li> <li>– Ways to eliminate rats and cockroaches and how to keep them away from the home.</li> </ul> </li> <li>• Follow up after 30 days</li> <li>• Immediately inform the health and/or environmental authorities if necessary.</li> </ul>	<ul style="list-style-type: none"> <li>• Advise family as above.</li> <li>• Follow up consultation.</li> <li>• Immediately inform the health and/or environmental authorities if necessary.</li> </ul>
<ul style="list-style-type: none"> <li>• Congratulate the family for proper waste disposal practices.</li> <li>• Advise family as above.</li> </ul>	<b>NO DETECTABLE ENVIRONMENTAL RISK</b>

Evaluate environmental risks associated with soil

<p><b>ASK:</b></p> <ul style="list-style-type: none"> <li>Ask the following questions with respect to the place where the child lives, plays and learns</li> <li>Is the previous use of the floor/ground known?</li> <li>Is there or do you suspect the presence of chemicals in the ground (agrochemicals, pesticides, oil spills, others)?</li> <li>Are garden plants or lawns treated with chemical products? (herbicides, insecticides, others)</li> <li>Do sources of treated water or sewage containing biological or chemical products circulate nearby?</li> <li>Are plants, trees or grass not growing in certain locations nearby?</li> <li>Does the child accompany the parent to their workplace or help with work tasks?</li> <li>Is there chemical spraying around the work environment?</li> <li>Does the child play, eat or sleep in the parents' work environment?</li> <li>In the places where the child spends time (home, school, others):             <ul style="list-style-type: none"> <li>Is there old, peeling paint or has there been a recent renovation?</li> <li>Are cleaning products, waxes, kerosene, insecticides, or other products used on floors?</li> <li>Are toys painted or treated with oils, salts or other products?</li> <li>Is there dust and or particulate matter (industry, silos, soot, traffic, others)?</li> <li>Are there any insects, parasites, disease vectorial transmitters (mosquitos, fleas, others)?</li> </ul> </li> <li>Do friends, neighbours or partners show possible symptoms of poisoning?</li> <li>Have pets, domestic or reared animals been sick or recently died?</li> <li>Are you aware of or suspect any other environmental risk situation with respect to the soil?</li> </ul>	<p><b>OBSERVE:</b></p> <ul style="list-style-type: none"> <li>Clinical symptoms that have not been evaluated in previous steps and could be compatible with illness caused by contaminated soils, including:             <ul style="list-style-type: none"> <li>Respiratory symptoms</li> <li>Digestive symptoms</li> <li>Skin problems</li> <li>Repeated infections</li> <li>Neurological symptoms</li> <li>Developmental delays</li> <li>Behavioural changes</li> <li>Repeated infections</li> <li>Malnutrition</li> <li>Anemia</li> <li>Hematological afflictions</li> </ul> </li> </ul> <p><b>DETERMINE:</b></p> <p>Review charts and/or ask mother to determine if child has:</p> <ul style="list-style-type: none"> <li>Respiratory problems (bronchial spasms, obstructive bronchitis, others), at least once every two months</li> <li>Digestive illness (at least once a month)</li> <li>Skin lesions such as rashes, eczema, bites, slings, others</li> <li>Repeated infections or fevers</li> <li>Neurological symptoms or changes in behaviour.</li> </ul>	<p style="text-align: center;"><b>CLASSIFY ENVIRONMENTAL RISKS</b></p> <ul style="list-style-type: none"> <li>The child shows symptoms and/or has a clinical history and:             <ul style="list-style-type: none"> <li>Environmental risk linked to soil is detected and/or suspected.</li> </ul> </li> </ul>	<p style="text-align: center;"><b>ENVIRONMENTAL RISK ASSOCIATED WITH SYMPTOMS</b></p>	<ul style="list-style-type: none"> <li>Proceed with suitable clinical treatment (with hospitalization if needed).</li> <li>Inform the family about the environmental risk detected.</li> <li>Advise family on:             <ul style="list-style-type: none"> <li>Preventing exposure when there is a life-threatening risk.</li> <li>Measures to reduce a child's exposure to chemical risks that cannot be immediately controlled, when there is no life-threatening risk.</li> <li>Promote community activities to control the environmental risk that requires an intervention beyond the family.</li> <li>Inform the mother about the possible warning symptoms regarding the health of the child that require immediate attention.</li> </ul> </li> <li>Schedule a home visit to evaluate environmental conditions.</li> <li>Immediately inform the health and/or environmental authorities if necessary.</li> <li>Follow up consultation.</li> </ul>
		<ul style="list-style-type: none"> <li>The child shows no symptoms and does not have a clinical history, and             <ul style="list-style-type: none"> <li>Environmental risk linked to soil is detected and/or suspected.</li> </ul> </li> </ul>	<p style="text-align: center;"><b>ENVIRONMENTAL RISK</b></p>	<ul style="list-style-type: none"> <li>Inform the family about the environmental risk detected.</li> <li>Advise family on:             <ul style="list-style-type: none"> <li>Preventing exposure</li> <li>Measures to reduce a child's exposure</li> <li>Promote community activities to control the environmental risk that require an intervention beyond the family</li> </ul> </li> <li>Inform the mother about the possible warning symptoms regarding the health of the child and that require immediate attention</li> <li>Immediately inform the health and/or environmental authorities if necessary</li> <li>Schedule a home visit to evaluate environmental conditions if necessary</li> <li>Hold a follow up consultation.</li> </ul>
		<ul style="list-style-type: none"> <li>The child shows no symptoms and does not have a clinical history and,             <ul style="list-style-type: none"> <li>Environmental risk linked to soil is not detected or suspected.</li> </ul> </li> </ul>	<p style="text-align: center;"><b>NO DETECTABLE ENVIRONMENTAL RISK</b></p>	<ul style="list-style-type: none"> <li>Congratulate the mother</li> <li>Advise the mother to promote a safe environment for the child.</li> </ul>

Evaluate environmental risks associated with chemicals

<p><b>ASK:</b> Ask the following questions with respect to the place where the child lives, plays and learns:</p> <ul style="list-style-type: none"> <li>• Building materials             <ul style="list-style-type: none"> <li>– Fiberglass tanks</li> <li>– Treated wood</li> <li>– Glues used in linings</li> <li>– Linings or furniture made from flexible PVC with softeners</li> <li>– Flame retardants (panels)</li> <li>– Paints</li> </ul> </li> <li>• Location:             <ul style="list-style-type: none"> <li>– Avenue or highway, construction zone or parking lot, gas station</li> <li>– History, use of lots: waste disposal sites, smelters, industrial deposits, chemical product manufacture industry</li> <li>– Proximity to industry, silos, incinerators, open burning of garbage, petrochemical plants, others</li> <li>– Near surface or underground contaminated water sources</li> <li>– Sources of emission or exposure: transformers, industrial deposits, others.</li> </ul> </li> <li>• Recreation areas:             <ul style="list-style-type: none"> <li>– Toys: treated wood, painted or with toxic plastic substances, lead, others</li> <li>– Enclosed swimming pools treated with chlorine.</li> </ul> </li> <li>• Clothes             <ul style="list-style-type: none"> <li>– Flame retardants</li> <li>– Toxic dyes</li> <li>– Cosmetics with lead or volatile substances</li> <li>– Aerosoles.</li> </ul> </li> <li>• Parental chemical exposure:             <ul style="list-style-type: none"> <li>– Bringing home work clothes that have come in contact with chemicals or washing these with children's or family's clothes.</li> <li>– Mother has acute chemical poisoning and is breastfeeding.</li> </ul> </li> <li>– Work at home involving the use of toxic chemicals (drycleaning solvents, volatile solvents, alcohol, ammonia [used in furniture renovation], others).</li> <li>– Washing work equipment at home (pesticide sprayers).</li> </ul>	<p><b>OBSERVE:</b></p> <ul style="list-style-type: none"> <li>• Clinical symptoms that have not been evaluated in previous steps and could be compatible with illness caused by contact or exposure to chemical products, including:             <ul style="list-style-type: none"> <li>– Respiratory symptoms</li> <li>– Digestive symptoms</li> <li>– Skin problems</li> <li>– Neurological symptoms</li> <li>– Sensory problems</li> <li>– Developmental delays</li> <li>– Behavioural changes</li> <li>– Anemia</li> <li>– Nutritional issues, low weight</li> <li>– Hematological conditions</li> <li>– Immune system disorders</li> <li>– Endocrine system disruption</li> <li>– Malformations or congenital diseases</li> </ul> </li> </ul> <p><b>DETERMINE:</b> Review charts and/or ask mother to determine if child has:</p> <ul style="list-style-type: none"> <li>• Respiratory problems (bronchial spasms, obstructive bronchitis, others), at least once every two months</li> <li>• Digestive illness (at least once a month)</li> <li>• Skin lesions such as rashes, eczema, bites, stings, others</li> <li>• Repeated infections or fevers</li> <li>• Neurological symptoms, tremors, insomnia, drowsiness or changes in behaviour, others</li> <li>• Anemia, stable weight, low weight</li> <li>• Combination of factors.</li> </ul>	<p style="text-align: center;"><b>CLASSIFY ENVIRONMENTAL RISKS</b></p> <ul style="list-style-type: none"> <li>• The child shows symptoms, has a clinical history and,             <ul style="list-style-type: none"> <li>– Environmental risk linked to chemicals is detected or suspected.</li> </ul> </li> </ul>	<p style="text-align: center;"><b>ENVIRONMENTAL RISK ASSOCIATED WITH SYMPTOMS</b></p>	<ul style="list-style-type: none"> <li>• Proceed with suitable clinical treatment (with hospitalization if needed).</li> <li>• Inform the family about the environmental risk detected.</li> <li>• Advise family on:             <ul style="list-style-type: none"> <li>– Preventing exposure when there is a life-threatening risk.</li> <li>– Measures to reduce a child's exposure to chemical risks that cannot be immediately controlled, when there is no life-threatening risk.</li> <li>– Promote community activities to control the environmental risk that require an external intervention</li> <li>– Inform the mother about possible warning symptoms regarding the health of the child and that require immediate attention</li> </ul> </li> <li>• Schedule a home visit to evaluate environmental conditions</li> <li>• Immediately inform the health and/or environmental authorities if necessary.</li> <li>• Follow up consultation.</li> </ul>
		<ul style="list-style-type: none"> <li>• The child shows no symptoms and does not have a clinical history and,             <ul style="list-style-type: none"> <li>– Environmental risk linked to chemicals is detected or suspected.</li> </ul> </li> </ul>	<p style="text-align: center;"><b>ENVIRONMENTAL RISK</b></p>	<ul style="list-style-type: none"> <li>• Inform the family about the environmental risk detected.</li> <li>• Advise family on:             <ul style="list-style-type: none"> <li>– Preventing exposure</li> <li>– Measures to reduce a child's exposure.</li> <li>– Promote community activities to control the environmental risk that require an intervention</li> <li>– Inform the mother about the possible warning symptoms regarding the health of the child and that require immediate attention</li> </ul> </li> <li>• Immediately inform health and/or environmental authorities if necessary</li> <li>• Schedule a home visit to evaluate environmental conditions if necessary</li> <li>• Hold follow up consultation.</li> </ul>
		<ul style="list-style-type: none"> <li>• The child shows no symptoms and does not have a clinical history and,             <ul style="list-style-type: none"> <li>– Environmental risk linked to chemicals is not detected or suspected.</li> </ul> </li> </ul>	<p style="text-align: center;"><b>NO DETECTABLE ENVIRONMENTAL RISK</b></p>	<ul style="list-style-type: none"> <li>• Congratulate the mother</li> <li>• Advise the mother to promote a safe environment for the child.</li> </ul>



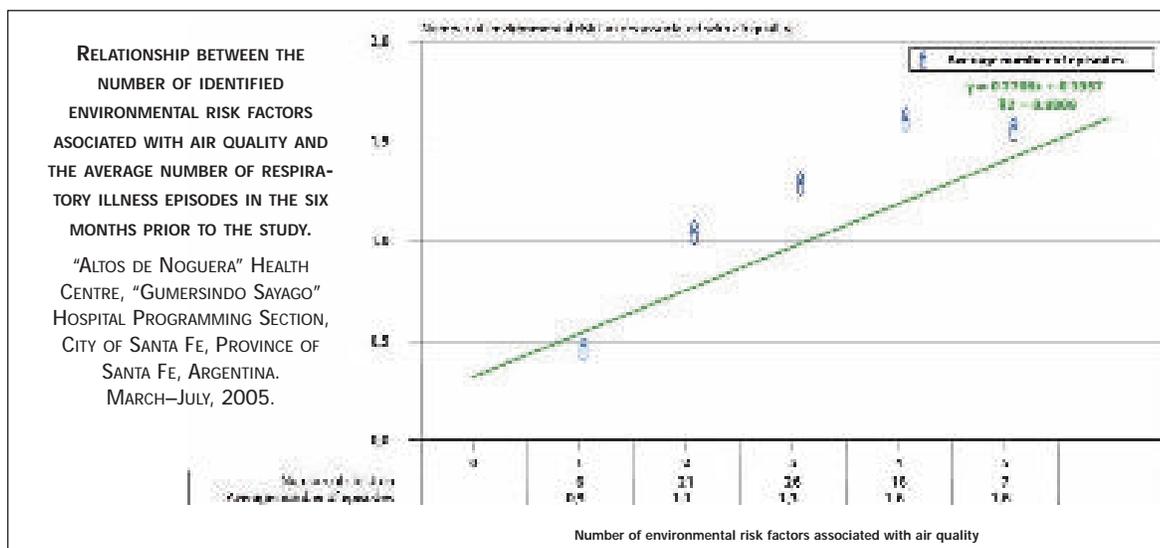
## IDENTIFICATION OF ENVIRONMENTAL RISK FACTORS ASSOCIATED WITH A GREATER FREQUENCY AND SEVERITY OF RESPIRATORY ILLNESS IN CHILDHOOD\*

During the months of March to October 2005, the framework procedures were used for the detection and prevention of childhood environmental risks associated with air quality as part of the Integrated Management of Childhood Illness (IMCI) Strategy. The evaluations were performed by qualified doctors experienced in the implementation of the Strategy and its framework procedures for the detection and prevention of environmental risks.

Three hundred and thirty-one children were evaluated and classified during the consultations that took place in seven ambulatory health centres in the City of Santa Fe, Province of Santa Fe, Argentina. Of these children, 97.2% lived in conditions that are recognized as having risk factors for respiratory illness. The conditions frequently mentioned by the participants were smoke and odours resulting from the burning of garbage, humidity inside the home, use of aerosol insecticides and the presence of pets.

Given the high prevalence of environmental risk factors found in the study, the frequency of respiratory illness was compared to the presence of multiple environmental risk factors. There was a statistically significant difference in the average number of environmental risk factors present in children with respiratory illness (risk factor average = 4.3) when compared to children with no respiratory illness (risk factor average = 2.9) (Student t-test = 6.51;  $p < 0.001$ ).

In addition, the correlation was analyzed between the number of environmental risk factors to which the children were exposed and the average number of respiratory illness episodes that they presented in the past six months (as assisted in centres of primary health care). A positive association was observed among the largest number of risk factors and the number of episodes of respiratory illness (correlation coefficient = 0.88).



Source: National Institute of Respiratory Illness (INER) “Emilio Coni”, Department of Health Programs. Work performed by Dr. Marcelino Diaz, 2005 as part of his thesis in Epidemiology and Childhood Respiratory Illness Control.

In this way, the framework procedures were useful to help identify those children who were exposed to a large number of environmental risk factors and children who are

more frequently affected by episodes of respiratory illness during the first five years of life.

\*This work was performed as part of the Childhood Respiratory Illness Clinical, Epidemiological and Operative Aspects Internship, National Institute of Respiratory Illness (INER) “Emilio Coni”, Ministry of Health, Argentina, 2005.

## PUBLICATIONS

**Title:** **Diagnosis on the use and handling of household pesticides: Collaborative Multicentre Study**

**Author:** National Commission of Health Research Programs of the Ministry of Health of Argentina; Unit of Health and Environment, Secretariat of Environment and Sustainable Development; Society of Argentine Pediatrics.

**Language:** Spanish

**Edition:** 2006

**Key words:** home survey; household pesticides; health; environment; information; poisoning; children

**Source:**

[http://www.ambiente.gov.ar/archivos/web/UniDA/File/Libro\\_Plaguicidas.pdf](http://www.ambiente.gov.ar/archivos/web/UniDA/File/Libro_Plaguicidas.pdf)

**Title:** **The child and his environment – Guide to protecting children from environmental hazards**

**Author:** Asociación Argentina de Médicos por el Medio Ambiente, AAMMA; International Society of Doctors for the Environment, ISDE; International Network on Children's Health, Environment and Safety, INCHES.

**Language:** Spanish

**Edition:** November 2004

**Key words:** vulnerability of children; air; heavy metals; toxic chemicals; solar exposure; noise; non intentional injury; climate change; rights of the child

**Source:**

[http://www.aamma.org/archivos/el\\_nino\\_y\\_su\\_ambiente.pdf](http://www.aamma.org/archivos/el_nino_y_su_ambiente.pdf)

**Title:** **Epidemiology of regional chronic endemic hydroarsenicism in Argentina: Collaborative Multicentre Study**

**Author:** National Commission of Health Research Programs of the Ministry of Health of Argentina; Unit of Health and Environment, Secretariat of Environment and Sustainable Development; Toxicology Association of Argentina.

**Language:** Spanish

**Edition:** 2007

**Key words:** hydroarsenicism; health; epidemiology; water; cancer

**Title:** **Estimating Releases and Prioritizing Sources in the Context of the Stockholm Convention: Dioxin Emission Factors for Forest Fires, Grassland and Moor Fires, Open Burning of Agricultural Residues, Open Burning of Domestic Waste, Landfill and Dump Fires**

**Author:** Pat Costner - Owltree Environmental Consulting - Eureka Spring, Arkansas, USA; Pesticide Action and Alternatives Network in Mexico (Spanish acronym RAPAM)

**Language:** Spanish

**Edition:** January 2006

**Key words:** Stockholm Convention

**Source:**

[http://www.ipen.org/ipepweb1/library/ipep\\_pdf\\_reports/7mex%20estimating%20dioxin%20releases%20english.pdf](http://www.ipen.org/ipepweb1/library/ipep_pdf_reports/7mex%20estimating%20dioxin%20releases%20english.pdf)

**Title:** **GEO Argentina 2004 – Environmental Perspectives in Argentina**

**Author:** Ministry of Health and Environment of Argentina; United Nations Environmental Program (UNEP); Secretariat of Environment and Sustainable Development of Argentina

**Language:** Spanish

**Edition:** Printed in Argentina, 2006.

**Key words:** environment; biodiversity; ozone layer; climate change; transportation and traffic; waste; environmental impact; impact on human health; scenarios for Argentina; recommendations

**Source:**

[http://www.ambiente.gov.ar/archivos/web/GEO/File/Geo\\_Argentina\\_2004.pdf](http://www.ambiente.gov.ar/archivos/web/GEO/File/Geo_Argentina_2004.pdf)

**Title:** **Nutrition Guide for Healthy Children from 0 to 2 years of age**

**Author:** Nutrition Committee of the Society of Argentine Pediatrics (SAP)

**Language:** Spanish

**Edition:** 2001

**Link:** [http://www.sap.org.ar/staticfiles/publicaciones/ediciones/alim\\_0a2.pdf](http://www.sap.org.ar/staticfiles/publicaciones/ediciones/alim_0a2.pdf)

**Title:** **Injury Prevention Manual**

**Author:** Injury Prevention Sub-committee of the Society of Argentine Pediatrics (SAP).

**Language:** Spanish

**Edition:** 2001

**Link:** <http://www.sap.org.ar/staticfiles/publicaciones/ediciones/accidentes.pdf>

**Title:** **Guide to understanding the Stockholm Convention**

**Author:** BIOS Argentina

**Language:** Spanish

**Edition:** 2007

**Key words:** Stockholm Convention, POPs

**Source:**

[http://www.aamma.org/images/gu%CDa\\_cops\\_biospdf.pdf](http://www.aamma.org/images/gu%CDa_cops_biospdf.pdf)

**Title:** **Impact of transgenic farming on the agrarian structure and nutrition: Analysis of the situation in Argentina**

**Author:** Ing. Agr. (MSc) Javier Souza Casadinho, Center of Studies for Appropriate Technologies of Argentina (Spanish acronym CETAAR), Pesticide Action and Alternatives Network in Latin America (Spanish acronym RAP-AL) Argentina

**Language:** Spanish

**Edition:** June 2004

**Source:** <http://www.rap-al.org/v2/index.php?seccion=3&f=publicaciones.php>

**Title:** **Poison Spiral**

**Author:** Fernando Bejarano González

**First Edition:** Pesticide Action and Alternatives Network in Mexico (Spanish acronym RAPAM)

**Language:** Spanish

**Edition:** June 2002

**Source:** <http://www.rap-al.org/v2/index.php?seccion=3&f=publicaciones.php>

**Title:** **Problems in the use of agrochemicals and their containers, incidence on the health of workers and risks to the population and the environment: Collaborative Multicentre Study**

**Author:** National Commission of Health Research Programs, Ministry of Health of Argentina; Unit of Health and Environment, Secretariat of Environment and Sustainable Development; Pan-American Health Organization/World Health Organization; Asociación Argentina de Médicos por el Medio Ambiente, AAMMA

**Language:** Spanish

**Edition:** Buenos Aires, Argentina, 2007

**Source:**

<http://www.ambiente.gov.ar/archivos/web/UniDA/File/LIBRO%20Agroquimicos.pdf>

**Title:** **Mortality from Respiratory Disease in Children under 5 years of age: Magnitude of the problem, trends and distribution, Argentina, 1980-2005**

**Author:** Ministry of Health of Argentina; National Institute of Respiratory Disease "Dr. Emilio Coni" - Health Programs Department

**Language:** Spanish

**Edition:** Province of Santa Fé, Argentina, February 2007

**Key words:** mortality due to respiratory disease; statistical health system in Argentina

**Title: Principles for an Environment Free of Pollutants**

*Author:* International Chemical Secretariat (ChemSec); Asociación Argentina de Médicos por el Medio Ambiente, AAMMA.

*Language:* Spanish

*Key words:* chemical substances; DDT; PCBs; precautionary principle; right to know; substitution principle

*Source:* [http://www.aamma.org/images//spanish%20booklet\\_finale.pdf](http://www.aamma.org/images//spanish%20booklet_finale.pdf)

**Title: Protecting Children from Dangerous Chemical Exposures. Chemical Safety and Child Health**

*Author:* Prepared for the Intergovernmental Forum for Chemical Safety Forum Standing Committee (IFCS FSC) Working Group chaired by Hungary. In Bangkok, Thailand - November 1–7, 2003

*Language:* Spanish

*Edition:* 2003

*Key words:* mercury; lead; PCBs; POPs

*Source:* <http://www.aamma.org/archivos/protecquimica.doc>

**Title: Sustainable Development Indicators System in Argentina**

*Author:* Secretariat of Environment and Sustainable Development, Chief of Cabinet of the Presidency of Argentina.

*Language:* Spanish

*Edition:* December 2006

*Key words:* National Indicators Network; poverty; indigence

*Source:* <http://www.ambiente.gov.ar>

**Title: Statistical Health System – Vital Statistics – Basic Information, 2005 - Argentina**

*Author:* National Secretariat of Determinants of Health and Sanitary Relations, Ministry of Health

*Language:* Spanish

*Edition:* Buenos Aires, Argentina, November 2006 (SIN 1668-9054 - Series 5 No. 49).

*Key words:* live birth; death; fetal death; indicators; mortality rate

**Title: Child Health and the Environment – A Primer**

*Author:* Canadian Partnership for Children's Health and Environment

*Language:* English

*Edition:* September 2005

*Key words:* General CEH, Vulnerable Groups, Women of Child-Bearing Age, Fetus, Infants, Pregnant Women, Children, Adolescents, Aboriginal Peoples, Public Health, Health Promotion.

*Source:* [http://www.healthyenvironmentforkids.ca/english/resources/card\\_file.shtml?x=2323](http://www.healthyenvironmentforkids.ca/english/resources/card_file.shtml?x=2323)

**Title: Children's Health and Environment – A Global Perspective. A Resource Manual for the Health Sector**

*Edited by:* J. Pronczuk de Garbino, M.D.

*Publication:* World Health Organization, WHO

*Language:* English

*Edition:* 2005

*Key words:* how and where exposures occur; specific environmental threats: sources of exposure and health effects; paediatric environmental history; taking action; case studies

*Source:* <http://www.who.int/ceh/publications/handbook/en/index.html>

**Title: Children in the New Millennium – Environmental Impact on Health**

*Author:* United Nations Environment Program (UNEP); United Nations Children's Fund (UNICEF) and World Health Organization (WHO)

*Language:* English

*Edition:* 2002

*Key words:* environment; children; health; sustainable development; chemical pollution; air pollution; climate change; water; sanitation

*Source:*

<http://www.who.int/bookorders/anglais/detart1.jsp?sesslan=1&codlan=1&codcol=15&codcch=501>

*Title:* **Inheriting the World: The Atlas of Children's Health and the Environment**

*Author:* Bruce Gordon, Richard Mackay, Eva Rehfuss

*Edition:* World Health Organization, WHO

*Language:* English

*Edition:* First edition 2004

*Key words:* child health; poverty; global environmental issues

*Source:*

<http://www.who.int/bookorders/anglais/detart1.jsp?sesslan=1&codlan=1&codcol=15&codcch=586>

*Title:* **Environment and Health (EEA Report No. 10/2005)**

*Author:* European Environment Agency (EEA) the Joint Research Center (JRC) of the European Commission

*Language:* English

*Edition:* 2005

*Key words:* respiratory disease; asthma; cancer; neurodevelopment; endocrine disruption

*Source:*

[http://reports.eea.europa.eu/eea\\_report\\_2005\\_10/en/EEA\\_report\\_10\\_2005.pdf](http://reports.eea.europa.eu/eea_report_2005_10/en/EEA_report_10_2005.pdf)

*Title:* **Pesticide-Related Illness and Injury Surveillance**

*Author:* Department of Health and Human Services – Centers for Disease Control and Prevention – National Institute for Occupational Safety and Health (NIOSH)

*Language:* English

*Edition:* October 2005

*Key words:* pesticides; report and law examples; poison control centers; laboratory diagnosis criteria; analysis and data reports; intervention strategies; agriculture sector

child labour; pesticides in schools; control and prevention

*Source:* <http://www.cdc.gov/niosh/docs/2006-102/pdfs/2006-102.pdf>

*Title:* **Pediatric Environmental Health. 2<sup>nd</sup> edition**

*Author:* Committee on Environmental Health - American Academy of Pediatrics, Ruth A. Etzel, M.D., Ph.D, Editor and Sophie J. Balk, M.D., Associate Editor

*Language:* English

*Edition:* 2003 (1<sup>st</sup> edition 1999)

*Key words:* developmental toxicity; air pollutants; arsenic; asbestos; carbon monoxide; electric and magnetic fields; endocrine disruptors; tobacco; food contaminants; radiation; lead; mercury; water pollutants; noise; pesticides; PCBs; ultraviolet light; asthma; cancer

*Source:*

[http://www.findarticles.com/p/articles/mi\\_m0CYP/is\\_5\\_112/ai\\_116524976](http://www.findarticles.com/p/articles/mi_m0CYP/is_5_112/ai_116524976)

*Title:* **Revision of the “IPCS - Multilevel Course on the Safe Uses of Pesticides and on the Diagnosis and Treatment of Pesticide Poisoning, 1994”**

*Author:* World Health Organization International Program on Chemical Safety (IPCS)

*Language:* English

*Edition:* 1994

*Key words:* poisoning; pesticides; healthcare; management; label

*Source:* Manual on Pesticide Safety No.00 WHO/PCS/94.3. February 1994

*Title:* **Preventing Disease through Healthy Environments: Towards an estimate of the environmental burden of morbidity**

*Author:* A. Prüss-Ustün, C. Corvalán

*Language:* English and orientation summary available in Spanish

*Edition:* 2006

*Key words:* morbidity

*Source:* [http://www.who.int/quantifying\\_ehimpacts/publications/preventingdisease.pdf](http://www.who.int/quantifying_ehimpacts/publications/preventingdisease.pdf)

*Title:* **Online Atlas of the Millennium Development Goals**

*Author:* copyright World Bank 2007

*Language:* Spanish, English and French

*Edition:* 2007

*Key words:* millennium development

*Source:* <http://devdata.worldbank.org/atlas-mdg/>

*Title:* **In Harm's Way – Toxic Threats to Child Development**

*Author:* Ted Schettler, Jill Stin, Fay Reich, Maria Valenti (Greater Boston Physicians for Social Responsibility) Boston (USA). (Spanish version translated and adapted by Asociación Argentina de Médicos por el Medio Ambiente, AAMMA).

*Language:* English and Spanish

*Edition:* English January 2000; Spanish February 2002.

*Key words:* bioaccumulation; neuronal migration; environmental influence in development; dioxins, PCBs, mercury; neurotoxins; neurodevelopmental disorders

*Source:* <http://psr.igc.org/ihw-project.htm>

*Title:* **Global Assessment of the state-of-the-science of Endocrine Disruptors**

*Author:* Edited by Terri Damstra; Sue Barlow; Aake Bergam; Robert Kavlock; Glen Van Der Kraak. International Programme on Chemical Safety, IPCS. (Spanish version translated and adapted by Asociación Argentina de Médicos por el Medio Ambiente, AAMMA).

*Language:* English–Spanish

*Edition:* 2002

*Key words:* endocrine disruptors

*Source:* [http://www.who.int/ipcs/publications/new\\_issues/endocrine\\_disruptors/en/](http://www.who.int/ipcs/publications/new_issues/endocrine_disruptors/en/)

*Title:* **Late Lessons from Early Warnings: the precautionary principle 1896-2000**

*Published by:* European Environment Agency

*Language:* English–Spanish

*Edition:* 2003

*Key words:* precautionary principle; fisheries; radiations; benzene; asbestos; PCBs; halocarbons; gasoline; hormones as growth promoters; mad cow disease

*Source:*

[http://reports.eea.europa.eu/environmental\\_issue\\_report\\_2001\\_22/en](http://reports.eea.europa.eu/environmental_issue_report_2001_22/en)

*Title:* **Our Stolen Future – Are synthetic chemical substances a threat to our fertility, intelligence and survival?**

*Author:* Theo Colborn, Dianne Dumanoski, Jhon Peterson Myeres

*Language:* English–Spanish (14 languages)

*Edition:* 1997

*Key words:* second hand poisons; chemical messengers; hormones; fecundity; beyond cancer; threats

*Source:* <http://www.ourstolenfuture.org/aboutOSF.htm>

*Title:* **Protection of workers from toxic occupational exposure to chemical products – Recommendations and priorities for health and chemical safety**

*Author:* Intergovernmental Forum on Chemical Safety (IFCS)

*Language:* English–Spanish

*Key words:* IFCS; toxic products; evaluation of chemical risks for workers; ILO

*Source:* [www.who.int](http://www.who.int), [www.ifcs.ch](http://www.ifcs.ch)

**Title: Meeting of the Ministers of Health and Environment of the Americas. June 16-17, 2005**

*Author:* Ministry of Health of Argentina; Pan-American Health Organization (PAHO); UNEP; OAS; IDRC-CRDI

*Language:* Spanish, English

*Edition:* 1<sup>st</sup> edition, 800 copies, July 2006

*Key words:* integrated approach to health and environment in the Americas; MiSAM meeting, case studies; municipalities and healthy communities; children's environmental health; chemical management; water resources integrated management; Mar del Plata declaration June 2005

**Title: Chemical Safety and Children's Health – Protecting children from the world of dangerous exposure to chemicals: a global guide to resources**

*Author:* Prepared for the Intergovernmental Forum on Chemical Safety (IFCS) – Working Group on Children Chemical Safety.

*Language:* English, Spanish, French

*Edition:* October 2005

*Key words:* IFCS; recommendations; work to prevent and to reduce; CEH indicators

*Source:*

<http://www.who.int/ifcs/documents/forums/forum4/children/en/index.html>

**Title: WHO Training Package for the Health Sector, World Health Organization – Children's Environmental Health: Training Modules**

*Author:* World Health Organization, WHO (Spanish version translated and adapted by Asociación Argentina de Médicos por el Medio Ambiente, AAMMA).

*Language:* English – Spanish

*Key words:* vulnerability; pediatric environmental history; pesticides; POP's; indoor and outdoor air; mercury; lead

*Source:* <http://www.who.int/ceh/capacity/en/>

## WEBSITES

### NON-GOVERNMENTAL ORGANIZATIONS

**Asociación Argentina de Médicos por el Medio Ambiente (Spanish acronym AAMMA)**

<http://www.aamma.org/>

**Toxicology Association of Argentina (Spanish acronym ATA)**

<http://www.ataonline.org.ar/index.htm>

**Canadian Institute of Child Health (CICH)**

<http://www.cich.ca>

**Center for Health, Environment & Justice**

<http://www.chej.org/>

**Clean Water Action**

<http://www.cleanwateraction.org/>

**Collegium Ramazzini, Italia**

<http://www.collegiumramazzini.org/>

**Commission for Environmental Cooperation (CEC)**

<http://www.cec.org/home/index.cfm?varlan=espanol>

**Environmental Defense Fund**

<http://www.environmentaldefense.org/home.cfm>

**Sustainable Hospitals**

<http://www.sustainablehospitals.org>

**International Society of Doctors for the Environment (ISDE)**

[www.isde.org](http://www.isde.org)

**Institute for Children's Environmental Health (ICEH)**

<http://www.iceh.org/>

**United Nations**

<http://www.un.org/english/>

**National Pesticide Information Center (NPIC)**

Lead <http://www.nsc.org/issues/lead/>

**World Health Organization (WHO)**

<http://www.who.int>

**Pan-American Health Organization (PAHO)**

[http://www.paho.org/english/paho/about\\_paho.htm](http://www.paho.org/english/paho/about_paho.htm)

**International Labour Organization (ILO)**

<http://www.ilo.org/public/spanish/bureau/integration/index.htm>

**Society of Argentine Pediatrics (SAP)**

<http://www.sap.org.ar/>

**United Nations Children's Fund - UNICEF**

<http://www.unicef.org/spanish/crc/index.html>

**Women in Europe for a Common Future**

<http://www.wecf.org/>

**World Family Doctors (WONCA)**

<http://www.globalfamilydoctor.com/MO/MO.asp?MOSearch=N&MOID=84>

**GOVERNMENTAL**

**Centers for Disease Control and Prevention (CDC)**

<http://www.cdc.gov/>

**Council for the Rights of the Child and Adolescents (Argentina)**

<http://www.infanciayderechos.gov.ar>

**Federal Environmental Council (Spanish acronym COFEMA), Argentina**

<http://www.ambiente.gov.ar/?idseccion=32>

**National Communications Commission (Spanish acronym CNC)**

Radiaciones: <http://www.cnc.gov.ar/espectro/radiacionesNoIonizantes.asp>

**National Bureau of Statistics and Health Information, Ministry of Health of Argentina**

<http://www.bsas.gov.ar/areas/salud/estadisticas/>

**Directory of Organizations and Environmental Projects**

<http://www2.medioambiente.gov.ar/bases/directorios/organismos/default.htm>

**Food and Drug Administration (FDA)**

<http://www.fda.gov/default.htm>

**Ministry of Health of Argentina**

<http://www.msal.gov.ar>

**National Institute of Environmental Health Sciences (NIEHS)**

<http://www.niehs.nih.gov/about/index.cfm>

**National Lead Information Center (EPA), US**

<http://www.epa.gov/lead/>

**Office of Healthy Homes and Lead Hazard Control, US Department of Housing and Urban Development (HUD)**

<http://www.hud.gov/offices/lead/index.cfm>

**First GEO Report or Integral Environmental Evaluation in Argentina**

<http://www.ambiente.gov.ar/?idseccion=46>

**National Prevention and Poison Control Program, Ministry of Health of Argentina**

[http://www.msal.gov.ar/htm/site/prog\\_PCI.asp](http://www.msal.gov.ar/htm/site/prog_PCI.asp)

**Matanza Riachuelo Basin Integrated Plan**

<http://cmr.ambiente.gov.ar/>

**Secretariat of Environment and Sustainable Development, Chief of Cabinet of the Presidency of Argentina**

<http://www.ambiente.gov.ar/>

**Safety in the Home, Government of Argentina**

<http://www.argentina.gov.ar/argentina/portal/paginas.dhtml?pagina=325>

**National Environment Information System**

<http://www.ambiente.gov.ar/?idseccion=55>

**USA Consumer Product Safety Commission (CPSC)**

<http://www.cpsc.gov/about/about.html>

**Health Canada**

<http://www.hc-sc.gc.ca>

**Public Health Agency of Canada**

<http://www.phac-aspc.gc.ca>

## ENVIRONMENTAL AGENCIES

### Environmental Protection Agency (EPA)

<http://www.epa.gov/opp00001/regulating/storage.htm>

### Agency for Toxic Substances and Disease Registry (ATSDR)

<http://www.atsdr.cdc.gov/about.html>

## NETWORKS

### Anti-incineration Civic Coalition

<http://www.noalaincineracion.org/>

### Healthy Environments for Children Alliance (HECA)

<http://www.who.int/heca/en>

### Health Care Without Harm (HCWH)

<http://www.hcwh.org/>

### International Network on Children's Health, Environment and Safety (INCHES)

<http://www.inchesnetwork.net/>

### Policy Interpretation Network on Children's Health and Environment (PINCHE)

<http://www.pinche.hvdgm.nl/>

### Argentine Toxicology Network (Spanish acronym REDARTOX)

[www.msal.gov.ar/redartox/](http://www.msal.gov.ar/redartox/)

### Pesticide Action Network, PAN

<http://www.pan-international.org/panint/?q=es/node/33>

### Pesticide Action and Alternatives Network in Latin America (Spanish acronym RAP-AL)

<http://www.rap-al.org/v2/>

### International POPs Elimination Network (IPEN)

<http://www.ipen.org/>

## FORUMS

### Clean Air Forum (Spanish acronym FOROBA)

<http://www.foroba.org.ar>

### Intergovernmental Forum on Chemical Safety (IFCS)

<http://www.who.int/ifcs/>

## PROGRAMS

### **International Program on Chemical Safety (IPCS)**

<http://www.who.int/ipcs/en/>

### **United Nations Chemical Environmental Program (UNEP)**

<http://www.chem.unep.ch/pops>

## ELECTRONIC ENVIRONMENTAL INFORMATION

### **Online database from the Society of Argentine Pediatrics (SAP)**

[http://www.sap.org.ar/index.php?option=com\\_bookmarks&Itemid=173](http://www.sap.org.ar/index.php?option=com_bookmarks&Itemid=173)

### **PAHO's Virtual Library on Health, Environment and Toxicology from the Pan-American Center of Civil Engineering and Environmental Sciences (CEPIS)**

<http://www.cepis.ops-oms.org/cepis/i/cepisacerca.html>

### **Virtual Library on Toxicology, (Spanish acronym REDARTOX)**

[www.msal.gov.ar/redartox](http://www.msal.gov.ar/redartox)

### **Dictionary and glossary, Secretariat of Environment and Sustainable Development, Chief of Cabinet of the Presidency of Argentina**

<http://www.ambiente.gov.ar/default.asp?IdArticulo=400>

### **Latin American and Caribbean Literature on Health Sciences (Spanish acronym LILACS)**

[http://www.bireme.br/abd/E/elista\\_general.htm](http://www.bireme.br/abd/E/elista_general.htm)

<http://regional.bvsalud.org/php/index.php?lang=en>

### **Ecodigital**

[www.ecodigital.com.ar](http://www.ecodigital.com.ar)

### **Environmental Health Perspectives (EHP)**

<http://www.ehponline.org/>

### **Environmental Change and Our Health (Ecohealth)**

<http://www.ecohealth101.org/index.html>

## **OTHER LINKS OF INTEREST**

### **Our Stolen Future**

<http://www.ourstolenfuture.org/>

### **Strategic Approach to International Chemicals Management (SAICM, UNEP)**

<http://www.chem.unep.ch/saicm/>

### **Union Institute of Labour, Environment and Health (Spanish acronym ISTAS)**

<http://www.istas.net/webistas/portada.asp>

### **Istituto Cooperazione Economica Internazionale (ICEI)**

<http://www.icei.it/chisiamo.html>

### **United Nations Millennium Development Goals**

<http://www.un.org/millenniumgoals/>



**APPENDIX B**

**Processes, Conventions  
and Declarations**

# Processes, conventions and declarations

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## Declarations

### **Agenda 21, Rio Declaration on Environment and Development, Rio de Janeiro – Brazil, June 1992**

The United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil in 1992, was the largest gathering of world leaders that has ever taken place. More than 178 governments, including Canada, adopted Agenda 21, the Rio Declaration on Environment and Development, and the Statement of Principles for the Sustainable Management of Forests. Agenda 21 is a comprehensive plan of action to be taken globally, nationally and locally by organizations of the United Nations system, governments, and major groups in every area in which humans impact on the environment. Other results and accomplishments of UNCED included: the Framework Convention on Climate Change, the Convention on Biological Diversity, the establishment of an NGO body called the Earth Council, and a new organization called the World Business Council for Sustainable Development.

Spanish: [www2.medioambiente.gov.ar/acuerdos/convenciones/rio92/agenda21/ageindi.htm](http://www2.medioambiente.gov.ar/acuerdos/convenciones/rio92/agenda21/ageindi.htm)

English: [www.un.org/esa/sustdev/sdissues/climate\\_change/climate\\_change.htm](http://www.un.org/esa/sustdev/sdissues/climate_change/climate_change.htm)

### **Program 21, Preamble of the Rio Declaration on Environment and Development, Rio de Janeiro – Brazil, June 1992**

Spanish: [www.aamma.org/images/programa21pre%E1mbulo.pdf](http://www.aamma.org/images/programa21pre%E1mbulo.pdf)

English: [findarticles.com/p/articles/mi\\_m1584/is\\_nSUP3-4\\_v3/ai\\_12536350](http://findarticles.com/p/articles/mi_m1584/is_nSUP3-4_v3/ai_12536350)

### **Alma-Ata Declaration on Primary Health Care, Alma-Ata, USSR, September 1978**

English: [www.who.int/hpr/NPH/docs/declaration\\_almaata.pdf](http://www.who.int/hpr/NPH/docs/declaration_almaata.pdf)

### **Jakarta Declaration on Health Promotion in the XXI Century. July 1997**

Spanish: [www.who.int/hpr/NPH/docs/jakarta\\_declaration\\_sp.pdf](http://www.who.int/hpr/NPH/docs/jakarta_declaration_sp.pdf)

English: [www.who.int/healthpromotion/conferences/previous/jakarta/declaration/en/](http://www.who.int/healthpromotion/conferences/previous/jakarta/declaration/en/)

### **1997 Declaration of the Environmental Leaders of the Eight on Children's Environmental Health (declaration text reproduced at the end of this Appendix)**

Spanish: [www.aamma.org/images/declaraci%F3n%20g8.pdf](http://www.aamma.org/images/declaraci%F3n%20g8.pdf)

English: [www.g8.utoronto.ca/environment/1997miami/children.html](http://www.g8.utoronto.ca/environment/1997miami/children.html)

### **Wingspread Declaration on the Precautionary Principle, 1998**

English: [www.gdrc.org/u-gov/precaution-3.html](http://www.gdrc.org/u-gov/precaution-3.html)

### **Bahía Declaration on Chemical Safety, Bahía – Brazil, October 2000**

Spanish, English, French, and other languages:

[www.who.int/ifcs/documents/forums/forum3/en/index.html](http://www.who.int/ifcs/documents/forums/forum3/en/index.html)

**IPEN Stockholm Declaration, May 22, 2001**

Spanish: [www.aamma.org/archivos/ipenestocolmo.pdf](http://www.aamma.org/archivos/ipenestocolmo.pdf)

English: [www.ipen.org/ipenweb/library/4\\_5\\_ipen\\_doc\\_3.html](http://www.ipen.org/ipenweb/library/4_5_ipen_doc_3.html)

**Bangkok Statement “A pledge to promote the protection of Children’s Environmental Health”. Bangkok Thailand, 3-7 March 2002, at the 1<sup>st</sup> International WHO Conference on Children’s Environmental Health (text reproduced at the end of this Appendix)**

English: [whqlibdoc.who.int/hq/2002/WHO\\_SDE\\_PHE\\_02.02.pdf](http://whqlibdoc.who.int/hq/2002/WHO_SDE_PHE_02.02.pdf)

[www.who.int/docstore/peh/ceh/Bangkok/bangstatement.htm](http://www.who.int/docstore/peh/ceh/Bangkok/bangstatement.htm)

**Action Day Declaration for the Elimination of Persistent Organic Pollutants, May 23, 2002**

Spanish: [www.aamma.org/index.php?option=com\\_content&task=view&id=44&Itemid=25](http://www.aamma.org/index.php?option=com_content&task=view&id=44&Itemid=25)

**Child Labour Declaration: Impact on Child Health. Analysis of the situation in the Republic of Argentina, Buenos Aires, Argentina, March 19, 2003**

Spanish: [www.aamma.org/index.php?option=com\\_content&task=view&id=47&Itemid=25](http://www.aamma.org/index.php?option=com_content&task=view&id=47&Itemid=25)

**Children’s Environmental Health Declaration from the Presidents of the Societies of Pediatrics of the Southern Cone, Mar del Plata, Province of Buenos Aires, Argentina, October 2, 2003 (enclosed version at the end of this Appendix)**

Spanish: [www.aamma.org/index.php?option=com\\_content&task=view&id=45&Itemid=25](http://www.aamma.org/index.php?option=com_content&task=view&id=45&Itemid=25)

English: [201.216.215.170/isde.org/images/pdf/cehdeclarationofthepresidentspediatricconesouthandperu.pdf](http://201.216.215.170/isde.org/images/pdf/cehdeclarationofthepresidentspediatricconesouthandperu.pdf)

**Buenos Aires Declaration on Healthy Environments, Healthy Children – Commitment for Action. Buenos Aires, November 16, 2005**

(text reproduced at the end of this Appendix)

Spanish: [www.who.int/ceh/news/pastevents/buenosairesdeclaresp.pdf](http://www.who.int/ceh/news/pastevents/buenosairesdeclaresp.pdf)

English: [www.who.int/ceh/news/pastevents/buenosairesdeclareng.pdf](http://www.who.int/ceh/news/pastevents/buenosairesdeclareng.pdf)

**Mar del Plata Declaration, Ministers of Health Meeting of the Americas (HEMA), Mar del Plata, Argentina, June 2005**

(text reproduced at the end of this Appendix)

Spanish: [www.aamma.org/images/reuni%D3n%20de%20ministros%20de%20salud%20mdq%20jun05.pdf](http://www.aamma.org/images/reuni%D3n%20de%20ministros%20de%20salud%20mdq%20jun05.pdf)

English: [www.oas.org/hema/english/index\\_2.htm](http://www.oas.org/hema/english/index_2.htm)

## **Charters**

### **Ottawa Charter for Health Promotion, First International Conference on Health Promotion, Ottawa, November 1986**

English: [www.who.int/hpr/NPH/docs/ottawa\\_charter\\_hp.pdf](http://www.who.int/hpr/NPH/docs/ottawa_charter_hp.pdf)

## **Conventions**

### **Stockholm Convention on Persistent Organic Pollutants, 2001**

Spanish: [www.pops.int/documents/convtext/convtext\\_sp.pdf](http://www.pops.int/documents/convtext/convtext_sp.pdf)

English: [www.pops.int/documents/convtext/convtext\\_en.pdf](http://www.pops.int/documents/convtext/convtext_en.pdf)

### **Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal Adopted by the Conference of the Plenipotentiaries on 22 March 1989**

English: [www.basel.int/text/con-e.pdf](http://www.basel.int/text/con-e.pdf)

### **The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade**

English, Spanish, French: [www.pic.int/home.php](http://www.pic.int/home.php)

### **Vienna Convention, 1985– Montreal Protocol, 1987**

Spanish: [www.unep.ch/ozone/Handbook2000-full-sp.shtml](http://www.unep.ch/ozone/Handbook2000-full-sp.shtml)

English: [wbln0018.worldbank.org/LAC/MontrealProtocol/Doclib.nsf/b752dfe8ff703d9c852567f4001d290a/d12f4a6c0a1604538525692d0068a3eb?OpenDocument](http://wbln0018.worldbank.org/LAC/MontrealProtocol/Doclib.nsf/b752dfe8ff703d9c852567f4001d290a/d12f4a6c0a1604538525692d0068a3eb?OpenDocument)

### **Montreal Protocol on Substances that Deplete the Ozone Layer, UNEP**

Spanish: [www.ambiente.gov.ar/?IdArticulo=850](http://www.ambiente.gov.ar/?IdArticulo=850)

English: [ozone.unep.org/pdfs/Montreal-Protocol2000.pdf](http://ozone.unep.org/pdfs/Montreal-Protocol2000.pdf)

### **International Convention on the Rights of the Child, 1989**

Spanish: [www.me.gov.ar/derechos/convencion/convencionarticulos/parte1.htm](http://www.me.gov.ar/derechos/convencion/convencionarticulos/parte1.htm)

English, French, Spanish: [www.unicef.org/crc/](http://www.unicef.org/crc/)

## Codes

### **International Code of Conduct on the Distribution and Use of Pesticides, 2002**

English, Spanish, French, other languages: [www.fao.org/ag/AGP/AGPP/Pesticid/Code/PM\\_Code.htm](http://www.fao.org/ag/AGP/AGPP/Pesticid/Code/PM_Code.htm)

## Resolutions

### **Priorities for Action, Beyond 2000, IFCS**

English, Spanish, French, other languages: [www.who.int/entity/ifcs/documents/forums/forum3/en/index.html](http://www.who.int/entity/ifcs/documents/forums/forum3/en/index.html)

### **Strategic Approach to International Chemicals Management (SAICM); Bangkok (2002) Resolution**

**The Bangkok Statement: A pledge to promote the protection of Children's Environmental Health. Bangkok Thailand, 2002 (Bangkok Statement, Appendix A of document below, reproduced in this Appendix)**

Spanish: [www.aamma.org/archivos/ipenresolucion.pdf](http://www.aamma.org/archivos/ipenresolucion.pdf)

English: [whqlibdoc.who.int/hq/2002/WHO\\_SDE\\_PHE\\_02.06.pdf](http://whqlibdoc.who.int/hq/2002/WHO_SDE_PHE_02.06.pdf)

### **City of Buenos Aires Resolution N° 2.479-MSGC/06. To Implement the Children's Environmental Health Program for Health Effects as Part of the Ministry of Health (December 15, 2006)**

Spanish: [www.buenosaires.gov.ar/areas/leg\\_tecnica/boletines/20070125.htm#28](http://www.buenosaires.gov.ar/areas/leg_tecnica/boletines/20070125.htm#28)

## Objectives

### **Millennium Development Goals, 2000**

[www.un.org/millenniumgoals/#](http://www.un.org/millenniumgoals/#)

## Enclosed documents

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### **1997 Declaration of the Environment Leaders of the Eight on Children's Environmental Health**

We acknowledge that, throughout the world, children face significant threats to health from an array of environmental hazards. The protection of human health remains a fundamental objective of environmental policies to achieve sustainable development. We increasingly understand that the health and well-being of our families depends upon a clean and healthy environment. Nowhere is this more true than in the case of children, who are particularly vulnerable to pollution. Evidence is growing that pollution at levels or concentrations below existing alert thresholds can cause or contribute to human health problems and our countries' present levels of protection may not, in some cases, provide children with adequate protection.

Among the most important environmental health threats to children worldwide are microbiological and chemical contaminants in drinking water, air pollution that exacerbates illness and death from respiratory problems, polluted waters, toxic substances, pesticides, and ultra-violet radiation. Most of these threats are aggravated for children living in poverty. While not a comprehensive list, we have chosen items for action, enumerated below, because they can benefit most from collective effort by the Eight.

We affirm that prevention of exposure is the single most effective means of protecting children against environmental threats. We seek to improve levels of protection for children, and we reaffirm the priority of children's environmental health in our own countries, as well as in bilateral and multilateral agendas. We agree to cooperate on environmental research, risk assessment, and standard-setting within the jurisdictions of each ministry. We agree to raise public awareness that would enable families to better protect their children's health. We urge our Leaders to make the protection of children's environmental health a high environmental priority and call for international financial institutions, the World Health Organization, the United Nations Environment Programme and other international bodies to continue ongoing activities and give further attention to children's environmental health, in particular the environmental, economic and social dimensions of children's health.

**Environmental Risk Assessments & Standard Setting:** Historically, due to a lack of comprehensive science, environmental protection programs, standards and testing protocols often have not adequately taken into account nor fully protected infants and children from environmental threats. While our countries have incorporated the precautionary principle or precautionary approaches and safety factors into environmental standard setting, it is important to employ more explicit scientific consideration of children's characteristics and behaviour in this process.

We pledge to establish national policies that take into account the specific exposure pathways and dose-response characteristics of children when conducting environmental risk assessments and setting protective standards. We agree there is a need to upgrade testing guidelines to improve our ability to detect risks to children and to assess and evaluate the effects of both single and multiple exposures for children. We urge cooperation through the OECD on adopting revised, harmonized testing guidelines. We will promote research to understand the particular exposures and sensitivities of infants and children to environmental hazards and exchange research results and information on regulatory decisions. Where there is insufficient information, we agree to pursue the precautionary principles or precautionary approaches to protecting children's health. We call for the consideration of children's environmental health, based on sound science, in the negotiation and implantation of future, bilateral,

regional and global agreements, such as the negotiations on persistent organic pollutants, long range transboundary air pollution, and trade in particularly dangerous pesticides, chemicals and hazardous wastes.

**Children's Exposure to Lead:** Lead poisoning is a major environmental hazard to children and our countries have taken many successful actions to reduce children's exposure to lead. Our countries continue to support the reduction in risks from exposure to lead.

We call for further actions that will result in reducing blood lead levels in children to below 10 micrograms per decilitre. Where this blood lead level is exceeded, further action is required. We acknowledge the importance to child health of maternal exposure to lead and agree to reduce maternal exposure.

We commit to fulfill and promote internationally the OECD Declaration on Lead Risk Reduction. We commit to a phase-out of the use of lead in gasoline, the elimination of exposure to lead in products intended for use by children, the phase-out of the use of lead in paint and rust-proofing agents, the restriction of lead in products that may result in ingestion in food and drinking water and to set schedules and develop strategies for elimination or reduction of lead from these sources. In addition, we agree to conduct public awareness campaigns on the risks to children from lead exposure and to develop scientific protocols and programs to monitor blood lead levels in children to track our progress in this important effort.

**Microbiologically Safe Drinking Water:** Worldwide, the greatest threat to childhood survival is lack of access to clean water, with more than four million children dying annually from diarrheal disease associated with contaminated water. In recent years, a number of countries have experienced serious waterborne disease outbreaks associated with microbial contaminants, such as cryptosporidium and bacterial and viral pathogens. All countries and relevant international organizations should better incorporate the existing knowledge bases into protecting children from microbiological contaminants in drinking water.

We agree to focus increased attention on drinking water disinfection, source water protection and sanitation, as major instruments of good drinking water quality in our national and regional progress, as well as through existing bilateral foreign assistance programs, international organizations and financial institutions. We will facilitate technology transfer to and capacity building in developing countries where micro biologically safe drinking water is a primary child survival concern.

We strongly support the initiative on sustainable use of freshwater for social and economic purposes, including, inter alia, safe drinking water and sanitation, proposed in the context of the preparations for UNGASS and consider that this initiative should make a major contribution to children's health.

We agree to share information and policies among our countries to improve our drinking water standards and will designate officials from our ministries to exchange monitoring data on microbiological drinking water contaminants and waterborne disease outbreaks on a regular basis. We agree to collaborate on research to support the development of technologies and methods to control disease outbreaks and will give special emphasis to appropriate technologies for small drinking water treatment systems.

**Air Quality:** Air quality is of particular importance to infants and children, both indoors and outdoors. Childhood asthma and other pediatric respiratory ailments are increasing dramatically in our countries and are substantially exacerbated by environmental pollutants in the air, including emissions from fossil fuel combustion and other sources. While research on children's exposure to some specific air pollutants has been conducted by some of our countries, further research is needed.

We undertake to reduce air pollution in our respective countries, which will alleviate both domestic and transboundary impacts of air quality and, particularly, children's health. Recognizing that indoor air pollution has been identified as a critical problem affecting children's health worldwide, we agree to exchange information, on indoor air health threats and remedial measures.

**Environmental Tobacco Smoke:** Children exposed to environmental tobacco smoke are more likely to suffer from reduced lung function, lower respiratory tract infections and respiratory irritations. Asthmatic children are especially at risk. Many of these symptoms lead to increased hospitalizations of children.

We affirm that environmental tobacco smoke is a significant public health risk to young children and that parents need to know about the risks of smoking in the home around their young children. We agree to cooperate on education and public awareness efforts aimed at reducing children's exposure to environmental tobacco smoke.

**Emerging Threats to Children's Health from Endocrine Disrupting Chemicals:** There is growing scientific evidence that a variety of environmental contaminants can exert adverse health effects by their ability to alter the functions of hormones within the body. These effects, which include cancer, reproductive disorders, changes in behaviour and immune dysfunction, have been observed in laboratory animals exposed to specific chemicals, wildlife populations in several broadly contaminated ecosystems such as the Great Lakes, and to a more limited extent in humans exposed to some organochlorine compounds. Some of these chemicals also are capable of causing long-term neurological damage. Infants and children may be at particular risk to the potential effects of these contaminants. Children may be exposed to endocrine disrupting chemicals in utero, through breast milk and in the environment.

We encourage continuing efforts to compile an international inventory of research activities, develop an international assessment of the state of the science, identify and prioritize research needs and data gaps, and develop a mechanism for coordinating and cooperating on filling the research needs. These activities should complement initiatives that are being pursued in international fora such as the Inter-governmental Forum on Chemical Safety (IFCS) and through the work of agencies such as the United Nations Environment Programme. We pledge to develop cooperatively risk management or pollution prevention strategies, as major sources and environmental fates of endocrine disrupting chemicals are identified and will continue to inform the public as knowledge is gained.

**Impacts of Global Climate Change to Children's Health:** Decisive international action must be taken to confront the problem of global warming including at Kyoto. Our children and future generations face serious threats to their health and welfare from changes in the Earth's climate due to the build-up of greenhouse gases in our atmosphere. Overwhelming scientific evidence links human actions to anticipated changes in the global climate system that are likely to result in unacceptable impacts to all nations. In the words of the Intergovernmental Panel on Climate Change: "Climate change is likely to have wide-ranging and mostly adverse impacts on human health, with significant

loss of life.” Children will be among the most susceptible to more severe heat waves, more intense air pollution, and the spread of infectious diseases and we are only beginning to understand the interactions between these issues and other global trends, such as ozone depletion. Future generations will face many potential impacts of climate change with serious health, environmental and economic consequences.

We must address environmental health threats with a specific focus on children which, for many countries, will require increased coordination between environment, health and other ministries. Countries must increase institutional and other scientific capacities to work on the specific problems of environmental threats to children. We will make the steps agreed upon in this declaration a priority in domestic action plans, report on our progress in carrying out those steps in appropriate international fora and broaden our cooperative efforts on children’s environmental health with other countries.

We recognize that environmental threats to children’s health must be set in a larger context of poverty, alleviation and economic and social development and we urge Leaders to commit to specific results-orientated actions that will accelerate a global transition to sustainable development at The UNGASS and other international fora.

## **Annex A**

### **Implementation Actions on Protecting Children’s Health and Environment Which the Environment Leaders of the Eight Have Agreed to Promote Within Their Governments and Countries**

#### **Risk Assessment and Standard Setting**

- Urge the OECD to expedite completion of the process of updating and harmonizing developmental and reproductive toxicity testing guidelines.
- Designate officials to work towards enhanced international harmonization of risk assessment approaches that explicitly address environmental risks to children.

#### **Lead**

- Each country agrees to develop and share individual country actions to accomplish the goals of the OECD Declaration on lead.
- The Eight will establish principal points of contact and a mechanism for sharing timely information regarding lead hazards in toys and other products to which children might be exposed, including imported products, and will consider other joint actions as appropriate.
- Provide access, on a timely basis, to new technological developments on blood lead level testing.

#### **Microbiologically Safe Drinking Water**

- Recommend that foreign assistance programs of the Eight, international organizations, and international financial institutions focus increased attention on drinking water disinfection and source water protection for nations worldwide.

- Designate contact points to exchange monitoring data on microbiological drinking water contaminants and waterborne disease outbreaks.
- Designate contact points to collaborate on research to support the development of technologies and methods, focused on small drinking water systems, to control disease outbreaks.

#### **Endocrine Disrupting Chemicals**

- Request that the International Organization on the Management of Chemicals and U.S. EPA complete an international inventory of ongoing research activities.
- Work with UNEP and other appropriate international organizations to complete an international scientific assessment.
- Develop an international research strategy after completion of the inventory and scientific assessment.
- Support an OECD initiative to develop a battery of screening and testing guidelines for endocrine disrupting chemicals that considers the special susceptibilities and exposures to children.

#### **Air Quality**

- Carry out regional commitments to address transboundary impacts of air pollution.
- Cooperate through existing scientific organization to enhance the exchange of information on health threats and effective remedial approaches for addressing indoor air quality problems.

**CHILDREN'S ENVIRONMENTAL HEALTH DECLARATION FROM THE  
PRESIDENTS OF THE SOCIETIES OF PEDIATRICS OF THE SOUTHERN CONE,  
MAR DEL PLATA, PROVINCE OF BUENOS AIRES, ARGENTINA**

**Mar del Plata, Argentina, 2003**

Analysis of the environmental hazards confronting children in Argentina, Bolivia, Brazil, Chile, Paraguay, Peru and Uruguay has demonstrated that there exist widespread problems in the environment that threaten the current and the future health of our children and our communities. The national pediatric societies of Argentina, Bolivia, Brazil, Chile, Paraguay, Peru and Uruguay hereby express their willingness to work jointly in the following areas:

- Education and capacity building among their members;
- Investigation of the most important problems;
- Advocacy to their governments and to other national and international organizations;
- Ongoing surveillance of the quality of children's environmental health in each of their countries;
- Promotion in the community of actions that will enhance knowledge and protection of the environments in which our children are born, grow, play and learn.

Our children are the future of our nations and the protection of environmental health is our responsibility.

**THE BANGKOK STATEMENT: A PLEDGE TO PROMOTE THE PROTECTION OF  
CHILDREN'S ENVIRONMENTAL HEALTH. BANGKOK THAILAND, 2002**

We, the undersigned scientists, doctors and public health professionals, educators, environmental health engineers, community workers and representatives from a number of international organizations, from governmental and nongovernmental organizations in South-East Asian and Western Pacific countries, have come together with colleagues from different parts of the world from 3 to 7 March 2002 in Bangkok, Thailand, to commit ourselves to work jointly towards the promotion and protection of children's health against environmental threats.

Worldwide, it is estimated that more than one-quarter of the global burden of disease (GBD) can be attributed to environmental risk factors. Over 40% of the environmental disease burden falls on children under 5 years of age, yet these constitute only 10% of the world population. The environmental burden of paediatric disease in Asia and the Pacific countries is not well recognized and needs to be quantified and addressed.

**We recognize:**

That a growing number of diseases in children have been linked to environmental exposures.

These range from the traditional waterborne, foodborne and vector-borne diseases and acute respiratory infections to asthma, cancer, injuries, arsenicosis, fluorosis, certain birth defects and developmental disabilities.

That environmental exposures are increasing in many countries in the region; that new emerging risks are being identified; and that more and more children are being exposed to unsafe environments where they are conceived and born, where they live, learn, play, work and grow. Unique and permanent adverse health effects can occur when the embryo, fetus, newborn, child and adolescent (collectively referred to as “children” from here onwards) are exposed to environmental threats during early periods of special vulnerability.

That in developing countries the main environmental health problems affecting children are exacerbated by poverty, illiteracy and malnutrition, and include: indoor and outdoor air pollution, lack of access to safe water and sanitation, exposure to hazardous chemicals, accidents and injuries. Furthermore, as countries industrialize, children become exposed to toxicants commonly associated with the developed world, creating an additional environmental burden of disease. This deserves special attention from the industrialized and developing countries alike.

That environmental hazards arise both from anthropogenic and natural sources (e.g. plant toxins, fluoride, arsenic, radiations), which separately and in combination can cause serious harm to children.

That restoring and protecting the integrity of the life-sustaining systems of the earth are integral to ensuring children’s environmental health now and in the future. Therefore, addressing global changes such as human population growth, land and energy use patterns, habitat destruction, biodiversity loss and climate change must be part of efforts to promote children’s environmental health.

That despite the rising concern of the scientific community and the education and social sectors about environmental threats to children’s health and development, progress has been slow and serious challenges still remain.

That the health, environment and education sectors must take concerted action at all levels (local, national, global), together with other sectors, in serious efforts to enable our countries to assess the nature and magnitude of the problem, identify the main environmental risks to children’s health and establish culturally appropriate monitoring, mitigation and prevention strategies.

**We affirm:**

That the principle “children are not little adults” requires full recognition and a preventive approach. Children are uniquely vulnerable to the effects of many chemical, biological and physical agents. All children should be protected from injury, poisoning and hazards in the different environments where they are born, live, learn, play, develop and grow to become the adults of tomorrow and citizens in their own right.

That all children should have the right to safe, clean and supportive environments that ensure their survival, growth, development, healthy life and well-being. The recognition of this right is especially important as the world moves towards the adoption of sustainable development practices.

That it is the responsibility of community workers, local and national authorities and policy-makers, national and international organizations, and all professionals dealing with health, environment and education issues to ensure that actions are initiated, developed and sustained in all countries to promote the recognition, assessment and mitigation of physical, chemical and biological hazards, and also of social hazards that threaten children’s health and quality of life.

**We commit ourselves:**

To developing active and innovative national and international networks with colleagues, in partnership with governmental, nongovernmental and international organizations for the promotion and protection of children's environmental health, and urge WHO to support our efforts in all areas, especially in the following four:

**1. PROTECTION AND PREVENTION**

To strengthen existing programmes and initiate new mechanisms to provide all children with access to clean water and air, adequate sanitation, safe food and appropriate shelter:

- Reduce or eliminate environmental causes and triggers of respiratory diseases and asthma, including exposure to indoor air pollution from the use of biomass fuels and environmental tobacco smoke.
- Reduce or eliminate exposure to toxic metals such as lead, mercury and arsenic, to fluoride, and to anthropogenic hazards such as toxic wastes, pesticides and persistent organic pollutants.
- Reduce or eliminate exposure to known and suspected anthropogenic carcinogens, neurotoxins, developmental and reproductive toxicants, immunotoxicants and naturally occurring toxins.
- Reduce the incidence of diarrhoeal disease through increased access to safe water and sanitation and promotion of initiatives to improve food safety.
- Reduce the incidence of accidents, injuries and poisonings, as well as exposure to noise, radiation, microbiological and other factors by improving all environments where children spend time, in particular at home and at school.
- Commit to international efforts to avert or slow global environmental changes, and also take action to lessen the vulnerability of populations to the impact of such changes.

**2. HEALTH CARE AND RESEARCH**

To promote the recognition, assessment and study of environmental factors that have an impact on the health and development of children:

- Establish centres to address issues related to children's environmental health.
- Develop and implement cooperative multidisciplinary research studies in association with centres of excellence, and promote the collection of harmonized data and their dissemination.
- Incorporate children's environmental health into the training for health care providers and other professionals, and promote the use of the environmental history.
- Seek financial and institutional support for research, data collection, education, intervention and prevention programmes.
- Develop risk assessment methods that take account of children as a special risk group.

### 3. EMPOWERMENT AND EDUCATION

To promote the education of children and parents about the importance of their physical environment and their participation in decisions that affect their lives, and to inform parents, teachers and caregivers and the community in general on the need and means to provide a safe, healthy and supportive environment to all children:

- Provide environmental health education through healthy schools and adult education initiatives.
- Incorporate lessons on health and the environment into all school curricula.
- Empower children to identify potential risks and solutions.
- Impart environmental health expertise to educators, curriculum designers and school administrators.
- Create and disseminate to families and communities culturally relevant information about the special vulnerability of children to environmental threats and practical steps to protect children.
- Teach families and the community to identify environmental threats to their children, to adopt practices that will reduce risks of exposure and to work with local authorities and the private sector in developing prevention and intervention programmes.

### 4. ADVOCACY

To advocate and take action on the protection and promotion of children's environmental health at all levels, including political, administrative and community levels:

- Use lessons learned to prevent environmental illness in children, for example by promoting legislation for the removal of lead from all gasoline, paints, water pipes and ceramics, and for the provision of smoke-free environments in all public buildings.
- Sensitize decision-makers to the results of research studies and observations of community workers and primary health care providers that need to be accorded high priority to safeguard children's health.
- Promote environmental health policies that protect children.
- Raise the awareness of decision-makers and potential donors about known environmental threats to children's health and work with them and other stakeholders to allocate necessary resources to implement interventions.
- Work with the media to disseminate information on core children's environmental health issues and locally relevant environmental health problems and potential solutions.

For all those concerned about the environmental health of children, the time to translate knowledge into action is now.

**BUENOS AIRES DECLARATION ON HEALTHY ENVIRONMENTS, HEALTHY CHILDREN – COMMITMENT FOR ACTION. BUENOS AIRES, NOVEMBER 16, 2005**

We, the researchers, health care professionals and environment specialists, university educators, representatives of governmental and nongovernmental organizations have gathered at the 2<sup>nd</sup> International Conference on Children's Environmental Health in Buenos Aires, Argentina, from the 14<sup>th</sup> to the 16<sup>th</sup> of November 2005 to consider the environmental influence on children's health and propose actions.

We, the participants, hereby affirm our will to define and promote actions so that the children and adolescents of the world grow, play, learn and develop in healthy, clean and safe environments that protect their health and future, and assure the full development of their capacities.

We are aware of the progress achieved since the First International Conference on Children's Environmental Health that took place in Bangkok, Thailand, in March of 2002 when participants pledged "to commit to collaborate for the promotion of children's health through protection from environmental threats".

This commitment has been reaffirmed at several events, including the World Summit on Sustainable Development in Johannesburg (2002), the Special Session on Children of the United Nations General Assembly (2002), the 56<sup>th</sup> World Health Assembly (2003), the IV Meeting of the International Forum on Chemical Safety (2003) and at the IV European Ministerial Conference on Environment and Health (2004).

Thus also, the Ministers of Health and Environment of the Americas, gathered in Mar del Plata, Argentina, on the 18<sup>th</sup> of June, stated: "we commit ourselves to improve the understanding of the links between the quality of the environment and children's health, since children are particularly vulnerable in all the stages of development. Similarly, we commit ourselves to continue and to strengthen the actions oriented to the prevention of the adverse effects of the environment on children".

Furthermore, the participants in the XV Forum of Ministers of Environment of Latin America and the Caribbean, who met in Caracas, Venezuela, in October 2005, stressed the importance of "the promotion of the bonds between the environment and health policies, strengthening the exchange of information between the two sectors, and promoting the development of actions and projects both locally and regionally".

In summary, the numerous international treaties ratified, agreements and commitments made, such as the Rio Declaration on Environment and Development, the Agenda 21, the Bahía Declaration, the Johannesburg Declaration, the Healthy Environments for Children Alliance and the Plan of Application of Johannesburg, the Stockholm Treaty on POPs, the regional plans of action in children's environmental health, the recommendations of the First Conference on Children's Environmental Health of Bangkok, the recommendations of the International Forum on Chemical Safety, the Strategic Approach for the Management of Chemicals at International Level – and specially for the Americas – and the recent declaration of the Inter-Ministerial Conference of the Americas (MiSAmA) offer a solid base to immediately turn knowledge into action.

We must not forget that children's environmental health and life in healthy environments are universal rights of children and adolescents of the world (UN Declaration of Children's Rights). These rights are important, critical, necessary and essential for the fulfillment of the internationally-agreed development objectives, enunciated by the Millennium Declaration, especially those that aim at reducing children's mortality – Objective 4 – and promoting environmental sustainability – Objective 7.

However, in spite of the significant consensus in the entire planet on the importance of protecting children from environmental risks, progress is slow and important problems remain to be solved. This inspires our commitment and willingness to strengthen actions to promote healthy environments, healthy children, increasing the knowledge and taking action.<sup>1</sup>

**FOR THAT REASON, WE RECOGNIZE THAT:**

- Children are particularly vulnerable to the impact of environmental factors given their physiological characteristics, process of fast growth, immaturity, “critical windows” of exposure and limitations to recognize and avoid environmental threats. This vulnerability is especially critical during the gestation period, and may result in consequences such as childhood illness, and disease later in life. These risks are enhanced by illiteracy, unsafe work, poverty, malnutrition and abandonment.
- An increasing number of pediatric diseases and developmental problems are linked to pollutants in water, air, soil and food, to traffic, to noise and radiations, to injuries, to zoonosis, to chemicals, and also to climate change, uncontrolled urbanization and adverse social conditions.
- These environmental risk factors are present in the places where children and young people live, grow, play and learn: in homes, schools and communities, rural and urban regions. They are further magnified under conditions of poverty and social and cultural conflict.
- The main health effects of environmental origin generate a high burden of disease, and this has an impact both on the social and public health costs, affecting the potential of the individual, human survival, social welfare, productivity of the countries and regions and the future of humanity.
- Recent research studies and the growing experience of countries have allowed the identification of interventions, tools and mechanisms to improve children’s environmental health, translating and integrating knowledge into actions that have to be adapted to the local needs and possibilities.
- Although norms and legislation for the protection of children’s environmental health do exist, these are not always known or implemented in an adequate manner.

**CONCERNED SPECIFICALLY ABOUT**

The high mortality of children and adolescents linked to contaminants in the air of cities and homes, drinking water, water for hygiene and recreation, soil and sediments, industrial effluents, all kinds of waste, unsafe food, low-quality consumption products: exposure to metals such as lead and mercury as well as to pesticides, sulphur compounds, arsenic and other chemicals that directly or indirectly affect health in a negative way, and the potential effects of persistent organic pollutants (POPs), the so-called “endocrine disrupters”, and other emergent risks that remain to be characterized, like those related to radiation and electromagnetic fields.

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1. Understanding “children” to mean all the children and adolescents of both sexes from gestation to adulthood.

## **WE UNDERSTAND**

That the First International Conference on Children's Environmental Health and the international meetings mentioned before established without any doubt a multilateral commitment on the need to promote children's environmental health. Some regions of the world and several countries have already given clear signals of adopting these principles in setting up their internal policies. Therefore, this Second Conference compels us to take a step forward, establishing concrete commitments, and agreeing on the need to develop strategies involving other social life sectors, especially those that decide on the use of economic resources.

## **BECAUSE:**

- In order to protect the health, development and well-being of our children it is essential to identify and reduce the environmental risk factors, to prevent and to diminish exposures, to alert the public on the main issues, to consider the application of a precautionary approach, and to involve the community and all the relevant actors in addressing and achieving the suitable solutions.
- Interventions such as the fulfillment of the norms and the accomplishment of suitable environmental and biological monitoring; the dissemination of information to the community, its families and children, and the capacity building of health and environment professionals have already shown to be effective.
- Health, environment and education professionals of governmental and nongovernmental sectors, as well as local, national and international decision-makers have specific roles and responsibilities to face the subject of children's environmental health from different angles, in a harmonized, constructive and collaborative way.
- It is necessary to identify human and economic resources to support the activities of research, qualification and prevention in order to promote children's environmental health.
- Environmental Health is a social public good and we all have the responsibility to identify the area from where we can best contribute to it.

## **THEREFORE, WE DECLARE OUR COMMITMENT FOR ACTION:**

- To contribute to reduce poverty and to improve social and environmental equity.
- To generate better environmental conditions to offer a healthy environment to children from their conception.
- To discourage child labour and to offer creative options.
- To contribute to raising awareness in local and national governments of the need to commit to Children's Environmental Health promoting the creation of specific programs, on the basis of intersectoral commitment.
- To increase collaboration between governmental, intergovernmental agencies and civil society organizations to evaluate and inform on the state of Children's Environmental Health, to carry out research, and to promote the use of the knowledge obtained for opportune decision making.
- To promote capacity building of Children's Environmental Health at all levels of the health care sector as well as training human resources incorporating environmental information in clinical records (including IMCI and others) and the use of the environmental history.

- To promote the creation and consolidation of multidisciplinary networks of Pediatric Environmental Health Centres.
- To promote the development of environmental epidemiology, the use of existing data, the environmental biomonitoring and the implementation of cohort studies on the effects of environmental factors on children's health.
- To promote healthy behaviours in schools and homes as well as measures to reduce the environmental risks linked with poor air, water, soil and food quality, and the poor quality of objects in children's settings.
- To promote Children's Environmental Health, with particular emphasis on the participation of adolescents as both subjects and actors, through the incorporation of Children's Environmental Health in curricula, into the programmes of social communicators, and in stimulating social participation.
- To promote local fora on Children's Environmental Health, as well as the incorporation of the Children's Environmental Health issues into other fora.
- To promote the application of a preventive approach to Children's Environmental Health through the use of the precautionary principle.
- To promote, from our respective areas of work, organizations, local and national governments, regional organisations and the World Health Organization, the development of strategies for the implementation of Children's Environmental Health initiatives and tools for evaluating this commitment and the activities achieved.

Let us translate the knowledge into action!

Today's children are the adults of tomorrow: the future of humanity requires a cleaner, safer and healthier world.

Buenos Aires, November 16<sup>th</sup>, 2005

**MAR DEL PLATA DECLARATION, MINISTERS OF HEALTH MEETING OF THE AMERICAS (HEMA), MAR DEL PLATA, ARGENTINA, JUNE 17, 2005**

We, the Ministers of Health and Environment of the Member States of the Organization of American States, gathered in the meeting of Mar del Plata, Argentina, in compliance with the agreement reached during the Summit of the Americas held in Quebec 2001, with the aim to strengthen our hemispheric alliance, to review progress made since our last meeting, and set directions for future actions aimed at achieving the improvement of the health and the environment conditions in the Region.

Complying with the mandate of the Special Summit of the Americas held in Monterrey in January 2004, as regards the instructions given to the Ministers of Health and Environment of the Americas (HEMA) to develop a cooperative agenda to prevent and minimize negative impacts on the environment and health.

Re-affirming the commitments, priorities and goals agreed to at the 1995 Pan American Conference on Health and Environment in Human Sustainable Development held in Washington, the Meeting of the Health and Environment Ministers of the Americas held in Ottawa in March 2002 and the World Summit on Sustainable Development, Johannesburg, 2002; Acknowledging that health conditions of the population depend on their interrelations with the physical and social environment in which they live, and also depend on the relationship between poverty, environmental quality and human health; Aware that eradication of poverty and overcoming inequality are the major challenges of the governments of the Region, and that they are crucial for the achievement of sustainable development.

Considering that the Millennium Declaration constitutes a priority in the agenda of our Region's countries, we are committed to contribute both at a national and regional level by means of a better integration of the actions addressed to achieve the goals.

Taking into account the theme selected for the Fourth Summit of the Americas: "Creating Employment to Fight Poverty and Strengthen Democratic Governance", to which the health and environmental issues are closely related.

Observing the progress made in the implementation of these commitments and acknowledging that there is still a lot to be done.

## **We declare**

### **Cooperation Agenda**

To advance a cooperative agenda focused on:

- Actions at a national level
- Regional cooperation on priority issues,
- Provision of tools and resources for decision makers,
- Expansion of the participation of civil society organizations and major groups as defined in Agenda XXI.

### **Actions at National Level**

We reiterate that the most important context for action is at a national level and, in this sense, we reaffirm our commitment to lead the efforts to strengthen and consolidate alliances between the Health and Environment Ministries and the sectors related to health and environment in our countries.

Further, we recognize the essential importance of the synergy developed by the coordination of efforts and actions with other government sectors with common or related areas of interests.

We commit ourselves to encourage public policies on sustainable development that endeavor to alleviate poverty and inequality, to protect the environment and public health in the framework of human rights.

### **Regional Cooperation on Priority Issues**

We recognize that our countries are facing difficult and complex challenges related to the health and environmental areas. Our efforts, both at the regional and subregional levels, will be aimed at supporting the progress and achievement of the results on the following three priority issues:

#### **Integrated Management of Water Resources and Solid Waste**

Access to safe drinking water, hygiene and basic sanitation, and solid waste management services are critical factors for the protection of human health and are particularly important for the reduction of children's morbidity and mortality. We are committed to improving such access, as well as to promote Integrated Solid Waste Management Systems.

#### **Sound Management of Chemicals**

We are committed to developing and implementing strategies to manage risks, reduce threats to ecosystems and to human health in our region from pesticides and other chemical substances, particularly with respect to vulnerable populations, including indigenous groups, industrial and agricultural workers, women and children. This will be done in compliance with the obligations contracted by countries under the Stockholm, Rotterdam and Basel Conventions.

#### **Children's Environmental Health**

We commit to improve the understanding of links between environmental quality and children's health, considering that children are particularly vulnerable throughout the different stages of their development. Similarly, we commit to continue and strengthen the actions aimed at the prevention of the adverse effects of the environment on children.

We also recognize the threats posed by the transmission of emerging and re-emerging diseases and commit ourselves to developing a better understanding of the conditions that give rise to them.

#### **Provision of Tools and Resources for Decision-makers**

We are committed to strengthening capacity and providing the and resources that will assist decision-makers at national, sub-national, local and community levels to better link and integrate environment and health factors.

#### **Expansion of the Participation of Civil Society Organizations and major groups as defined in Agenda XXI.**

We reiterate our strong conviction regarding the importance of the role that Civil Society and major groups as defined in Agenda XXI must play in shaping national and regional action to mitigate and prevent threats to human health and the environment. We commit to expand their participation in this process.

### **Implementation of the Cooperative Agenda**

We will concentrate our efforts on the implementation of the Cooperative Agenda by developing actions that cover environmental and health factors to solve priority problems, taking care of specificities proper of each nation, achieving closer technical cooperation and achieving exchanges of information among countries and within themselves.

In order to move forward on the Cooperative Agenda, the commitment of all the countries of the Region and the continued strong support of the associated partners is required, as well as additional financial resources. We look towards sub-regional, regional and global development banks and other financial institutions to provide the necessary support for the implementation of the Cooperative Agenda.

The HEMA Working Group will be in charge of the follow-up concerning the progress made in the cooperative agenda. To do so, we request the support of international financial institutions, organizations of regional and subregional integration as well as the Pan American Health Organization (PAHO), the Regional Office for Latin America and the Caribbean of the United Nations Environment Programme (UNEP/ROLAC), and the Organization of American States (OAS) in the context of their mandate.

We emphasize the need to give a new direction to the role and the Working Group functions according to the cooperative agenda, considering the need to expand the participation of the countries of the region.

## **BUILDING STRATEGIC ALLIANCES**

We commit to encourage the creation of alliances with the Ministries of Labor and Education and other Ministries to increase synergies in order to make progress towards the internationally agreed goals of the Millennium Declaration.

### **Final Messages**

We acknowledge the importance of the actions that have been taken by the subregional organizations of countries to develop the commitments made at the Meeting of the Health and Environment Ministers of the Americas held in Ottawa in March 2002, and we recognize this level as an important factor in the future implementation of the cooperative agenda.

We thank the participants of the civil society and major groups as defined in Agenda XXI for the coordination of the preparatory consultation work on the themes discussed, and for the contributions made to this meeting.

We urge PAHO, UNEP/ROLAC, and OAS, in the context of their mandates, and other development organizations and financial institutions at a national, regional and global level, to continue with the actions aimed at the contribution of the implementation of the Millennium Declaration.

This meeting has given us the opportunity to renew and strengthen our commitment to improving the health and environment of our countrymen. We do believe that by formulating this Cooperative Agenda we will make progress in the development of the mandate derived from the process of the Summit of the Americas.

We commend Argentina to convey, on our behalf, the documents of this Meeting to all hemispheric leaders at the Fourth Summit of the Americas.

We thank the Government and the people of Argentina for their generosity and hospitality in hosting this meeting of Health and Environment Ministers of the Americas. We also thank all those who have, through their efforts, contributed to the success of this initiative.

## **ANNEX COOPERATIVE AGENDA**

At the regional and subregional level, and taking into account the capacities, the countries will focus their efforts on:

### **Integrated Management of Water Resources and Solid Waste**

- Develop and implement water safety plans for the reduction of risks to human health.
- Implement and strengthen the systems of surveillance regarding the quality of water for human use and consumption.
- Promote the use of health and environmental impact assessments in water and waste infrastructure decision-making, including water and waste effluents treatment systems.
- Develop and implement integrated solid waste management systems.
- Develop ecosystem assessment projects between water resources and health.
- Develop and update country sectorial analysis for the implementation of intersectorial collaborative water and sanitation strategies.
- Develop and implement technological collaborative strategies for the prevention or reduction of the risks derived from water pollution.
- Promote the safe storage and treatment of drinking water at the point of use to reduce adverse health effects.
- Develop responses and knowledge with an ecosystems approach to water management to prevent and control communicable diseases.
- Incorporate science and technology into the formulation of integrated policies for water resources and solid waste management.
- Promote hygiene education programs as part of a broader strategy for the prevention of health risks associated with water.
- Promote and develop sustainable funding mechanisms for the management of water resources and solid waste with the aid of organizations and institutions, such as the Inter-American Development Bank, the World Bank, the Caribbean Development Bank, etc.

### **Sound Management of Chemicals**

- Support the implementation of national action plans for the reduction and elimination of persistent organic pollutants listed under the Stockholm Convention.
- Increase action to reduce the use and the emissions of mercury from chloralkali facilities, products containing mercury and artisanal gold mining through multi-stakeholders partnerships.
- Strengthen sub-regional and national actions to achieve a complete elimination of lead in gasoline and its reduction from other sources, and to decrease sulfur in gasoline and diesel.
- Strengthen knowledge and research on the effects of chemicals on human health and the environment.
- Establish and/or strengthen public access to information and knowledge of the adverse health and environmental effects as a result of the exposure to chemical substances.
- Develop and strengthen national systems of chemicals risk assessment.
- Control and assess the effects on health and the environment provoked or produced by the exposure to pesticides and heavy metals, particularly among vulnerable populations, in order to take actions for their mitigation.
- Promote the implementation of the Harmonized Global System of Classification and Labeling of Chemicals.
- Promote the development and implementation of Pollutant Release and Transfer Registries.
- Strengthen the surveillance to prevent illegal trafficking of chemicals.
- Promote the development of prevention, preparation and rapid response systems in case of chemical emergencies.
- Strengthen programs of education and incentive for public participation, as part of a broad strategy for the prevention of health risks associated with chemicals.
- Promote and develop sustainable funding mechanisms for the management of chemicals with the aid of organizations and institutions, such as the Inter-American Development Bank, the World Bank, the Caribbean Development Bank, etc.

### **Children's Environmental Health**

- Strengthen the training with respect to children's environmental health at every level of health care.
- Strengthen programs of education and incentive for public participation, as part of a broad strategy for promoting children's environmental health.
- Incorporate the theme of children's environmental health into formal educational programs.
- Promote the organization of fora on children's environmental health , as well as incorporate this issue into other fora.
- Develop strategies for the implementation of initiatives on Children's Environmental Health.
- Promote cohort studies on the effects of pollution on children's health.
- Promote measures aimed at the reduction of environmental risks related to zoonotic diseases.
- Promote the establishment and networking of pediatric environmental health specialty units.
- Strengthen capacities to recognize and manage poisoning in children derived from pesticides and other chemicals.

## **PROTECTING CHILDREN FROM HARMFUL CHEMICAL EXPOSURES**

### **Forum IV recommendations and agreed action items on children and chemical safety, 2003**

Children represent the future of our societies. Protecting the health of children and ensuring that children live in safe environments will allow them to reach their full potential. As scientific understanding of the linkages between health and exposure to toxicants increases, we are becoming more aware that children and the developing fetus can be especially vulnerable to some chemicals in the environments where they grow, live, play, learn and work. Governments and stakeholders have a responsibility to take action to reduce the sources of chemical risks and prevent childhood exposure. Children and chemical safety was a special focus of discussion at the Fourth Session of the Intergovernmental Forum on Chemical Safety (Forum IV) held 1 to 7 November 2003 in Bangkok, Thailand, hosted by the Government of Thailand. Over 500 participants, representing over 125 governments, intergovernmental organizations, nongovernmental organizations and industry were in attendance. Forum IV recommended that the following actions be taken to protect children from harmful chemical exposures:

1. When assessing the protection of children, consideration should be given to chemical exposures that can occur during preconception, throughout gestation, infancy, childhood and adolescence.
2. Governments should prepare, through multi-stakeholder consultation, initial national assessments of children's environmental health and chemical safety. These assessments should identify the priority concerns and provide a basis for developing action plans to address those concerns. Governments should provide a progress report to Forum V. WHO is requested to develop, through multi-stakeholder consultation, guidance tools, and to assist at least three countries in different stages of economic development in each region to prepare the assessment and action plans by 2006.
3. Governments, with support from stakeholders, particularly WHO and UNICEF, should promote education and training on children's chemical safety, and where risks are identified, governments and stakeholders should commit to taking action to prevent or reduce exposure. Governments should also promote harmonized data collection, research, legislation and regulations, and consider the use of indicators of children's environmental health, and report back to Forum V in 2006. Governments should, when setting acceptable levels or criteria related to chemicals, take into consideration the potential enhanced exposures and/or vulnerabilities of children.
4. WHO is requested to support, collaborate with, and coordinate among research organizations and those supporting research (such as the European Commission, Science non-governmental organizations, the Global Health Research Forum, governments and others) to develop mechanisms to facilitate collaborative national and international research and share technology.

5. Governments and stakeholders should commit to sharing information on options for taking effective action to protect children from established chemical threats and from chemical risks where there is a degree of uncertainty. WHO is requested to convene a multi-stakeholder meeting to explore the mechanisms for collecting data and disseminating information that could be used to reduce uncertainty in risk assessments.
6. In addition, Forum IV requests the IFCS President to convey these recommendations to other meetings and fora.
7. In carrying out the recommendations set out in this priority, the stakeholders concerned should be guided by the full decision document and companion information paper that were developed by the Forum Standing Committee working group on children and chemical safety.

These documents are available at: [www.who.int/ifcs/documents/forums/forum4/children/en/index.html](http://www.who.int/ifcs/documents/forums/forum4/children/en/index.html)

## Glossary

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The technical definitions provided below have been adapted or taken from the web sites of the organizations and agencies listed at the end of this chapter, which we acknowledge with thanks.

### A

**Absorption:** the process of nutrient transfer through the cellular membrane or introduction or decrease of a substance through another.

**Accidental exposure:** non-intentional contact with a substance or change in the environment that takes place.

**Accumulation:** successive retention of a substance by an organism, organ or a part of the environment that leads to an increase in quantity or concentration of that substance. WHO 1989<sup>a</sup>.

**Acute toxicity:** capacity of a substance to produce adverse effects within a short time frame (usually up to 14 days) after the administration of a single dose (or a given exposure) or after multiple exposure doses within 24 hours.

**Aldrin:** pesticide belonging to the chlorinated hydrocarbons group.

**Alternative energy:** use of renewable energy resources such as solar energy or wind power that are less damaging and polluting than fossil fuels as an alternative to the use of traditional, nonrenewable resources.

**Asbestos:** fibrous hydrous silicates that are naturally present in rock formations.

### B

**Bioaccumulation:** accumulation of a substance such as a toxic chemical in a living organism more quickly than the substance can be broken down.

**Biocide:** substance such as pesticides, used to kill organisms.

**Biodegradation:** destruction of a substance by enzymatic action either in a living organism (*in vivo*) or in an artificial environment (*in vitro*).

**Biodiversity:** the variation of life forms within a given ecosystem, including terrestrial, marine and other aquatic ecosystems and the ecological complexes that they are part of.

**Biological community:** interacting organisms living together and interacting in a specific habitat.

**Biological pest control:** alternative technology to the employment of agrochemicals used for the control of pests in cultivated plants.

**Biological process:** chemical or other changes that cause transformation in living organisms.

**Biological vector:** an organism that acts as a carrier to transfer infection from one host to another.

**Biomagnification:** the increase in concentration of a persistent substance that occurs in a food chain.

**Biomarker:** 1. parameter that can be used to identify a toxic effect in an organism and allows for interspecies extrapolation 2. indicator that describes an event or a situation in a sample or in a biological system and provides a measure of exposure, effect or susceptibility.

**Biomarkers of exposure:** indicates the present or past exposure of an organism to an external agent (virus, chemical agent, toxicant, etc.). Measures whose qualities (sensitivity and specificity) are known and can be used in extensive populations.

**Biotic:** relating to, produced by, or caused by living organisms. A biotic association includes interdependent plants and animals living in a determined surface area.

## C

**Cancer:** name for abnormal growth of cells into malignant tumors. Carcinoma originates in epithelial cells; sarcoma originates in connective tissue.

**Carbon monoxide:** a colourless, odourless poisonous gas that comes from combustion processes and constitutes a serious pollution problem in cities, due to the excess number of vehicles.

**Carcinogenesis:** process of initiation of malignant neoplasms from physical, chemical or biological agents. WHO 1989<sup>a</sup>.

**Carcinogenic agent:** name given to cancer causing agents.

**Case-control study:** study that begins with the identification of individuals with a certain disease (or any other feature) of interest, and an appropriate healthy control group (for comparison or reference).

**Chemical safety:** practical guarantee that organisms are not exposed to toxic quantities of chemical substances; implies an acceptable low risk of exposure to potentially toxic substances.

**Chlorofluorocarbons (CFCs):** family of organic chemicals containing chlorine, fluorine and carbon. CFCs are of anthropogenic origin and they are commonly used in refrigeration, aerosols, sterilizers, cleaning solvents and in a variety of applications. CFCs have the potential to destroy ozone molecules in the stratosphere and are one of the main causes for the depletion of the ozone layer. The five main CFCs are subject to control as Group I substances in the Montreal Protocol (Appendix A). Ten or fewer common CFCs are subject to control as Group I substances in the same protocol (Appendix B).

**Chronic effect:** an adverse effect on a human or animal in which symptoms recur frequently or develop slowly over a long period of time.

**Chronic exposure:** many or continuing exposures over a long period of time or a significant fraction of the life of respective individuals.

**Chronic toxicity:** capacity of a substance to produce adverse effects as a result of prolonged exposure; these can appear during or after the exposure has been terminated.

**Climate change:** according to the Convention, it is the change in climate directly or indirectly attributed to human activity altering the composition of the world's atmosphere and refers to the variation in the Earth's global climate or in regional climates over time.

**Climate change, adverse effects:** changes in the physical environment or plant/animal life of an area as a result of climate change that can have significant adverse effects in the composition, recovery capacity or productivity of natural ecosystems; and that are subject to the operation of socio-economic systems, or the health and well-being of humans.

**Clinical history:** medical-legal document consisting of standard or non-standard forms used to record care received by the patient.

**Community:** specific group of people that often live in a defined geographical area, share the same culture, values and standards and are organized in a social structure according to the type of relationships that they have developed over time. Members of the community acquire their personal and social identity when sharing beliefs, values and common standards that have been developed by the community in the past and that can be modified in the future. Members are conscious of their identity as a group and share needs and the commitment to satisfy them.

**Confidence Interval:** an estimated range of values that likely include unknown variables, the range being calculated from a given set of sample data to include the value of the variable.

## Glossary

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**Contamination:** presence in the environment of one or more pollutants, or any combination of these that exceed the tolerable limits, cause damage to living organisms or impact the environment.

**Contamination prevention:** act of eliminating a pollutant or sources of risk before they occur.

**Corporal load:** total amount of a substance present in an organism at a particular moment in time.

**Critical development period:** point in time when a developing organism requires something to occur for development to proceed normally; can be structural or anatomical, physiological, metabolic or psychological; such a period can be associated to a high vulnerability toward certain pollutants.

### D

**Desertification:** process where soil becomes desert or arid by natural causes or because of mismanagement such as soil erosion or climate change.

**Dioxins:** a family of 75 closely related compounds known chemically as dibenzo-p-dioxins. The most common is TCDD. It is one of the more toxic man-made compounds.

**Disease:** a condition or symptoms in a human, animal or plant that is not normal and impair the performance of a part or vital function.

**Disease Control:** actions or interventions developed with the objective of reducing the incidence and/or prevalence of disease to the lowest level possible.

**Disease prevention:** embraces the measures not only destined to prevent the onset of disease, such as the reduction of risk factors, but also to stop the advance of disease and to attenuate its consequences once these are established.

**Diversity:** variety, dissimilarity, difference.

**Dose-effect relationship:** association between dose and magnitude of the effect.

**Dose-response relationship:** association between dose and incidence of a certain effect in an exposed population; usually expressed as the percentage of individuals that experience the effect.

**Drinking water (safe):** water that can be consumed without posing a health risk.

### E

**Ecology:** doubtful origin of the term, but in general the first definition is attributed to Haeckel: knowledge relating to the economy of nature, the investigation of all animal relationships from the inorganic as well as the organic environment (Haeckel, 1870).

**Ecosystem:** abiotic environment (physical - chemical) and biotic group of plants, animals and microorganisms that constitute an ecological system or ecosystem.

### Education levels:

*Source: National Bureau of Information and Evaluation of Educational Quality. Federal Network of Educational Information. Ministry of Education, Science and Technology - Provincial Bureau of Planning - Bureau of Information and Statistics. General Bureau of Culture and Education. Province of Buenos Aires.*

#### ***Levels from which the formal education system is structured.***

They go together with the individual needs at different stages of the psychophysical-evolutionary process, psychophysical-social and cultural development. The levels are: Initial, EGB, Polimodal, Superior and Quaternary. (See Provincial Education System, SEP)

#### ***Initial Education Level***

Integrated child care services for children 45 days to 3 years of age and Kindergarten for children 3 to 5 years of age. The last stage of Kindergarten is obligatory, being added to the immediate upper level and forming part of the 10 years of compulsory education.

***Basic General Education Level (Spanish acronym EGB1–EGB2–EGB3)***

Obligatory level, nine years in duration, starting at 6 years of age. Organized in three cycles (EGB1, EGB2 and EGB3) as a pedagogical unit. Its objective is the acquisition of basic competencies, appropriation of elementary and common knowledge essential for the entire population. This level also exists for Common Education, Special Adult and Artistic Education with requirements pertinent to each area of study. (See Provincial Education System, SEP)

***Secondary Education Level***

This level became obligatory in December 2006, starting at 14 years of age with a duration of at least three years after completion of Basic General Education. Its objective is to deepen the learning process and group knowledge, abilities and values in several areas of focus: scientific, technical, humanistic and social. This level also exists for Common Types of Education, Special Adult and Artistic Education with requirements appropriate to each category. A Technical Professional Track and/or Education Track are offered as integrated and complementary options at this level. Students receive a certificate of Secondary Education Level and one or more technical certifications. (See Provincial Education System, SEP)

***Higher Education Level***

Academic degree training is offered for teaching, technical, professional, artistic or scientific-technological knowledge and research through academic and non-academic institutions. Students who fulfilled the Secondary Education Level can register at this level. (See Provincial Education System, SEP)

***Postgraduate Education Level***

Graduate degree studies have as a requirement the previous degree stage or accredited knowledge and experience in the field of study. Its objective is to deepen and to upgrade the cultural, educational, scientific, artistic and technological education by means of research, critical thinking and exchange of advances in the different specialties. It includes specializations, masters and doctorates. (See Provincial Education System, SEP)

**Effectiveness:** comparison of the results of an activity with its proposed objectives.

**Effluent:** untreated liquid or gas waste, generated by diverse human activities that flow toward collecting systems or directly into receiving bodies. Commonly used when referring to liquid waste.

**Embryo:** developmental stage during which organs and systems are formed. 1. in humans, from the time of conception to the eighth week, inclusive. After this time, the baby is called a fetus. 2. in birds, from fertilization of the egg to hatching. 3. in plants, within the seed.

**Emergent disease:** new or previously unrecognized disease.

**Emission:** release of substances from a source into the atmosphere.

**Emissions:** according to the Convention, the release of greenhouse gases or their precursors into the atmosphere within a surface area and a specified timeframe.

**Endocrine:** relative to hormones or internal secretion glands.

**Endocrine Disruptors:** synthetic and natural chemicals that mimic, modify or interfere with the action of natural hormones in living organisms. The term was initially applied to chemicals with estrogenic effects, but was then broadened to include those that interfere with the hormones of the thyroid, insulin and androgenic activity and the complex hormonal processes that utilize multiple hormones such as those in action during puberty and development.

**Environment:** all external conditions that affect the life, development and survival of an organism.

**Environment: vital environment;** group of physical, biological, social and cultural factors that interact with each other in a systemic way.

## Glossary

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**Environmental management:** management of interaction between human activity and the environment to achieve maximum sustainability of the environment and natural resource systems over the long term.

**Environmental control:** legal and technical measures that are implemented to lower or avoid the degradation of the environment or environmental consequences produced by human activity or natural disasters, and to diminish risks to human health.

**Environmental damage:** loss or damage caused to the environment or any of its natural components.

**Environmental deterioration:** deterioration of one or several of the components of the environment (air, soil, water, etc.) that negatively affects living organisms.

**Environmental diagnosis:** assessment of an environmental situation, based on the integrated use of indicators.

**Environmental health:** the influence of the environment on human health, including technical and administrative means to improve the human environment from a health perspective.

**Environmental impact:** there is said to be an environmental impact when an action or activity produces an alteration, favorable or unfavorable, in a medium or in some of the components of the medium.

**Environmental indicators:** a variable or value that provides evidence of the effects of the state or condition of the environment.

**Environmental planning:** planning that recognizes the importance of preserving the environment as a physical and biological system.

**Environmental profile:** comprehensive and multidisciplinary review of the environmental conditions that characterize an area or district using indicators of environmental quality.

**Environmental protection:** 1. directed measures to avoid or minimize adverse effects on the environment 2. group of measures that include: pollution monitoring and surveillance, development and implementation of environmental protection principles, as well as baseline control and risk communication.

**Environmental waste:** trash, garbage or discarded waste or discharges with potential danger (latent) for humans and other living organisms.

**Epidemiology:** study of the distribution and determinant of states or events related to the health of certain populations and its application to the control of health problems.

**Eradication:** end of all infectious transmission because of artificial extinction of the agent in question.

**Etiologic agent:** infectious biological, physical or chemical entity capable of causing disease (can be severe, disabling or fatal).

**Exogenous:** originating or taking place outside a system.

**Exposure:** direct or indirect contact with a physical, chemical or biological agent capable of resulting in damage to health.

## F

**Factor:** any term used to define a component of the environment or its properties.

**Fecundity:** 1. ability to reproduce frequently and in great numbers. 2. in demographics, physiological capacity to reproduce.

**Fertility:** reproductive potential of an individual or population measured by the ability to produce viable offspring.

**Final disposal:** any dangerous waste elimination process that entails the incorporation of these waste materials into receiving bodies, prior to treatment.

**Final waste disposal:** final or definitive placement of all types of residues or waste using a proper process to treat the waste according to its characteristics.

**Food additive:** substance added to food (not a typical ingredient) for the purpose of improving technological preparation and processing methods, treatment, preservation, packaging, transport or handling. The term does not refer to substances that are added to food products to improve their nutritious properties.

**Food (trophic/nutrition) chain:** sequence or series of species that feed on each other and as a result transmit and concentrate toxic substances (among others).

**Fossil fuels:** fuel constituted by fossils of prehistoric eras. Among them are: peat, coal, crude oil, and natural gas.

**Fumigation:** application of gas substances capable of destroying animal life, especially insects and rodents.

## G

**Genotoxicity:** alteration or damage to genetic material, caused by physical, chemical or biological environmental agents.

**Global change:** group of causes, processes, effects and impacts that have as a principle the variation of current climate conditions, mainly due to Greenhouse Gas Emissions of anthropogenic origin (caused by human activity) that unchain a series of processes (greenhouse effect) causing, among others, the elevation of the mean temperature of the Earth as well as other impacts on the planet.

**Gradual effect:** consequence that can be measured in a graduated intensity or severity scale and its magnitude directly related to the dose or the concentration of the substance that produces it.

**Greenhouse gases:** gas components of the atmosphere, natural or anthropogenic that absorb and emit infrared radiation.

## H

**Habitat (biological):** group of elements (physico-chemical as well as biotic) that constitute the “surroundings” of an organism or a population.

**Hazardous waste:** waste that can cause a substantial or potential hazard to living organisms or contaminate the soil, water, environment or atmosphere when improperly managed. Has at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity).

**Hazardous waste generator:** according to law 24.051 (Argentina), individuals or plants whose actions or processes make it possible to be subjected to the above mentioned law, either because the waste generated is identified as hazardous or because of the amount released.

**Health:** physical, mental and social well-being, and not merely the absence of an ailment or disease.

**Health determinant:** factors such as personal behavior and lifestyles, social, economic, work and environment, access to health services that determine the state of health of individuals or populations.

**Health indicator:** characteristic of an individual, population or environment (such as rates of disease, disability, death) that can be measured (directly or indirectly) to indicate the state of health of an individual or population (quality, quantity and time).

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**Health policy:** declaration or official guideline within institutions (especially governments) that defines performance priorities and parameters as a response to health needs, available resources and other factors.

**Health promotion:** process of enabling people to increase their control over and to improve their health.

**Health status:** description or measure given to the health of an individual or population in a specific moment in time according to certain identifiable standards, with reference to health indicators.

**Heavy metals:** metal elements with high atomic weight (mercury, chromium, cadmium, arsenic, lead and others).

**Herbicide:** chemical substance that kills plants or inhibits the development of weeds. Commercially called weed killers.

**Hormone:** substance of androgenic origin that regulates cellular metabolic activity by different specific mechanisms.

**Human habitat:** place where an individual, group or human community live(s) and exist(s). Can be characterized by natural and cultural elements.

**Human settlements:** a place where a group of humans develop their existence together.

### I

**Immune response:** selective reaction of the body to foreign substances, or that the immune system identifies as external; manifested by the production of antibodies and by cells loaded with antibodies or by hypersensitivity reactions mediated by cells.

**Immunity:** ability to resist, be protected or prevent development of infectious agents.

**Impact:** the result of cause, long-term.

**In situ:** Latin term that means in its original place; unmoved unexcavated.

**Incidence:** number of new cases of a disease or people who get sick during a certain period of time in a specific population; usually expressed as a proportion or rate, where the denominator is the average number of people during this period of time, or an estimated number of people at half the period of time.

**Incineration:** process of high-temperature thermal oxidation in which hazardous waste is converted, in the presence of oxygen, into gas and incombustible solid waste. The generated gases are cleaned and emitted into the atmosphere and the solid waste is deposited in a safe landfill.

**Indicator:** mathematical expression, a ratio generally expressed as a rate or proportion although it can be any other type of logical value.

**Indirect exposure:** 1. when the medium or vehicle that transports an agent is different from the one that originally contained it. 2. when an individual receives an agent via another individual who was directly exposed.

**Industrial process:** an operation that transforms materials, energy and information into products as part of an industrial production system.

**Infectious agent:** micro-organisms (virus, rickettsia, bacteria, fungi, protozoa), or parasites (helminths and other) capable of invading body tissues, producing infection or infectious illnesses.

**Infectious disease:** clinically apparent disease, in humans or animals, caused by microbial agents.

**Inhalation:** to draw in air, vapour, gas or suspended particles by breathing.

**Inorganic:** bodies devoid of life, for example, minerals.

**Insecticide:** substance used to kill insects; can be found in liquid, gas or powder form. A well-known insecticide is DDT, an organochlorine insecticide. Another classification of insecticides is the organophosphates such as parathion.

**Ionizing radiation:** produces charged particles (ions) in the materials or tissues that absorb them; when this occurs in molecules of biological importance it produces recognizable damage, such as damage to DNA, with a risk of cancer being the most serious consequence.

## L

**Latency:** period from the first exposure until the appearance of a toxic effect or disease; in the clinical evolution of a disease in which the symptoms disappear in spite of the host still being infected and already having suffered the primary attack, and or several relapses or other manifestations.

**Latency period:** period from the moment of exposure to a toxic substance to the manifestation of its effects.

**Leached:** refers to any liquid and its suspended components that has percolated or drained through soil.

**Leak, release, spill:** when a hazardous or non-hazardous substance or residue has entered the environment unintentionally.

**Lethal:** capable of causing death.

**Life conditions:** daily environment of people where they live, interact and work.

**Life Status:** concept used to objectively measure the degree of satisfaction with needs that are considered basic.

**Lifestyle (healthy lifestyles):** the way a person lives; form of life based on identifiable behavior patterns of the individual, social interactions and socioeconomic conditions.

**Long term effect:** chronic effect.

**Long term exposure:** continuous or repeated exposure to a substance over a period of time, usually several years in humans and most of their life in animals or plants.

## M

**Magnitude:** size or extent.

**Magnitude of an impact:** term used to express the extent or scale of an impact.

**Malfunction:** altered function or failure to operate normally.

**Maximum tolerable concentration:** highest concentration of a substance that can be released to an environmental medium that does not pose health risks or death to organisms or species (man, animals or plants)

**Maximum tolerable level:** norm imposed by national government institutions, national or international committees that indicates the concentration or dose of a pollutant that should not be surpassed to avoid endangering an organism, with the purpose of protecting environmental quality and human health.

**Medium:** substance that surrounds or envelops.

**Metabolism:** all chemical and physical processes that take place in an organism; in a stricter sense, all physical and chemical changes that a substance undergoes inside an organism. It includes the incorporation and distribution of chemical components within the organism, changes (bio-transformations) and elimination of compounds and their metabolites.

**Microorganisms:** minuscule animal and plant organisms that can only be seen with the aid of a microscope.

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**Monitoring:** sporadic surveillance carried out to determine the degree of adjustment to a certain standard or degree of deviation from a prospective norm.

**Morbidity:** any subjective or objective deviation from physiologic or psychological states of well-being; disease or chronic condition.

**Mortality:** death rate.

**Mortality rate:** estimate of the proportion of deaths in a population during a certain period of time. The number of deaths is divided by the number of individuals in the population or population at risk.

**Mutagenesis:** process by which mutation in the cellular genetic material (genes, chromosomes) occur.

**Mutagenic agent:** chemical compound that causes mutations in the descendants of a living organism. A mutation is a change in the structure of the genetic material of an organism.

**Mutation:** any inheritable, relatively stable change in genetic material that can be due to the chemical transformation of an individual gene that alters its function (genetic or point mutation); or a reorganization, gain or loss of a chromosome, visible to the microscope (chromosome mutation): mutations can occur in germinal cells and be transmitted to descendants or in somatic cells and pass from cell to cell during cell division.

## N

**Natural pollutant:** pollutants released by different natural processes such as the ocean, forests, volcanos, swamps, electric storms.

**Negative impact:** environmental impact whose effect is translated into the loss of naturalistic, aesthetic-cultural, ecological productivity value or an increase in the derived damages due to contamination, erosion and other environmental risks

incompatibles with the ecological-geographical structure and character of a certain area.

**Neurotoxin:** substance with the ability to cause damage to the central and peripheral nervous system.

**Noise:** undesirable sound that affects hearing for most people and animals, it can cause headaches, nausea, muscular tension, insomnia, fatigue, concentration problems and restlessness. Undesirable noise is sometimes inaudible to the human ear.

**Non-migratory:** population that resides in the same province where they were born.

*Source: Situation and Provincial Social Evolution, Buenos Aires, Synthesis N° 1, 1998, INDEC*

## O

**Organochlorines:** class of biocides characterized by the presence of chlorinated radicals and an organic group.

**Organophosphates:** group of chemical pesticides that contain phosphorous.

**Ozone layer:** the atmospheric ozone layer is located in the lower portion of the stratosphere above the outer layer of the planet (troposphere) that absorbs some of the sun's ultraviolet rays, reducing the amount of potentially harmful radiation that reaches the earth's surface.

## P

**Particulate matter:** Fine liquid or solid particles such as dust, smoke, mist, fumes, or smog, found in air or emissions; very small solids suspended in water that can vary in size, shape, density and electrical charge.

**Passive smoker:** non-smoking person who inhales smoke from nearby smokers, i.e., secondary smoke.

**Pathogen:** disease causing agent.

**Perinatal:** the period immediately previous to birth and/or immediately after birth, for example in humans, from week twenty-nine of gestation up to four weeks after childbirth.

**Persistence:** the length of time a compound stays in the environment, once introduced. A compound may persist for less than a second or indefinitely. Also, capacity of a substance to remain unchanged in a certain medium.

**Persistent Organic Pollutants, POPs:** a group of highly toxic chemicals of special concern that persist in the environment for a long time, travel long distances in the air and water, and on living creatures, and are being found in regions where they have never been used or produced. They are highly toxic organic chemicals, ubiquitous and persistent. POPs are bioaccumulative and biomagnifiable and can be found in all living organisms accumulating at the top of the food chain.

**Pesticides:** toxic substances designed to kill, repel or inhibit the growth of living organisms.

**Physical environment:** non-living component of an ecosystem and its processes whether these are natural or induced by man.

**Pollutant:** any form of matter or energy capable of negatively altering, interfering or modifying environmental elements and as a consequence being possible risk factor for humans and other living organisms.

**Polychlorinated biphenyls (PCBs):** biphenyls or polychlorinated diphenyls (PCDs) and polychlorinated triphenyls (TPCs) are also known in English as polychlorinated biphenyls (PCBs) and polychlorinated triphenyls (PCTs); when they are used in electric equipment, their more frequent use, they are referred to under the generic denomination "askarel".

**Population:** any group of individuals of a species that occupy a given surface area at the same time. In genetic terms, a group of organisms that mate among each other.

**Positive impact:** environmental impact seen as positive by the technical and scientific community as well as the population in general, in the context of a cost-benefit analysis or other measurement.

**Precautionary principle:** when information about potential risks is incomplete, basing decisions about the best ways to manage or reduce risks on a preference for avoiding unnecessary health risks instead of on unnecessary economic expenditures.

**Precursor:** substance starting from which another substance with more biological activity is formed.

**Preservation:** maintaining the medium in its natural state.

**Prevention:** public health term referring to an anticipated action whose objective is to prevent, interrupt or terminate the effect of illness, disease or injury.

**Primary healthcare:** initial health care contact, general or basic medical attention with focus on preventive care and treatment of common problems and diseases.

**Protection:** regulations, policies and measures to implement the restoration of the environment and the prevention and control of its deterioration.

**Public health:** health promotion, disease prevention and medical care directed towards improving the health of the whole community with a focus on achieving the greatest impacts.

**Public participation:** appropriate procedures used for informing the public, getting an early and continuous participation from the community and considering the perspective of all interested parties in the planning and decision making process.

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### Q

**Quality of life:** an individual's satisfaction with his/her life within a cultural context and value system with regard to well-being, goals, expectations, standards and concerns. It is an extensive and complex concept that includes physical health, psychological state, level of independence, social relationships, personal beliefs and relationship with the environment.

### R

**Reproduction:** having offspring.

**Resources:** sources of support, supply, information or expertise.

**Risk:** the probability that an event will occur, for example that an individual will get sick or die within a certain period or age.

**Risk analysis:** process that characterizes adverse effects, evaluates probabilities, determines outcomes and analyzes the way in which risks can be mitigated and communicated.

**Risk behavior:** behavior that facilitates injury or transmission of an illness.

**Risk estimate:** determination, with or without a mathematical model, of the probability and the nature of the effects of exposure, by means of the quantification of dose-effect and dose-response relationships for any substance; and the measure of potential levels of exposure of the population, organisms or environment being considered.

**Risk exposure:** proximity and/or contact with the source of a hazardous or beneficial agent in such a way that an effective transmission of the agent can occur.

**Risk factor:** social, economic or biological conditions, behaviors or environments that are associated with or increase susceptibility to specific diseases or injuries.

**Risk group:** group where the risk of contracting injury or a disease is greater.

**Risk population:** group of people who can develop an adverse effect and who are potentially exposed to certain risk factors.

**Rural area:** rural areas are areas of low density population, in villages or small towns located in the countryside and away from cities.

### S

**Scenario:** model or projection of the future, often to develop action to avoid adverse effects or to achieve a desired objective.

**Sign:** objective evidence of disease.

**Sociocultural environment:** environment of human beings and their social, cultural, historical and economic processes.

**Specificity:** property of immune response molecules (antigen, antibody or sensitive cells) to selectively combine with corresponding reactants.

**Spectrometer:** apparatus that separates particles or radiations of certain characteristics (mass, charge, wavelength, etc.) and measures their ratios.

**Spectrophotometer:** apparatus used to compare the intensity of corresponding colors of two light spectra. Starting from 'spectrum': result of the dispersion of a group of radiations, sounds and, in general, wave phenomena, in such a way as to separate them into different frequencies.

**Stratification (in epidemiology):** process of separating a sample into several subsamples according to certain criteria, such as age group, socio-economic status, etc.

**Sub-acute effect:** biological change after continuous or repeated exposure for 21 days.

**Sub-clinical effect:** biological change resulting from exposure to a pathogen, before disease symptoms appear.

**Substance:** form of matter that has a constant defined composition and distinctive properties.

**Susceptibility:** condition in which there is a decrease in the resistance of an individual to a certain disease or poison at lower dose exposures than the common doses harmful for the rest of the population.

**Sustainable development:** development which satisfies the present needs without compromising the capacity of future generations to satisfy their own needs (WCED 1987).

**Sustainable management:** administration and rational use of the environment and its natural resources based on rules that allow for conservation and sustained yield over time without adverse effect on the environment.

**Sustainable use:** use of natural resources with minimal alteration to ecosystems and maintaining maximum biodiversity.

**Symptom:** any morbid phenomenon or deviation from the norm in terms of function, phase or sensation experienced by the patient that is indicative of disease.

**Syndrome:** group of signs and symptoms associated to any morbid process and constituting the clinical framework of a disease.

**System:** an organized procedure to achieve a desired outcome.

**Systemic:** related to or affecting the entire body as a whole.

## T

**Teratogen:** a substance capable of causing birth defects.

**Teratogenesis:** the introduction of nonhereditary birth defects in a developing fetus by exogenous factors such as physical or chemical agents acting in the womb to interfere with normal embryonic development.

**Toxic gases:** emissions released by fuel and manufacturing plants, as well as cars, soil and waste facilities. These gases contain hazardous toxic substances, such as carbon monoxide, nitrogen oxide, hydrocarbons, soot and heavy metals.

**Toxicity:** the degree to which a substance or mixture of substances can harm humans or animals.

**Toxicology:** science that deals with chemical composition, physiological effects, origin, etc., of chemical and physical agents on living organisms.

**Transgenic:** individual animal or plant whose “genes” have been modified by means of biotechnology or genetic engineering.

**Troposphere:** the layer of the atmosphere closest to the earth’s surface.

## U

**Ultraviolet:** non-ionizing radiation of wavelength under 440u, invisible to the naked eye.

**Ultraviolet radiation (UV):** short wave radiations between 10 and 390 nanometers, that come from the sun and can cause damage to the skin.

**Unsatisfied Basic Necessities:** individuals or social groups that in situations of poverty or need are not able to satisfy their health, nutrition, housing, clothing and labour needs. Households with unsatisfied basic necessities are those where at least one of the following deprivation indicators is present: households inhabited by more than three people per room; households that are in disrepair, of poor quality – that is, they are not suitable for living; households that do not have a toilet or have a toilet without water discharge;

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households that have children of school age that do not attend school; households that have four or more people supervised per occupied member and where the head of household has a low education level (two years or less at primary level).

*Source: INDEC; Population Census, 1980, 1991 and 2001; Situation and Social Evolution (Synthesis N°4); Consudec N° 843 - 1998.*

**Urban area:** an area that is highly populated, such as a city or town with a built infrastructure and other services such as electricity.

### V

**Vector:** a living organism that does not cause disease itself but which is capable of spreading infection by conveying pathogens from one host to another.

**Virus:** microscopic infectious agent that can infect the cells of its living host.

**Vulnerability:** capacity of an individual or group to manage threats to their situation in the physical and social world. (Dow, 1992).

**Vulnerability Assessment:** process carried out to determine the critical or weak components of emergency and mitigation systems and measures in the face of a threat.

### W

**Waste:** any material or energy generated in extraction, transformation, production, consumption, use, control or treatment processes whose quality does not allow it to be used again.

**Water contamination:** any discharge, spill, waste, direct or indirect deposit of any type of materials and, in general, any event capable of causing the degradation of water/water systems.

### X

**Xenobiotic:** in a strict sense, any substance that interacts with an organism and that is not one of its natural components.

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