

The Atlas of Children's Health and Environment in the Americas



**Pan American
Health
Organization**



*Regional Office of the
World Health Organization*

PAHO HQ Library Cataloguing-in-Publication

Pan American Health Organization
The Atlas of Children's Health and Environment in the Americas
Washington, D.C.: PAHO, © 2011

ISBN: 978-92-75-11651-7

I. Title

1. CHILD WELFARE
2. ENVIRONMENTAL HEALTH
3. ATLASES
4. ENVIRONMENTAL POLLUTION - adverse effects
5. INFANT MORTALITY - trends
6. AMERICAS

NLM WM 17.DA1

The Pan American Health Organization welcomes requests for permission to reproduce or translate its publications, in part or in full. Applications and inquiries should be addressed to Editorial Services, Area of Knowledge Management and Communications (KMC), Pan American Health Organization, Washington, D.C., U.S.A. The Area of Sustainable Development and Environmental Health (SDE) will be glad to provide the latest information on any changes made to the text, plans for new editions, and reprints and translations already available.

©Pan American Health Organization, 2011. All rights reserved.

Publications of the Pan American Health Organization enjoy copyright protection in accordance with the provisions of Protocol 2 of the Universal Copyright Convention. All rights are reserved.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the Pan American Health Organization concerning the status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the Pan American Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by the Pan American Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the Pan American Health Organization be liable for damages arising from its use.

Acknowledgments

The Sustainable Development and Environmental Health Area prepared this Atlas thanks to the support of PAHO's Director, Mirta Roses Periago, Assistant Director, Dr. Socorro Gross-Galiano, and Area Manager, Dr. Luiz A. C. Galvão.

Our heartfelt gratitude goes to all the colleagues listed below who provided their professional experience, substantial contributions, and expert views in the preparation of this Atlas, as well as all those individuals who, throughout the Americas, joined in this effort:

- Eva Rehfues, WHO
- Enrique Loyola, WHO
- Martha Shimkin, Independent Consultant, USA
- Patricia Arbelaez, National School of Public Health, University of Antioquia, Colombia
- Yehuda Benguigui, PAHO
- Samuel Henao, PAHO
- Carlos Corvalán, PAHO

Our special recognition also goes to the office of Children's Health Protection, United States Environmental Protection Agency for their financial contribution towards this publication.

Table of Contents

Preface	1
Introduction	3
Part 1: Healthy Environments Make Healthy Children	9
1. Entering the World with Health and Hope	10
2. A Safe and Healthy Environment Fosters Good Health	14
Part 2: All Children Need Food, Water, Sanitation, and Clean Air	17
3. Surviving the First Months	18
4. Children Need Safe and Sufficient Food	22
5. Giving Children Clean Water	26
6. Children Deserve Adequate Sanitation Services	30
7. Clean Indoor Air Saves Children’s Lives	34
Part 3: Children Thrive in a Nurturing Environment	37
8. Children Living Free of Tobacco Smoke	38
9. Controlling Air Pollution Supports Good Health in Children	42
10. End Childhood Lead Poisoning and other Chemical Exposure	46
11. Keeping Children Away from Pesticides	52
12. Don’t Bug Me!	56
13. Garbage Dumps Are No Place for Kids	60
Part 4: Living in a Supportive Community	63
14. Moving to the City	64
15. Adequate Shelter Offers Children a Safe Base	68
16. Preparing for Disaster	72
17. Schools Can Promote and Safeguard Environmental Health	76
18. Children Playing and Staying Safe	80
19. Promote Child Safety through Fair Labor Standards	84
Part 5: Offering Children a Secure Future	89
20. Striving for Equality in Health and Environment	90

List of Graphs & Tables 4

Figure 1	Increasing cleanliness, efficiency, cost, and convenience. Decreasing health impacts.	35
Graph 1	Infant mortality trends, Latin America and the Caribbean, 1950–2015 (projected)	11
Graph 2	Estimated number of children surviving from birth to age 5, Latin America and the Caribbean, 2004.	11
Graph 3	Five leading causes of mortality in children ages 0-14, by percentage, Region of the Americas, 2002.	11
Graph 4	The influence of economic equality on child mortality, Latin America and the Caribbean, 2003.	12
Graph 5	Child population, by age group, Region of the Americas, 2005.	15
Graph 6	Proportionate mortality of children under age 14 from diseases related to poor environmental conditions, by disease type and percentage, Region of the Americas, 2002.	15
Graph 7	Environmental burden of disease, country groupings by development level, Region of the Americas, 2002.	15
Graph 8	Exclusive breast-feeding among children aged 4-6 months, selected countries of the Americas, 1998-2003.	19
Graph 9	Daily per capita calories availability in the Americas, selected countries and territories and Regionwide, 2006.	23
Graph 10	Correlation between female literacy, poverty, and stunting, Region of the Americas, latest date available (1990-2002).	23
Graph 11	Access to improved sources of drinking water and under-5 mortality rate, Region of the Americas, 2002-2004.	27
Graph 12	Correlation between gross national income and access to improved sources of water, Region of the Americas, 2004.	27
Graph 13	Access to improved sources of drinking water, Latin America and the Caribbean, 1990 and 2004.	27
Graph 14	Acute diarrheal diseases mortality rate, children under age 5, by subregion, Region of the Americas, 1995-2005.	27
Graph 15	Urban versus rural coverage of improved sanitation facilities in the Americas, selected countries and territories and Regionwide, 2006.	31
Graph 16	Access to basic sanitation services, Latin America and the Caribbean, 1990 and 2004.	31
Graph 17	Percentage of rural population with access to improved sanitation services, selected countries and territories, Region of the Americas, 2006.	31
Graph 18	Under-5 mortality rate and proportionate mortality due to acute respiratory infections (%), selected subregions, Latin America and the Caribbean, 2005.	35

Graph 19	Percent of students 13-15 years old who support smoking bans in public places, Latin America and the Caribbean, 2001-2005.	39
Graph 20	Percent of youth 13-15 who smoke cigarettes, Latin America and the Caribbean, 2006 or latest available data.	39
Graph 21	Correlation between students 13-15 years old who smoke and students who support smoking bans, Latin America and the Caribbean, 2006 or latest available year.	39
Graph 22	Particulate matter concentrations (standard average, 50 μm^3), selected cities in the Americas, 2000-2004.	43
Graph 23	Estimated number of children under 19 years old who live in cities that exceed their country's air pollution standards (annual average concentration of PM-10) at least in one year, Latin America and the Caribbean, 2000-2004.	43
Graph 24	Estimated percentage of children 1-5 years old with lead blood levels $\geq 10 \mu\text{g}/\text{dL}$, United States of America, 1976-1980, 1988-1991, 1992-1994, and 1999-2000.	47
Graph 25	Relationship between the phase-out leaded gasoline in on-road vehicles and the decline in children's blood-lead levels in the U.S..	47
Graph 26	Concentrations of lead in blood of children ages 5 and under.	47
Graph 27	Trend in the cost of pesticide imports, Latin America and the Caribbean, 1990-2004.	53
Graph 28	Incidence of pesticide poisoning in children under 15 years old and trend in pesticide imports, Central America, 1992-2000.	53
Graph 29	Correlation between the incidence rate of pesticide poisoning in children under 15 years old and the import of pesticides, Central America, 1992-2000.	53
Graph 30	Annual malaria parasite incidence in malarious areas, subregions of the Americas, 2006.	57
Graph 31	Number of dengue cases, Region of the Americas, 2006.	57
Graph 32	Average garbage generated per household, Latin America and the Caribbean and regional average, 2005.	61
Graph 33	Final disposition of solid waste, Latin America and the Caribbean, 2005.	61
Graph 34	Number of children in urban settings, Latin America and the Caribbean, 1950-2030 (projected).	65
Graph 35	World cities with populations over 10 million, 2000.	65
Graph 36	World urban population (%), 1800-2030 (projected).	65
Graph 37	Proportion of population living in overcrowded urban housing, selected countries, Region of the Americas, latest data available (1998-2003).	69
Graph 38	Population affected by disasters, by disaster type, Region of the Americas, 2000-2006. ...	73
Graph 39	Selected disasters, by type, Region of the Americas, 1970-2005.	73
Graph 40	Total enrollment in primary school, children ages 5-12, Latin America and the Caribbean, 1970-2000.	77

Graph 41	School-aged population, by subregion, Region of the Americas, 2005.	77
Graph 42	Schools with access to water and sanitation services, selected Latin American countries, 2004.	77
Graph 43	Proportionate mortality due to unintentional injuries, by injury type, children aged 0-14, ^a Region of the Americas, 2002.	81
Graph 44	Estimated deaths from unintentional injuries, by injury type, children aged 5-14, by sex, Region of the Americas, 2002.	81
Graph 45	Proportion (%) of child laborers, Region of the Americas and globally, 2000 and 2004.	85
Graph 46	Percentage of children aged 5-14 working in agriculture and the services industry, selected countries, Region of the Americas, 2005.	85
Graph 47	Infant mortality rates, by ethnic group and nationwide, United States, 2001-2003.	91
Graph 48	Urban population without access to water and sanitation services and affected by undernutrition, by percentage and poverty level, Peru, 2001.	91
Graph 49	Proportion of children aged 0-14 in white and non-white households, selected countries, Region of the Americas, various years.	91
Graph 50	Number of children under age 12 per family, selected Latin American countries, 1999-2002.	91
Table 1	Situation of children in the Americas, selected basic indicators, latest available data.	6
Table 2	Mortality in children from selected nutritional deficiencies, Region of the Americas, 2002.	23
Table 3	Impacts of indoor air pollution on children's health.	35

Preface

As the world begins its final countdown toward achievement of the Millennium Development Goals, the pivotal determinant of our success or failure will be the seeds we are sowing today to secure an abundant, nurturing, healthy, safe, and sustainable environment for our children now and in the future. *The Atlas* you hold in your hands provides a snapshot of where the Region of the Americas stands as it nears a critical milestone in the road, and what it must do over the next few years to fulfill the commitments made by governments through their unanimous adoption of the United Nations Millennium Declaration in 2000.

The eyes of children turn to us—parents, caregivers, schoolteachers, civil society, governments, and international partners supporting these groups—to do for them what they cannot do for themselves: remove them from harm, protect their health, foster their growth and development, and provide them with the necessary hope and opportunities they need to become tomorrow’s productive and resourceful citizens.

In 20 succinct topical chapters, this Atlas provides a blueprint for action in the health, social, educational, economic, legal, and political spheres to be taken by all of us upon whom children rely. Each topic is linked to the pertinent MDGs and targets, and each chapter ends with a series of concrete policy actions that may be taken at the individual, community, national, and regional/international levels. Amply resourced and referenced, *The Atlas of Children’s Health and Environment in the Americas* will provide valuable input for a broad spectrum of decision-makers that includes political leaders, legislators, city planners, educators, health workers, and families, among others.

By creating healthy and supportive environments for children today, we can transform them into the next generation’s courageous advocates for a clean and safe planet where precious natural and human resources are treasured and preserved in harmony for the enjoyment and prosperity of countless generations to come.

*Dr. Mirta Roses Periago, Director
Pan American Health Organization*

Our future depends on our children. On an individual level, we invest time in and devote attention and energy to our children as we delight in their accomplishments. We work to ensure their safety and take precautions to prevent them from becoming ill. As they finish their formal schooling, get jobs, begin careers, become active in their communities, and start their own families, we offer our children hope and support. Every parent or caregiver understands that what we give a child reaps a return many times greater than the initial investment.

Just as individuals dedicate their time, talents, and resources to raising children, so must communities, local and national governments, and international organizations invest in society's children. Disease prevention and health promotion interventions have proven themselves to be much more cost-effective than managing public health outbreaks.

The environments in which children live, learn, play, and—as they get older—enter the labor force, must support good health and safety. Governments play a crucial role in ensuring these healthy environments. By placing children at the center of environmental policy goals, public investments can provide children with better opportunities to build their lives, nurture their minds, and reach their full potential. The future of the Americas depends on the children of the Americas. Public investment in healthy environments for children will yield a substantial and long-lasting return to society as a whole.

Meeting the Needs of Children

World leaders demonstrated their commitment to safeguard children through the adoption of the Convention on the Rights of the Child (1989) and reaffirmed this support at the Special Session of the United Nations General Assembly on Children (2002). The influence of environmental quality on the health of children is a topic that now is being steadily integrated into global conventions and declarations. At the World Summit on Sustainable Development held in Johannesburg, South Africa, (2002), leaders pledged their support for a worldwide initiative to improve environments for children. Likewise, in the Stockholm Convention on Persistent Organic Pollutants (2001), safeguarding children from highly toxic chemicals was highlighted. Regions around the world, such as Europe, the Eastern Mediterranean, North America, and the Americas as a whole, have signed declarations and implemented actions targeted to promote and protect the health of children by improving environmental quality.

At the dawn of the new millennium, United Nations members adopted the Millennium Declaration,¹ which defined a common vision for a world that offered "human dignity, equality, and equity at the global level." The Millennium Declaration affirms the central importance of children to the world's future. Goals linked to the Millennium

1. United Nations. United Nations Millennium Declaration. New York: United Nations; 2000. (General Assembly Resolution 55/2). Available at: <http://www.un.org/millennium/declaration/ares552e.htm>. Accessed on 19 February 2009.

Declaration aim to eradicate poverty, eliminate hunger, provide for safe and affordable drinking water and basic sanitation services, provide primary education for all boys and girls, improve the lives of slum dwellers, promote gender equality, and ensure employability of young people. The Declaration reminds the world of commitments made to safeguard the environment and highlights the need to hand down to children a world rich in natural resources. Measurable, quantifiable targets were designed to assess and report yearly progress toward the eight Millennium Development Goals (MDGs). Throughout the Millennium Declaration and in progress reports by the United Nations, priority is given to the well-being, safety, survival, and future of children. "Strategies to protect children and promote their welfare should be put in place," noted former U.N. Secretary-General Kofi Annan in 2002. "There can be no issue more important."²

Investments to improve children's environmental health bring together three important facets of the Millennium Development Goals: improving the lives of children, improving the environment, and achieving sustainable economic growth. Interventions to improve children's environmental health include the alleviation of poverty and hunger, enhancing primary education, the promotion of primary and secondary education for girls, the reduction of child mortality, and the prevention of major diseases such as malaria, Chagas', and dengue.

Leaders of the Americas have recognized that children are our future and require public attention and investment. The 2005 Millennium Development Goals report, entitled *Investing in Development: A Practical Plan to Achieve the Millennium Development Goals*, states that Latin America and the Caribbean are among the best situated of developing regions in terms of their ability to meet the MDGs.³ At a June 2005 meeting of the health and environment ministers of the Region of the Americas, children's environmental health was declared a priority topic for national and international action and collaboration. Equity, access to health care, quality environments, and investment in children's health and safety are central environmental health policies of the Americas. Increasing understanding and taking action are the two avenues defined for policy goals and public investment. The overarching objective will be to create and sustain environments for children that protect and promote their health wherever they live, learn, play, and are growing and maturing into the adults of tomorrow.

The governments of the countries of the Americas have signaled their commitment to continue to support and achieve improvements in the lives of children of the Region. Despite excellent progress, policymakers know that more than 428,000 children still die in the

2. United Nations. Implementation of the United Nations Millennium Declaration: Report of the Secretary-General. New York: United Nations; 2002. (General Assembly document A/57/270, page 18, paragraph 99.) Available at: <http://daccessdds.un.org/doc/UNDOC/GEN/No2/506/69/PDF/No250669.pdf?OpenElement>. Accessed on 20 February 2009.

3. United Nations Development Program, U.N. Millennium Project. Investing in Development: A Practical Plan to Achieve the Millennium Development Goals. New York: UNDP; 2005. Available at: <http://www.unmillenniumproject.org/reports/fullreport.htm>. Accessed on 12 March 2009.

Americas every year before reaching the age of five.⁴ It has been estimated that 25% of the burden of disease in Latin America and the Caribbean can be attributed to poor environmental quality.⁵ These factors include unsafe water, inadequate sanitation and hygiene, urban air pollution, indoor smoke exposure from solid fuels, and lead exposure. The diseases they cause are all preventable. Accidents and injuries are the leading cause of death in children under five years of age in Canada and the United States, and asthma is the leading cause of illness, hospital stays, and missed school days. Infant mortality rates in the Americas range from 80.3 deaths per 1,000 live births in the poorest countries to 33.1 per 1,000 live births on average across Latin America and the Caribbean to just over eight deaths per 1,000 in Canada and the United States, producing an average of 20 infant deaths per 1,000 live births across the Region.⁶ Despite these disparities, there is a need in every country of the Americas to improve children's environmental health and safety. Each country can also share its experience and knowledge with its neighbors throughout the Region. Serious public investment in children's environmental health will improve the lives of all the Region's children, thereby securing their future and that of the Americas as a whole.

I see healthy children and hear them laughing, I think of all people drinking safe water, breathing fresh air, and eating safe and nutritious food. I envision all people living in homes that promote development and protect well-being, I think of all children, everywhere, in every setting and from every background having the best opportunities to grow and develop, learn and study and become productive members of our society and our future leaders.

*Dr. Mirta Roses Periago, Director
Pan American Health Organization*

The Impact of Environment on Children's Health

Children are at a greater risk than adults to environmental hazards. On the one hand, they can become exposed to environmental threats more easily than adults. On the other hand, their developing bodies may allow these exposures to take a greater toll on their health than in the case of adults. Distinctive behaviors and development stages find children placing unclean hands and objects in their mouths, rolling and crawling on the ground and floor, and climbing to dangerous places as they explore their natural surroundings and try out new development skills. While a normal part of the growth and development process, these behaviors often place children in risky situations if they live, play, learn, and/or work in a degraded, contaminated, or unsafe environment.

-
4. World Health Organization. Burden of Disease: Estimates by Region. Geneva: WHO; 2005. Available at: http://www3.who.int/whosis/menu.cfm?path=evidence,burden,burden_estimates,burden_estimates_2002N,burden_estimates_2002N_2002Rev,burden_estimates_2002N_2002Rev_Region&language=english. Accessed on 20 February 2009.
 5. Prüss-Üstün A, Corvalán C. Preventing disease through healthy environments: towards an estimate of the environmental burden of disease. Geneva: World Health Organization; 2006. Available at: http://www.who.int/quantifying_ehimpacts/publications/preventingdisease.pdf. Accessed on 2 June 2009.
 6. Pan American Health Organization. Health Situation in the Americas: Basic Indicators. Washington, DC: PAHO; 2005.

Poor children suffer the most. They tend to live in less safe and more polluted and degraded environments, while at the same time they suffer from poorer nutrition and more vulnerable defense systems that are less able to ward off disease and infection. Poor children also tend to enter the workforce at a younger age to help support their families than their counterparts in higher socioeconomic strata, thus exposing themselves to additional environmental dangers and risks.

Table 1
Situation of children in the Americas, selected basic indicators, latest available data.

Description/Variable	
Demographic	
Total population of children (0–19 years of age) (thousands)	311,631
Children from total population (%)	35.0
Children under five years of age (%)	8.8
Percentage of school children (five–19 years of age)	26.2
Average number of annual live births	16,076.7
Mortality and morbidity	
Infant mortality rate (per 1,000 live births)	17.7
Under five children mortality rate (per 1,000 live births)	21.0
Deaths from acute diarrheal disease, children under age five (%)	3.5
Deaths from acute respiratory disease, children under age five (%)	6.2
Environmental burden of disease among children worldwide (%) disability-adjusted life years [DALYs])	25.0
Health services coverage and access	
Population with access to improved sources of drinking water (%)	94.0
Population with access to improved sanitation (%)	86.0
Children under age one covered by measles immunization (%)	93.0
Births attended by trained personnel (%)	91.4

Sources:

Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2008. Washington, DC: PAHO; 2008.

Prüss-Üstün A, Corvalán C. Preventing disease through healthy environments: towards an estimate of the environmental burden of disease. Geneva: World Health Organization; 2006. Available at: http://www.who.int/quantifying_ehimpacts/publications/preventingdisease.pdf. Accessed on 2 June 2009.

United Nations. World Population Prospects: the 2006 Revision. Population Database. Available at: <http://esa.un.org/unpp>. Accessed on 23 February 2009.

The American Academy of Pediatrics manual, *Pediatric Environmental Health, 2nd Edition* (2003), provides an in-depth discussion of the unique characteristics that may make children more vulnerable to environmental exposures. The publication divides children into six age groups, ranging from the fetal stage through adolescence. Characteristics are presented in three categories: (1) the physical environment, (2) the biological environment, and (3) the social environment. A summary of these characteristics by category is presented in the following paragraphs.⁷

7. Etzel RA, ed. *Pediatric Environmental Health, 2nd Edition*. Elk Grove Village, IL: American Academy of Pediatrics; 2003.

Physical Environment: Where a child spends most or all of his or her time comprises the physical environment. A fetus is unique in this regard, in that the unborn child is exposed to what the mother ingests, breathes, and absorbs. A fetus is in a rapid stage of development that presents "critical windows"; during these particular moments, if the fetus is exposed to certain contaminants, overall growth and development process can be greatly compromised. While generally speaking, development continues at a slower pace following birth and as the child enters into adolescence, it is thought that these windows of vulnerability exist throughout the child's development into adulthood. Harmful environmental exposures that occur during such critical periods will cause greater negative effects.

Exposures considered particularly relevant to children throughout their development are derived from the locations where they spend the majority of their time, their air intake, food and water consumption, and behavior:

- **Location:** Infants and toddlers tend to spend long period of times in a single setting within the home. An infant or young toddler will spend time on the floor or ground, sitting or crawling, thus exposing himself or herself to chemical residues on the flooring, or, if outside, those found in the soil or grass. Children in day care centers and schools are likewise exposed to these types of residues. As children grow into adolescents, they become increasingly independent, their ability to choose their physical locale is greatly enhanced, and they may take risks through misjudgments.
- **Air intake:** A child has a shorter stature than an adult and therefore breathes at a level that is closer to the ground. Chemicals that are heavier than air hover close to the ground, creating greater levels of exposure for children than for adults in the same space. At the same time, children breathe at a faster rate than adults and their air intake is greater, which also increases their exposure to airborne environmental toxins.
- **Food and water consumption:** Children consume more water and food per pound of body weight than do adults, again increasing their exposure to chemicals and other contaminants that may be present in these substances. Children also tend to eat the same kinds of foods over and over again, so if a particular food is highly contaminated with pesticides or other chemicals, the exposure is repeated and therefore higher than that of adults, whose diet is more varied.
- **Behavior:** The normal behavior of children as they grow and develop places them at an increased risk of exposure to harmful environmental substances. For example, infants and toddlers use their mouths to explore the world around them. They put their hands and foreign objects in their mouths to feel them and learn more about them. If these objects contain harmful chemical or biological agents, children can readily ingest these contaminants. Children are very curious and have little sense of danger. Young children do not have the capacity to protect themselves, choose their environments, or—in the case of the youngest in this group—to physically remove themselves from harmful environments and go to ones that are safer.

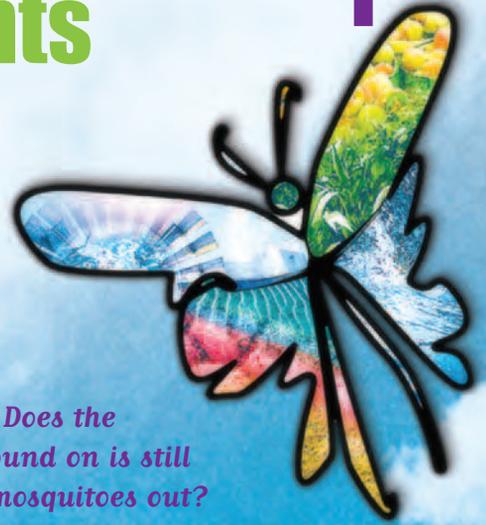
Biological Environment: Once exposed to an environmental contaminant, any human—whether adult or child—will take in a certain dose of that contaminant through skin absorption, ingestion, or respiration. A fetus will be exposed through the placenta. Once the contaminant enters the body, it will be distributed and processed. The contaminant is either stored in or excreted from the body. Sometimes certain organs within the body are particularly vulnerable to certain contaminants. The physiological characteristics of a child at various stages of development will determine if and/or how much a contaminant will affect him or her. Often, these physiological characteristics differ from those of adults, so that children may be more susceptible to harmful environmental exposures than adults. Some special considerations as regards children are:

- **Skin absorption:** A child has a greater skin-to-body-mass ratio than an adult, and a newborn's ratio is even greater than that of a young child. In the first two weeks of life, a newborn lacks natural defenses in the outer layer of skin and is significantly more vulnerable to exposure through skin absorption.
- **Respiratory development:** While lung function begins developing from the fetal stage, it does not reach full development until approximately age eight.
- **Gastrointestinal physiology:** A child absorbs certain nutrients (e.g., calcium) at higher levels than adults. Various chemicals (e.g., lead) may be absorbed at higher levels, mimicking the absorption of calcium.
- **Distribution:** The body's fat and water content change the characteristics of distribution within the body. Since a child's body composition is constantly changing throughout the development process, the distribution of environmental contaminants will also vary.
- **Metabolism:** A child's ability to process (metabolize) contaminants may vary at different stages, depending on his or her genetic makeup, and the enzymes serving as metabolic agents that are present in the body. Children's metabolism, as compared to that of adults, may safeguard them from certain exposures, while exacerbating the health impacts caused by other exposures.
- **Organ susceptibility:** A child's body develops from the fetal stage through adolescence. The functioning of the lungs and brain, as well as that of the nervous and reproductive systems, for example, will continue to develop for years after birth. Exposures that target certain organs may cause long-term or permanent effects.

Social Environment: Poverty, malnutrition, environmental injustice, and child labor increase children's exposure to contaminants and their susceptibility to the effects of exposures. Most legislation, even in highly industrialized countries, traditionally has not considered the unique characteristics of children that increase their vulnerability to harmful environmental exposures and can make them more susceptible to the negative health consequences of these exposures. Children have little influence over changes in society's actions. They need advocates to protect and promote their health. Parents, caregivers, local and national governments, and professional groups—in particular, health workers—make excellent advocates for children's environmental health.

Healthy Environments Make Healthy Children

1



A child may not realize that he or she is walking into a dangerous environmental setting. Smoke near the open fire indoors might seem normal, even as the little girl coughs, rubs her stinging eyes, and gasps for fresh air. Does the parent know that the carpet the toddler is crawling around on is still coated with pesticides after being sprayed to keep the mosquitoes out? The backyard battery-recycling business brings extra income to the family, but it also drops lead in the soil that blows around the community during the dry season. The teenager cannot find his helmet, but wants to join friends on a bicycle trip—just one short ride won't hurt, he reasons.

While there are environmental hazards in our everyday life, much can be done to protect public health in general and children's health in particular. The World Health Organization estimates that more than one-third of children's diseases worldwide could be prevented by improving environmental conditions.¹ Protecting children is especially important because:

- *Children are often not able to protect themselves and may even unknowingly endanger themselves.*
- *Children are constantly developing, and as they grow and develop, their bodies may be more vulnerable to dangerous environmental exposures than the bodies of their parents or other adults around them.*

¹ Prüss-Üstün A, Corvalán C. Preventing disease through healthy environments: towards an estimate of the environmental burden of disease. Geneva: World Health Organization; 2006.



Entering the World with Health and Hope

Promoting, supporting, and strengthening caregiving in the home maximizes a child's likelihood of good health and development.

Of the nearly 60 million children under age five in Latin America and the Caribbean,¹ most get the good start in life they need by having a well-nourished mother who has access to prenatal health care, to birth attendance, and to a continuum of health care throughout childhood. In Latin America and the Caribbean, on average, 79% of babies are born in health care facilities (although there are wide individual country variations) and 90% of newborns are breast-fed in their first month.² Nearly 92% of children under age one benefit from access to a program of vaccinations.³ Since 1990, child mortality from measles, neonatal tetanus, and bacterial meningitis has been drastically reduced. Nearly 60% of children live outside of poverty, 90% have access to sufficient nutrition, and 89% have access to potable water.⁴ So far, Latin America and the Caribbean exceed the Millennium Development Goal targets for reducing overall infant and under-five mortality rates, and for reducing child deaths from acute respiratory infections and acute diarrheal diseases.

Of the five leading causes of mortality in children ages 0–14, the primary factor in child survival concerns conditions relating to birth and immediately after birth.

Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2005. Washington, DC: PAHO; 2005.



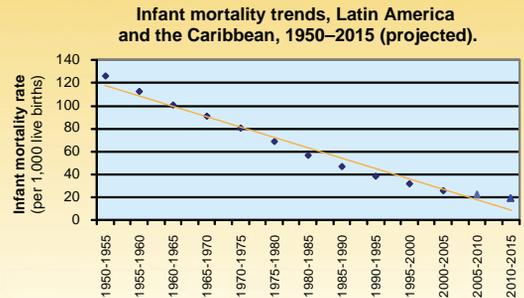
Effects of poor caregiving and lack of quality health care on children's health

- Perinatal disease and mortality
 - Malnourishment
 - Stunting
 - Misdiagnoses
- Missed treatments
- Preventable infections and illnesses
- Chronic disease and disability

This includes low birthweight, birth asphyxia, and birth trauma. The World Health Organization estimates that 6% of all adverse perinatal conditions in developing countries are caused by poor environmental quality.

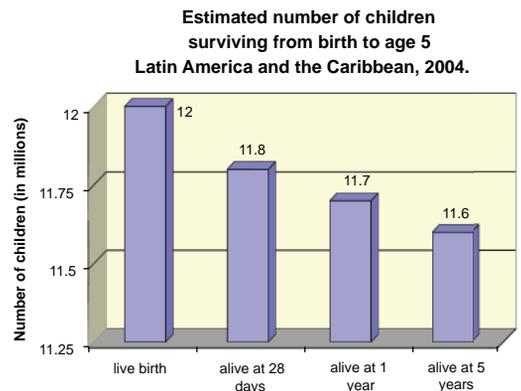
Whether or not a child in the Americas is included in this success story depends on the economic means of the parents and caregivers. It depends on ethnicity, whether the child lives in a rural or urban setting, and if the mother is educated. In fact, 70 million children under the age of 15 in the Americas still live in poverty, 270,000 infants do not survive their first year, and 400,000 children die before they turn 5. While across the Region of the Americas the average for institutional births is high, 77% of births in Haiti take place at home, as do 60% of births in Guatemala.⁵ Only 35% of infants are exclusively breast-fed for their first six months of life in Latin America and the Caribbean.⁶ The presence in mothers of malnutrition, vitamin deficiencies, tobacco use, and/or tobacco smoke exposure leads to low birthweight. For HIV-infected women who become pregnant, transmission to infants can occur in utero, during birth, or through breast-feeding. Domestic violence and poverty increase marginalization and the risk of poor health. As the Region dubbed the world's most inequitable, how a child fares in the Americas

Graph 1



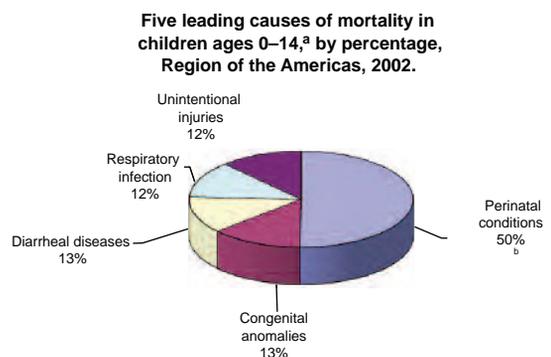
Source: Economic Commission for Latin America and the Caribbean. Statistical Yearbook for Latin America and the Caribbean, 2005, Table 1.4.2: Infant mortality rate, by sex, by five-year periods. Santiago, Chile: United Nations; 2006. Available at: http://websie.eclac.cl/anuario_estadistico/anuario_2005/eng/index.asp. Accessed on 24 February 2009.

Graph 2



Source: Pan American Health Organization. Neonatal Health in the Context of Maternal, Newborn, and Child Health for the Attainment of the Millennium Development Goals of the United Nations Millennium Declaration. Washington, DC: PAHO; 2006. (CD47/12). Available at: <http://www.paho.org/English/GOV/CD/CD47-12-e.pdf>. Accessed on 25 February 2009.

Graph 3

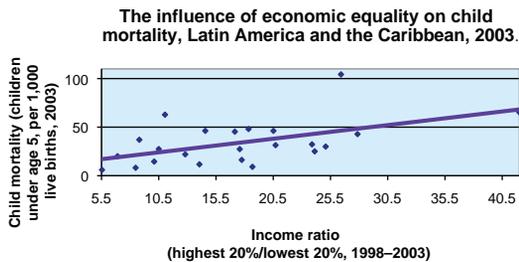


^a N = 251,144.

^b Includes low birthweight, birth asphyxia, and other conditions.

Source: World Health Organization. Global burden of disease estimates. Geneva: WHO; 2004.

Graph 4



Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2003. Washington, DC: PAHO; 2003.

largely depends on the social and economic circumstances into which that child is born.

Policy Actions—Continuing the Successful Trend of Improved Quality of Life for All Children in the Americas

- In recognition that families are the front-line caregivers to children, increase their access to adequate health care and promote their full participation in community health promotion and education activities.
- Incorporate skilled attendance at birth into Health for All strategies.
- Ensure that all girls and boys, whether indigenous, of Afro descent, or of another ethnicity, from all economic backgrounds, are brought into Health for All strategies and the continuum of care practices promoted by governments, nongovernmental organizations, and international organizations.

Related Millennium Development Goals

Goal 1: Eradicate extreme poverty and hunger

Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger

Goal 3: Promote gender equality and empower women

Target 4: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015

Goal 4: Reduce child mortality

Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate

Goal 5: Improve maternal health

Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio

1. Economic Commission for Latin America and the Caribbean. Statistical Yearbook for Latin America and the Caribbean, 2005. Santiago, Chile: United Nations; 2006.
2. Pan American Health Organization. Neonatal Health in the Context of Maternal, Newborn, and Child Health for the Attainment of the Millennium Development Goals of the United Nations Millennium Declaration. Washington, DC: PAHO; 2006. (CD47/12). Available at: <http://www.paho.org/English/GOV/CD/CD47-12-e.pdf>. Accessed on 25 February 2009.
3. Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2006. Washington, DC: PAHO; 2006.
4. Economic Commission for Latin America and the Caribbean. Statistical Yearbook for Latin America and the Caribbean, 2005. Santiago, Chile: United Nations; 2006.
5. Pan American Health Organization. Neonatal Health in the Context of Maternal, Newborn, and Child Health for the Attainment of the Millennium Development Goals of the United Nations Millennium Declaration. Washington, DC: PAHO; 2006. (CD47/12). Available at: <http://www.paho.org/English/GOV/CD/CD47-12-e.pdf>. Accessed on 25 February 2009.



2 A Safe and Healthy Environment Fosters Good Health

Public investment in children's environmental health improves the lives of children while securing their future and the future of the Americas.

In the Americas, approximately 98,000 children die every year before their fifth birthday because they lack a life-sustaining environment. Nearly two million years of healthy life are lost among children up to age 15 in the Americas due to factors related to poor environmental quality.¹ The first five years are key to a healthy life. Mortality data show that the highest number of deaths in children from environmental-related diseases occur in the 0–4 age group and that the primary causes are acute diarrheal diseases and acute respiratory infections.²

Areas where there is high mortality both from acute diarrheal diseases and acute respiratory infections also tend to have lower levels of water quality, limited access to sanitation services, poorer quality housing, and crowded living conditions, all of which are recognized factors for these diseases.

Source: Pan American Health Organization, Health Analysis and Statistics Unit. Regional Core Health Data Initiative; Indicators Glossary. Washington, DC: PAHO; 2007.



In the Region's industrialized nations, children face environmental exposures that lead to asthma, neurological and behavioral disorders, and cancers. Children in developing countries of the Region not only face these "modern" risks, but more traditional ones as well, such as those from indoor smoke, poor water quality, lack of sanitation, disease vectors, and other infrastructure-related diseases.

Poor children need special attention in every country of the Americas. They tend to live in less safe and more polluted and degraded environments and to suffer from poor nutrition and inadequate defense systems that are unable to fight off disease and infection. Poor children tend to have lower quality schools and less access to adequate medical care. They also tend to become child laborers at an early age to secure needed income and help support themselves or their families.

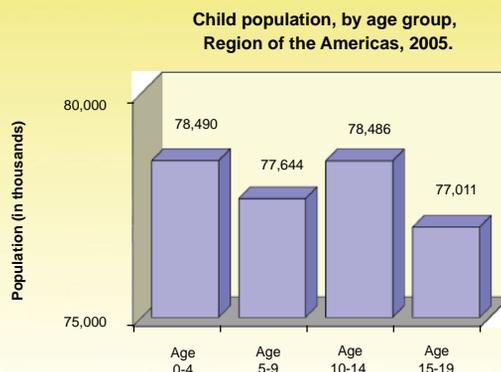
More than 311 million children under the age of 19 live in the Region of the Americas.

As they grow, children's health will be dependent upon their living in a sustainable environment that provides access to adequate sanitation, clean water, and fresh air—both indoors and outdoors—and safety from manmade and natural disasters. Their communities, whether urban or rural, must also offer basic safety from war and violence, access to nearby schools and health care of acceptable quality, and opportunities to improve their lives and gain a hold on the future.



The World Health Organization estimates that worldwide, nearly one-quarter of all illnesses and deaths in children under age 15 are due to environmentally related diarrheal diseases, malaria, and respiratory infections. In the Americas, these conditions play a major role in the needless and preventable deaths of children each year

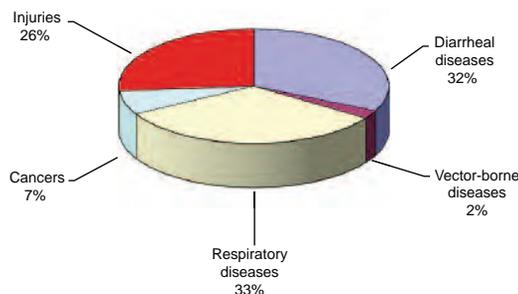
Graph 5



Source: United Nations, Department of Economic and Social Affairs, Population Division. World Population Prospects: The 2006 Revision. Highlights. New York: United Nations; 2007 (ESA/P/WP.202). Available at: http://www.un.org/esa/population/publications/wpp2006/WPP2006_Highlights_rev.pdf. Accessed on 18 March 2009.

Graph 6

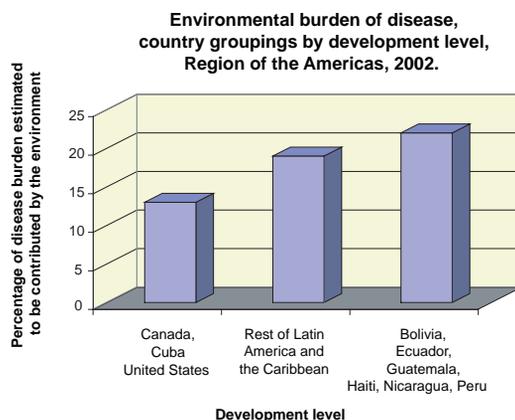
Proportionate mortality of children under age 14^a from diseases related to poor environmental conditions, by disease type and percentage, Region of the Americas, 2002.



^a N = 144,837.

Source: World Health Organization. Global burden of disease estimates. Geneva: WHO; 2004.

Graph 7



Source: Prüss-Üstün A, Corvalán C. Preventing disease through healthy environments: towards an estimate of the environmental burden of disease. Geneva: World Health Organization; 2006. Available at: http://www.who.int/quantifying_ehimpacts/publications/preventingdisease.pdf. Accessed on 2 June 2009.

Policy Actions—Improving the Environment for the Sake of the Children

- Complete national profiles on children's environmental health.
- Develop national action plans on children's environmental health to target investments.
- Support education and information campaigns for communities, schools, and health care workers.
- Collect and report indicators on children's environmental health, in support of regional and global efforts in this area.
- Use data and indicators to further target policies on and investments in children's environmental health.

All of the countries of the Americas could reduce disease burden through investments that improve the environment.

Related Millennium Development Goals

Goal 6: Combat HIV/AIDS, malaria and other diseases

Target 8: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

Goal 7: Ensure environmental sustainability

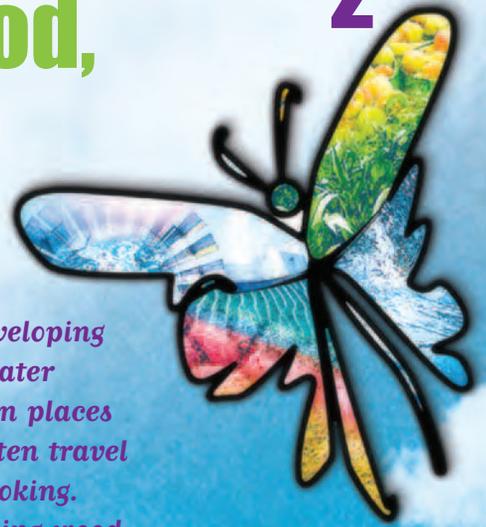
Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation

Goal 8: Develop a global partnership for development

Target 17: In cooperation with pharmaceutical companies, provide access to affordable, essential drugs in developing countries

1. Prüss-Üstün A, Corvalán C. Preventing disease through healthy environments: towards an estimate of the environmental burden of disease. Geneva: World Health Organization; 2006. Available at: http://www.who.int/quantifying_ehimpacts/publications/preventingdisease.pdf. Accessed on 2 June 2009.
2. Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2006. Washington, DC: PAHO; 2006.

All Children Need Food, Water, Sanitation, and Clean Air



The poorest countries, or the poorest areas within developing countries, typically lack critical infrastructure, such as water delivery, waste disposal, and energy systems. This situation places additional burdens on poor families. Its members must often travel long distances by foot to collect water for drinking and cooking. When energy is not available from means other than burning wood, coal, or dung, it is less likely that people will boil water for their own safety. Without consistent energy sources, keeping and preparing safe food is a major challenge. Time that could be spent on nurturing, income generation, or learning activities is instead dedicated to securing the basic elements for survival.

Middle- and high-income nations also face challenges, such as providing equal access to safe and sufficient food, water, and sanitation, and consistent and clean energy sources. Even in wealthy countries, there are thousands of poor people who suffer from unhealthy diets and lack affordable energy.



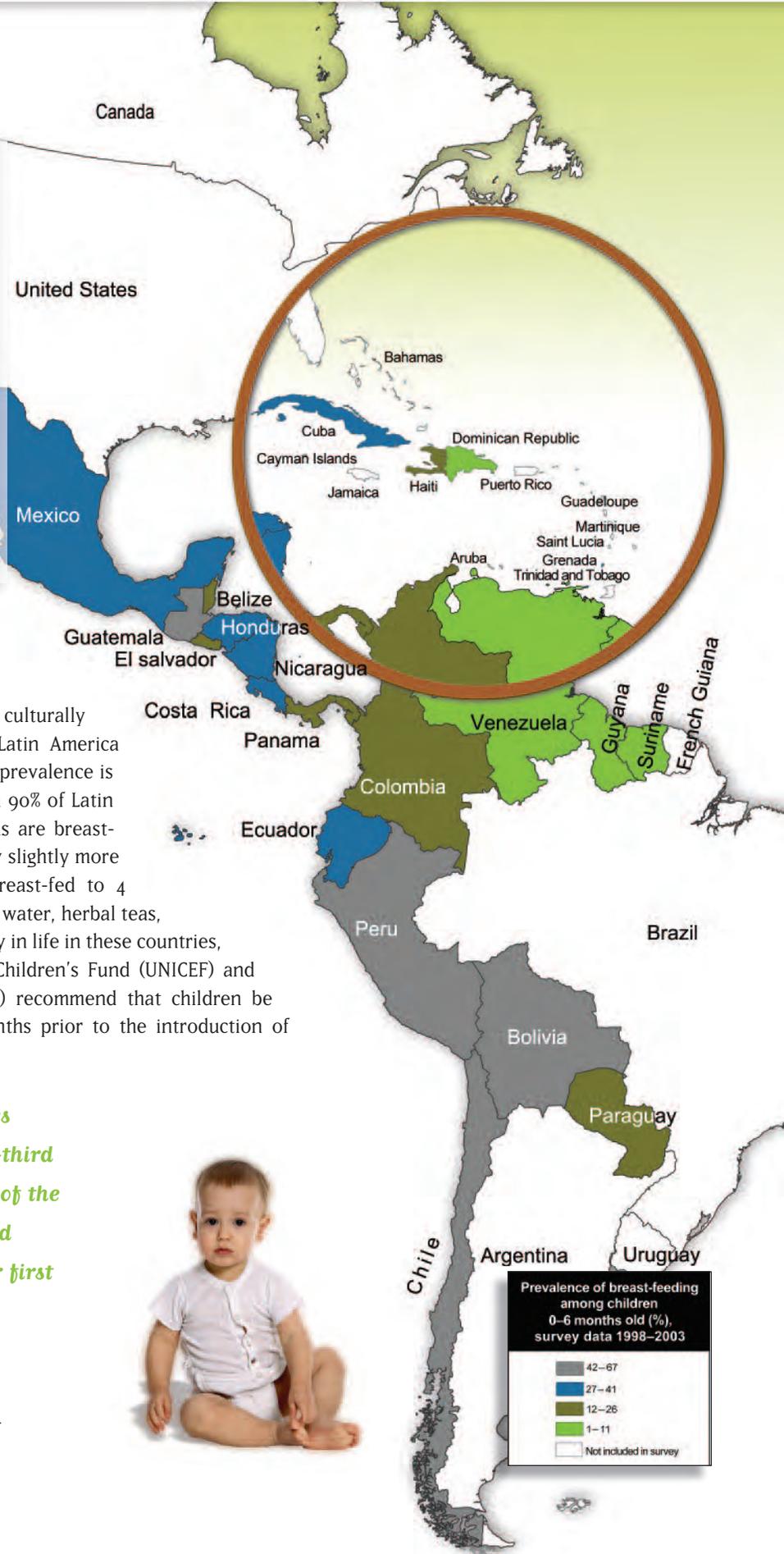
3 Surviving the First Months

Exclusive breast-feeding during the first six months of life, and continued breast-feeding together with the provision of safe and sufficient complementary foods until age two or beyond, provide a child with the best possible start in life.

While breast-feeding is a culturally accepted practice in Latin America and the Caribbean, its prevalence is far from optimal. While more than 90% of Latin American and Caribbean newborns are breast-fed for the first 15 days of life, only slightly more than one-third are exclusively breast-fed to 4 months of age. The introduction of water, herbal teas, and solid foods tends to occur early in life in these countries, even though the United Nations Children's Fund (UNICEF) and World Health Organization (WHO) recommend that children be exclusively breast-fed for six months prior to the introduction of complimentary foods.

On average, for countries reporting, less than one-third of infants in the Region of the Americas were breast-fed exclusively through their first six months of life.

Source: UNICEF Global Database on Breastfeeding.



The importance of breast-feeding to the health and survivability of infants is well-established. During the 1980s, WHO assumed a leadership role in combating unethical marketing practices by companies that sold breast-milk substitutes in developing countries. The tactics included clever and attractive media advertising, aggressive promotion of infant formula products in the academic community, the provision of free samples to pediatricians, and manipulation of local culture and superstition. As a result, mothers received inadequate counseling and inaccurate information from health care providers regarding the superior nutritional benefits of breast milk.

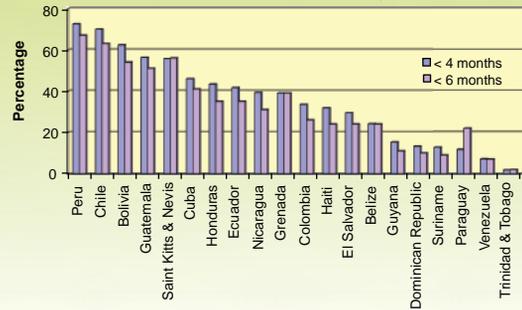
WHO's International Code of Marketing of Breast-milk Substitutes (1981) that came as a reaction to these private sector abuses aimed "to contribute to the provision of safe and adequate nutrition of infants and young children, and in particular to promote breast-feeding . . .".¹ This Code and its guidelines are considered minimum requirements to protect the health of infants and young children. Data suggest that in developing countries, during the 1990–2000 period, exclusive breast-feeding levels rose from 46% to 53% among infants younger than four months and from 34% to 39% in infants under six months of age.²

Breast milk alone is the only food and drink an infant needs for the first six months.³ Infants exclusively breast-fed for six months have a lower incidence of gastrointestinal infections compared to infants who are not.

In 1990, public policy-makers from more than 30 countries signed the Innocenti Declaration on the Protection, Promotion, and Support of Breast-feeding, which set forth additional action strategies and operational targets to strengthen breast-feeding promotion efforts on a national scale. This was followed by the 1991 launching of the Baby-friendly Hospital Initiative (BFHI), a global effort by UNICEF and WHO to improve the role of maternity care services and facilities, whether free-standing or in a hospital, in enabling mothers to breast-feed babies for

Graph 8

Exclusive breast-feeding among children aged 4-6 months, selected countries of the Americas, 1998-2003.



Source: Nutrition data. Healthy Life Course, Family and Community Health, Pan American Health Organization, 2011.

How breast-feeding benefits children's health

- It provides the best available nutrition for the first six months of life.
- It promotes physical growth and mental development.
- It provides immunoglobulins, antibodies, and antioxidants and helps reduce the risk of diarrhea and acute respiratory and ear infections.
- It may reduce the risk of obesity and chronic diseases later in life.
- It temporarily reduces the mother's fertility and extends the period between pregnancies, a factor in child survival.

1. World Health Organization. International Code of Marketing of Breast-milk Substitutes. Geneva: WHO; 1981.
 2. Labbok M. Breastfeeding: a woman's reproductive right. Int J Gynaecol Obstet 2006;94(3):277–86.
 3. United Nations Children's Fund. Facts for Life. New York: UNICEF; 2002. Available at: <http://www.unicef.org/ffi/pdf/facts-forlife-en-full.pdf>. Accessed on 3 March 2009.

the best start in life. Since the BFHI's launching, the network of baby-friendly facilities has grown to include more than 20,000 facilities in more than 150 countries across the globe.⁴

Policy Actions—Promoting Exclusive Breast-feeding through the First Six Months of Life

- Implement and enforce the International Code of Marketing of Breast-milk Substitutes.
- Establish and/or strengthen multisectoral breast-feeding promotion committees and their coordination at the national level, as called for in the Innocenti Declaration on the Protection, Promotion, and Support of Breast-feeding, to increase the number of women who exclusively breast-feed their children during the first six months of life.
- Strengthen support for maternity facilities, health workers, and community midwives in promoting breast-feeding and in helping new mothers overcome all barriers to its practice.

Related Millennium Development Goals

Goal 4: Reduce child mortality

Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate

Goal 5: Improve maternal health

Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio

Factors that influence breast-feeding initiation and duration

- mother's socioeconomic status
- urban versus rural residence
- modern versus traditional beliefs and practices
 - other cultural factors
 - family's migratory patterns
 - race and/or ethnicity
 - maternal birthplace
 - mother's level of schooling
 - maternal age
- mother's employment status and type of work performed
- family and media influence
 - maternal level of stress
 - onset of lactation
 - mode of delivery
- use of anesthesia/analgesia during labor and delivery
- time elapsed between delivery and the first feeding
- newborn "rooming-in" with mother after delivery
 - maternal knowledge about breast-feeding
 - maternal confidence
 - breast-feeding support
- nipple soreness and breast-feeding difficulties
 - obesity
 - mother's body image
- mother's previous experience with breast-feeding

4. World Health Organization. Baby-friendly Hospital Initiative. Available at: <http://www.who.int/nutrition/topics/bfhi/en/index.html>. Accessed on 4 March 2009.



4 Children Need Safe and Sufficient Food

Adequate and balanced nutrition is critical to the healthy growth and development of children

María called her four-year-old son Harold a picky eater. He would only eat rice and beans, day in and day out. Fortunately, the balanced proteins provided him with a sufficient calorie intake and filled him up. He did not go hungry. If he continued to lack other important foods in his diet, though, Harold would never reach an adequate height for his age group. He might also suffer from other nutritional deficiencies.

There are sufficient calories available to support nutrition across the Americas, with the majority of countries and territories reporting that 100% or more of the recommended daily calories are available.

In the Americas, few children suffer from acute malnutrition. In its 2005 annual report on *The State of the World's Children*,¹ the United Nations Children's Fund reported that less than 2% of the under five-year old population in the Americas was determined to be suffering

Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2003. Washington, DC: PAHO; 2003.



Effects of malnutrition on children's health

- Underweight
- Stunting
- Vitamin deficiency

Table 2
Mortality in children from selected nutritional deficiencies, Region of the Americas, 2002.

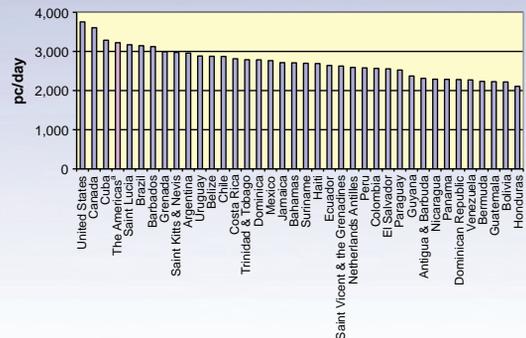
Deficiency	Consequence	Number of deaths
Protein-energy	Stunting and wasting	41,940
Iron	Anemia (which in turn causes fatigue, negatively impacts learning, increases vulnerability to other diseases)	15,437
Vitamin A	Blindness, susceptibility to infections	6,000 (est.)
Iodine	Goiter, infant mortality, mental retardation, decreased fertility rate	6,000 (est.)

from nutritional wasting, defined as being 10% or more underweight. Still, some of the most impoverished countries in the Region reported wasting levels as high as 6%.

Stunted growth, which indicates chronic malnutrition, is a concern in the Region. An average 18% of children under the age of five in Latin America and the Caribbean suffer from stunting (low height-for-age). Many other children are at nutritional risk, lacking a diet containing sufficient amounts of fruits and vegetables that provide important vitamins and minerals, and foods that have been safely stored and prepared. In some countries, the other end of the nutritional spectrum affects children: overweight and obesity.

Graph 9

Daily per capita calories availability in the Americas, selected countries and territories and Regionwide, 2006.



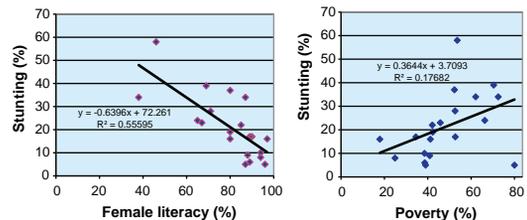
^a 2005 data.

Sources: Pan American Health Organization. Health Analysis and Statistics Unit (HA). Regional Core Health Data Initiative; Indicators Glossary. Washington, DC: PAHO; 2006.

Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2007. Washington, DC: PAHO; 2007.

Graph 10

Correlation between female literacy, poverty, and stunting, Region of the Americas, latest data available (1990–2002).



Sources: United Nations Children's Fund. The State of the World's Children 2005; Childhood under Threat. UNICEF: New York; 2005.

Economic Commission for Latin America and the Caribbean. Statistical Yearbook for Latin America and the Caribbean, 2005. Table 1.6.1: Poor and indigent population urban and rural areas. Santiago, Chile: United Nations; 2006. Available at: http://websie.eclac.cl/anoario_estadistico/anoario_2005/datos/1.6.1.xls. Accessed on 7 May 2009.

United Nations Children's Fund. The State of the World's Children 1996. Table 6: Economic indicators (poverty data, rural only). UNICEF: New York; 1996. Available at: <http://www.unicef.org/sowc96/swc9616x.htm>. Accessed on 7 May 2009.

Poverty and malnutrition track each other nearly one-for-one in the Americas. As the percentage of the population living in poverty decreases, so does the percentage of children suffering from stunting. Female literacy has an inverse relationship with these other two factors. Among women who are better educated, poverty and stunting incidences are lower.

Food preparation is also important to ensure safety and good health. Lack of access to safe drinking water and insufficient water to support good hygiene negatively impact food safety. Without electricity, refrigerators cannot operate, thus presenting a challenge for the safe storage of perishable food-stuffs. Fresh foods that are not properly chilled, kept for too long, or left uncovered allow dangerous bacteria to grow and reproduce. Contaminated foods cause foodborne diseases, which in turn are characterized by diarrhea and vomiting, and can lead to dehydration. Repeated bouts with these diseases may lead to chronic nutritional deficiencies and malnutrition.

Policy Actions—Providing Children with the Nutrition They Need

- Continue infrastructure investments to bring water, sanitation, and energy to households throughout the Americas. These actions, in turn, will improve food safety.
- Develop and implement food distribution programs for undernourished children.
- Promote the creation of food fortification programs to facilitate children's intake of adequate quantities of iron, Vitamin A, Vitamin B, and iodine to support good health.
- Develop and disseminate education programs to teach parents and caregivers about safe food storage and preparation.

Related Millennium Development Goals

Goal 1: Eradicate extreme poverty and hunger

Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger

Goal 3: Promote gender equality and empower women

Target 4: Eliminate gender disparity in primary and secondary education preferably by 2005 and in all levels of education no later than 2015

Goal 4: Reduce child mortality

Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate

1. United Nations Children's Fund. The State of the World's Children 2005: Childhood under Threat. UNICEF: New York; 2005.



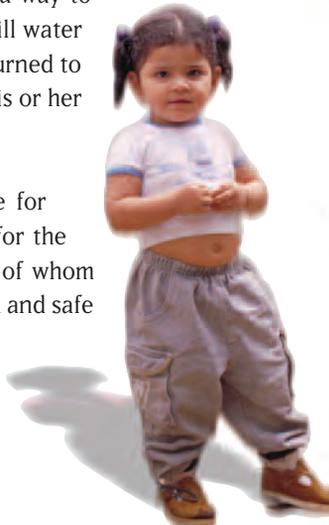
5 Giving Children Clean Water

Improving the quality of water services, especially in rural areas, is one of the most important public investments that developing countries can make to safeguard children's health.

"Can I have a drink of water?" asks the thirsty child as he comes in the house after playing outside.

In 91% of households in Latin America and the Caribbean,¹ a parent can pour a glass of water with a pretty good feeling that it is safe. But what does the parent do who does not have this luxury? Did the mother boil the water last night after fetching it or was there not enough firewood left to do this? Does the home have a way to store the family's water properly? Was there still water in the nearby stream or had this water source turned to mud? Will the glass of water this parent gives his or her child cause diarrhea?

A simple request for water that so many take for granted can bring life-or-death consequences for the 50 million people in the Americas—two-thirds of whom live in rural areas—who still lack access to clean and safe drinking water. In fact, for most of the 14,600 children of the Americas who died from acute



Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2007. Washington, DC: PAHO; 2007.

Effects of unsafe drinking water on children's health

- Acute diarrheal diseases
 - Cholera
 - Typhoid fever
 - Hepatitis A

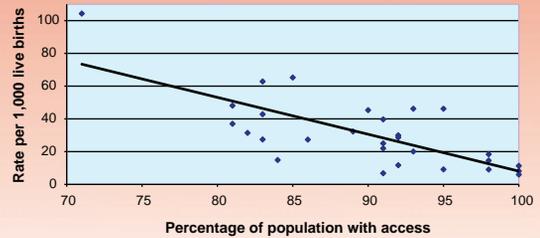
diarrheal diseases in 2004, drinking unsafe water was probably their killer. Without a doubt, access to water and basic sanitation services is a basic requirement for good health and child survival. Parasites and diarrhea are a primary cause of child illness in many parts of Latin America and the Caribbean.

There is some good news, however. In recent years, fewer children have died from diarrheal diseases, including cholera, than in the past. Investments in safe water, improved access to sanitation and adequate sewage disposal, and access to sufficient water to support basic hygiene have significantly decreased morbidity and mortality from diarrheal diseases in the Region. The improved availability of oral rehydration therapy has also worked to decrease the number of children who die from diarrheal diseases. Between 1990 and 2004, the Latin American and Caribbean population grew from nearly 444 million to some 554 million people. Because of increased attention to and investment in providing access to safe water, the proportion of the population with access to potable water was still able to grow during this population surge, reaching a regional average of 91% coverage of improved sources of water in 2004.¹

Access to improved sources of drinking water will likely improve the chances of a child's survival. As access to these services declines, the proportion

Graph 11

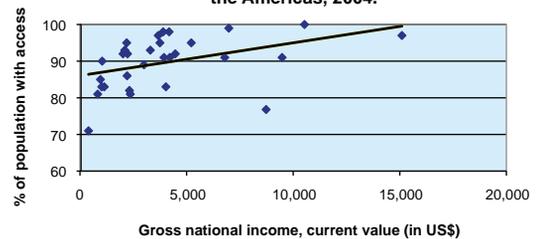
Access to improved sources of drinking water and under-5 mortality rate, Region of the Americas, 2002–2004.



Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2006. Washington, DC: PAHO; 2006.

Graph 12

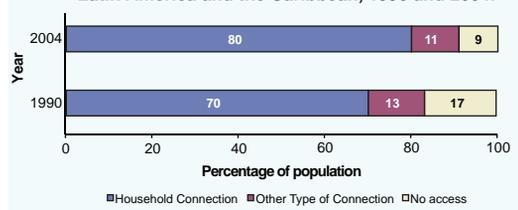
Correlation between gross national income and access to improved sources of water, Region of the Americas, 2004.



Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2006. Washington, DC: PAHO; 2006.

Graph 13

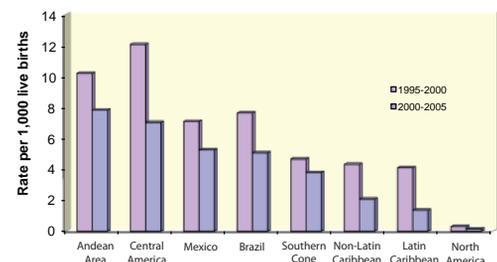
Access to improved sources of drinking water, Latin America and the Caribbean, 1990 and 2004.



Source: World Health Organization and United Nations Children's Fund, Joint Monitoring Program for Water Supply and Sanitation, 2006.

Graph 14

Acute diarrheal diseases mortality rate, children under age 5, by subregion, Region of the Americas, 1995-2005.



Source: Organización Panamericana de la Salud. Iniciativa Regional de Datos Básicos en Salud. Sistema Generador de Tablas. Available at: <http://www.paho.org/Spanish/sha/coredata/tabulador/newTabulador.htm>. Accessed on 9 March 2009.

of children who may die from acute diarrheal diseases before age five increases.

With continued investment in the water services sector, the countries of Latin America and the Caribbean will remain on track to meet the 2015 Millennium Development Goal target for access to improved sources of water. In fact, according to the Inter-American Development Bank, an investment in water services across Latin America and the Caribbean totaling only US\$ 1 billion per year in urban areas and US\$ 100 million annually in rural areas will allow this entire region to meet the 2015 Millennium Development Goal target for access to improved sources of drinking water.²

Policy Actions—Continuing the Positive Trend of Increasing Access to Safe Water

- Provide access to improved water sources for all children, including a focus on safe water provision at all schools.
- Increase access to disinfected water sources and ensure continuity of services.
- Educate schoolchildren about proper hygiene.
- Protect all natural water resources, remembering they are the source of water for human consumption.
- Promote home-based safe water treatment in rural zones where public water services are not yet available, so that all children have access to safe drinking water in their homes.

Related Millennium Development Goals

Goal 4: Reduce child mortality

Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate

Goal 7: Ensure environmental sustainability

Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation

Goal 8: Develop a global partnership for development

Target 17: In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries

1. World Health Organization and United Nations Children's Fund Joint Monitoring Program for Water Supply and Sanitation. Meeting the MDG Drinking Water and Sanitation Target: the Urban and Rural Challenge of the Decade. WHO and UNICEF: Geneva; 2006. Available at: http://www.who.int/water_sanitation_health/monitoring/jmpfinal.pdf. Accessed on 1 June 2009.

2. Inter-American Development Bank. Las metas del milenio y las necesidades de inversión de América Latina y el Caribe. Document presented at the Financing Water and Sanitation Services: Options and Restraints international conference. 1–11 November 2003, Washington, DC.



6

Children Deserve Adequate Sanitation Services

A child's lack of access to a flush toilet connected to a sewer increases the risk of disease and compromises opportunities for a healthy and hygienic start in life.

Household connections to a sewer or septic system, pour-flush toilets, or pit latrines that separate human waste from human contact can make a world of difference in the quality of a child's environment. These technologies help prevent the spread of disease, offer privacy and dignity, and provide a healthy and hygienic start for youngsters.

In every country of Latin America and the Caribbean, marked progress in sanitation coverage has taken place since 1990, with some of the poorest countries showing the highest percentage gain. Fifteen countries in the Region have succeeded in providing improved sanitation services to 90% or more of urban populations. In fact, only three countries in the Region have not attained at least a 70% coverage level for improved sanitation facilities in cities. Noteworthy is the success of Caribbean countries in providing sanitation services throughout their island states. Given the high importance of attracting tourism revenue to this subregion, sanitation becomes a needed investment.

Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2007. Washington, DC: PAHO; 2007.



Effects of contact with human fecal waste on children's health

- Acute diarrheal diseases
- Cholera
- Typhoid
- Hepatitis A

Bringing rural sanitation into balance with urban settings remains a challenge; only 14 countries or territories are providing 90% or more access to improved sanitation services. Twenty-one have not yet reached the 70% sanitation services mark in rural areas. Overall, the rural poor in Latin America have less access to improved sanitation services than their urban counterparts. This underprivileged sector also suffers from less access to improved drinking water sources and greater malnutrition among children.

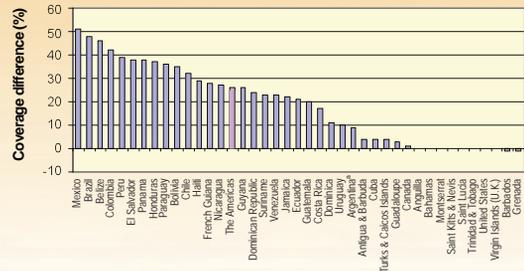
In nine countries or territories in the Americas, one-half of the rural population does not have access to sanitation services. In only 14 countries or territories does 90% or more of the rural population have access to improved sanitation facilities.

Even where collected, most of the sewage waste in Latin America and the Caribbean is flushed directly into rivers, lakes, and oceans without any treatment whatsoever. Not only does this pollute the environment, creating unhealthy and unpleasant settings, but the same water polluted by sewage is often used as a source for drinking water. Thus the cycle of drinking water, contaminating water, and drinking the water again continues.

It is fair to state that most of the countries in the Americas need to increase investments in public sanitation infrastructure. The general population's health will benefit as a

Graph 15

Urban versus rural coverage of improved sanitation facilities in the Americas, selected countries and territories and Regionwide, 2006.



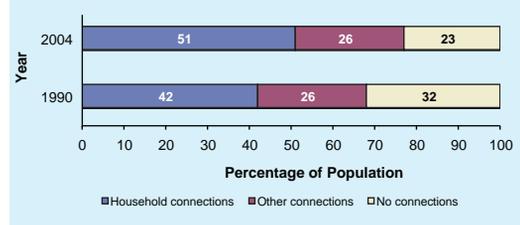
^a 2004 data.

Sources: Pan American Health Organization, Health Analysis and Statistics Unit. Regional Core Health Data Initiative; Indicators Glossary. Washington, DC: PAHO; 2007.

Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2007. Washington, DC: PAHO; 2007.

Graph 16

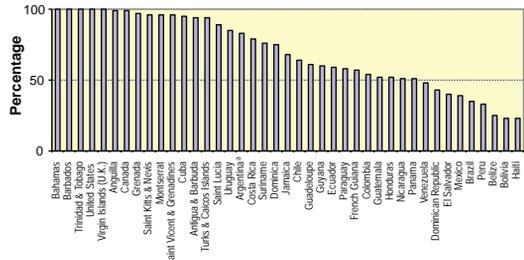
Access to basic sanitation services, Latin America and the Caribbean, 1990 and 2004.



Source: World Health Organization and United Nations Children's Fund, Joint Monitoring Program for Water Supply and Sanitation.

Graph 17

Percentage of rural population with access to improved sanitation services, selected countries and territories, Region of the Americas, 2006.



^a 2004 data.

Sources: Pan American Health Organization, Health Analysis and Statistics Unit. Regional Core Health Data Initiative; Indicators Glossary. Washington, DC: PAHO; 2007.

Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2007. Washington, DC: PAHO; 2007.

result: removing human waste from human contact reduces the risk of disease, improves the survivability of children, and increases equity across all sectors of society.

Policy Actions—Increasing Access to Sanitation Services

- Make and follow through on political commitments to provide improved sanitation services equally to all rural and urban populations.
- In communities where there is little or no sanitation infrastructure, provide residents with adequate education regarding the safe disposal of wastewater and sewage and proper hygienic practices to safeguard health and prevent disease.
- Apply appropriate technologies to collect and treat wastewater that take into account local environmental conditions and are respectful of residents' socio-cultural values.
- Develop sanitation provision policies that are sustainable, allocating sufficient human and financial resources to develop systems that protect the environment, break the cycle of disease, and improve quality of life at the household level.

Related Millennium Development Goals

Goal 2: Achieve universal primary education

Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

Goal 4: Reduce child mortality

Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate

Goal 7: Ensure environmental sustainability

Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation



7 Clean Indoor Air Saves Children's Lives

Individuals, communities, and governments can and should join forces to improve the quality of indoor air in homes, schools, and other places where children spend a lot of their time.

In Latin America and the Caribbean, the use of open fires, unsafe fuels, and inefficient stoves for cooking and heating purposes not only cause air pollution, but are a primary threat to children's health. Approximately one-quarter of the population in these countries depends on biomass fuels, such as firewood, animal dung, and crop residues, to prepare food and to keep their dwellings warm. The Caribbean islands, in general, exhibit a higher proportion of biomass fuel use, with one country reporting a greater than 95% dependency and several others hovering around 50%.¹ Exposure to other indoor air pollutants—including environmental tobacco smoke, household cleaning and disinfectant products, fungi, mold, dust, and animal dander—also presents a serious concern to child health. Not surprisingly, children in the poorest households and in the poorest countries of the Americas suffer the most from indoor air pollution, both in terms of exposure and lack of access to adequate health care.



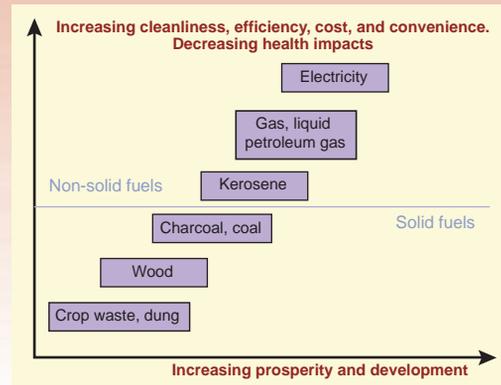
Source: Desai MA, Mehta S, Smith KR. Indoor smoke from solid fuels: Assessing the environmental burden of disease at national and local levels. Geneva: World Health Organization; 2004 (WHO Environmental Burden of Disease Series No. 4).

Table 3
Impacts of indoor air pollution on children's health.

Health outcome	Evidence	
<ul style="list-style-type: none"> Acute lower respiratory infections (children five years of age) Chronic obstructive pulmonary disease (adults) Lung cancer (coal) 	<p>Between 10–20 studies</p> <p>Few measured exposure</p> <p>Confounding problematic</p>	Strong
<ul style="list-style-type: none"> Tuberculosis Cataract Upper airway cancer Asthma 	Several consistent studies (more conflicting for asthma)	Moderate
<ul style="list-style-type: none"> Low birthweight Perinatal mortality Otitis media 	Very few studies, support from environmental tobacco smoke and ambient air pollution studies	Weak
<ul style="list-style-type: none"> Cardiovascular disease 	No studies, but suggestive	

Source: World Health Organization. Indoor Air Pollution and Household Energy Monitoring: Workshop Resources. Geneva: WHO; 2005. Available at: <http://www.who.int/entity/indoorair/publications/workshopresources.pdf>. Accessed on 8 May 2009.

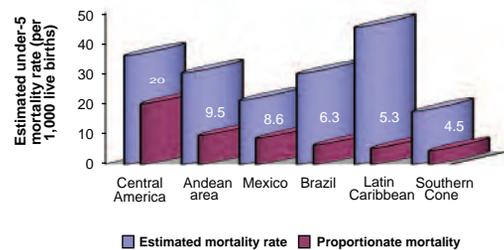
Figure 1



Source: World Health Organization. Indoor Air Pollution, Health and the Burden of Disease. Indoor Air Thematic Briefing 2. Available at: <http://www.who.int/indoorair/info/briefing2.pdf>. Accessed on 11 March 2009.

Graph 18

Under-5 mortality rate and proportionate mortality due to acute respiratory infections (%), selected subregions, Latin America and the Caribbean, 2005.



Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2007. Washington, DC: PAHO; 2007.

As economic status improves, reliance on "dirty" fuels decreases. When countries invest in energy infrastructure, homes, communities, the nation, and the Region as a whole benefit from increased cleanliness and improved economic efficiency.

Indoor air pollution is a particular risk to younger children due to the amount of time they spend indoors. Typically, newborns and infants stay close by their mothers, sometimes even tied to their mother's back while she prepares food over an open fire. Indoor air

pollution is considered a major contributor to acute respiratory infections in children, particularly in the Andean and Central American countries.²

Recent data from the Americas indicates that 6.2% of all registered deaths in children under five years of age were due to acute respiratory infections.³ 1.17 million cases and 76,000 deaths from lower respiratory infections are thought to be caused by environmental factors.⁴

Policy Actions—Integrating Clean Indoor Air into Healthy Housing Initiatives

- Incorporate clean indoor air provisions in healthy housing programs to harmonize economic, technical, and housing design factors, which at the same time promote disease prevention and environmental sustainability and are respectful of cultural values.
- Improve the type of fuel used for cooking and heating, opting for cleaner, more efficient, and environmentally sustainable fuels, and investing in energy infrastructure to the degree feasible to provide cleaner and more efficient fuels for rural and urban communities alike.
- Improve stoves and open fires for cooking and heating, enabling them to vent outdoors and thus to significantly decrease indoor pollution.
- Promote micro-enterprises or cooperatives that develop and sell upgraded ovens and provide assistance to families in upgrading households to improve ventilation systems.
- Promote community-level education on indoor smoke and its dangers, with special attention on marginalized communities, to build their trust and capacity to develop feasible mechanisms to protect children from exposure to indoor smoke and pollutants.

Related Millennium Development Goals

- Goal 4: Reduce child mortality**
Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate
- Goal 6: Combat HIV/AIDS, malaria, and other diseases**
Target 8: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases
- Goal 7: Ensure environmental sustainability**
Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation
- Goal 8: Develop a global partnership for development**
Target 17: In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries

1. United Nations. Millennium Development Goals Indicators. Available at: http://unstats.un.org/unsd/mi/mi_series_results.asp?rowID=712&fID=r15&cglD=419. Accessed on 11 March 2009.
2. Smith KR, Samet JM, Romieu I, Bruce N. Indoor air pollution in developing countries and acute lower respiratory infections in children. *Thorax* 2000;55:518–32.
3. Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2008. Washington, DC: PAHO; 2008.
4. Prüss-Üstün A, Corvalán C. Preventing disease through healthy environments: towards an estimate of the environmental burden of disease. Table A2.3: Deaths attributable to environmental factors, by disease and mortality stratum, for WHO regions in 2002. Table A2.4: Burden of disease (in DALYs) attributable to environmental factors, by disease and mortality stratum, for WHO regions in 2002. Geneva: World Health Organization; 2006. Available at: http://www.who.int/quantifying_ehimpacts/publications/preventingdisease.pdf. Accessed on 2 June 2009.

Children Thrive in a Nurturing Environment

Two of the five leading causes of death in Latin American and Caribbean children are triggered or exacerbated by environmental conditions. Children who live with air pollution; drink unsafe water; are exposed to lead, mercury, and pesticide contamination; are prey to disease vectors; or mke their living off garbage dumps cannot be healthy. Moreover, they have difficulty learning and are less likely than healthy children to reach their full potential. Improving children's environmental health will not only improve the health and future of children in the Americas, it also will secure economic sustainability and future prosperity for the Region.



Children and those around them must be protected from exposure to tobacco smoke.

Dr. David Kessler, former Commissioner of the United States Food and Drug Administration, famously called smoking a "pediatric disease," highlighting the fact that the vast majority of smokers begin to smoke while still in their teens or even younger. Yet still today, some countries in the Americas post youth smoking rates at 1/3 or higher and in many countries, 10%–20% of youth between ages 13 and 15 smoke. Smoking is one of the most dangerous practices a child can acquire. Even when used according to directions, smoking is harmful to health and well-being and often results in death.

Smoking has been dubbed "the pediatric disease," because most smokers begin this unhealthy habit when they are teenagers or younger.

Cigarette use, however, is not the only way that children suffer from exposure to tobacco



Source: Pan American Health Organization. Global Youth Tobacco Survey (GYTS), Pan American Tobacco Information Online System (PATIOS). Washington, DC: PAHO; 2006. (<http://www.paho.org/tobacco/PatiosHome.asp>). Accessed at: <http://www.cdc.gov/tobacco/global/GYTS/factsheets/paho/factsheets.htm> on 10/11/2009.

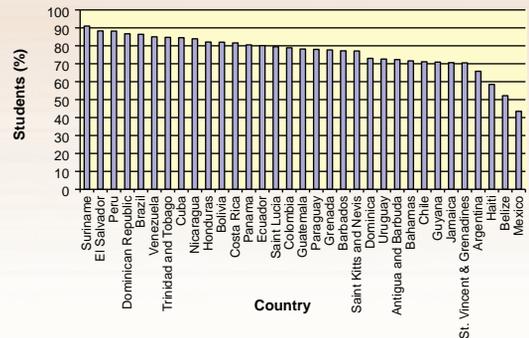


Effects of maternal smoking or exposure to environmental tobacco smoke on children's health

- Prenatal**
- Premature birth**
- Low birthweight**
- In childhood**
- Sudden Infant Death Syndrome (SIDS)**
- Middle-ear infections**
- Bronchitis**
- Pneumonia**
- Onset of asthma and exacerbation**
- Reduced lung function**

Graph 19

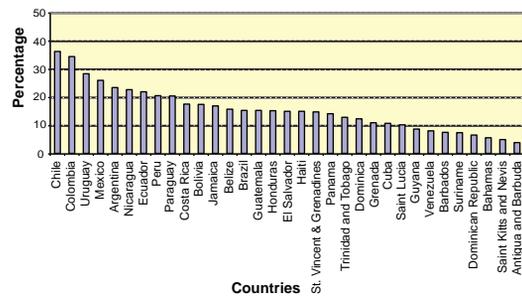
Percent of students 13–15 years old who support smoking bans in public places, Latin America and the Caribbean, 2001–2005.



Source: Pan American Health Organization. Global Youth Tobacco Survey (GYTS), Pan American Tobacco Information Online System (PATIOS). Washington, DC:Pan American Health Organization; 2006. (<http://www.paho.org/tobacco/PatiosHome.asp>). Accessed at: <http://www.cdc.gov/tobacco/global/GYTS/factsheets/paho/factsheets.htm> 10/III/2009.

Graph 20

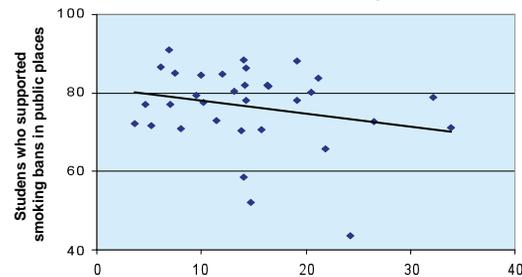
Percent of youth 13–15 who smoke cigarettes, Latin America and the Caribbean, 2006 or latest available data.



Source: Pan American Health Organization. Global Youth Tobacco Survey (GYTS), Pan American Tobacco Information Online System (PATIOS). Washington, DC:Pan American Health Organization; 2006. (<http://www.paho.org/tobacco/PatiosHome.asp>). Accessed at: <http://www.cdc.gov/tobacco/global/GYTS/factsheets/paho/factsheets.htm> 10/III/2009.

Graph 21

Correlation between students 13–15 years old who smoke and students who support smoking bans, Latin America and the Caribbean, 2006 or latest available year.



Source: Pan American Health Organization. Global Youth Tobacco Survey (GYTS), Pan American Tobacco Information Online System (PATIOS). Washington, DC:Pan American Health Organization; 2006. (<http://www.paho.org/tobacco/PatiosHome.asp>). Accessed at: <http://www.cdc.gov/tobacco/global/GYTS/factsheets/paho/factsheets.htm> 01/14/2008.

smoke; just being around others who smoke can be harmful, too. And, in fact, where open fires are used indoors to cook or heat in the Americas, tobacco smoke is the most prevalent indoor air pollutant. An estimated 35% of youth aged 13–15 years in Latin America and the Caribbean stated they were exposed to tobacco smoke in their homes. If that percentage is a good indicator of at-home exposure across the Region, an extrapolation across the entire population under 19 years old in Latin America and the Caribbean nets an estimated 78,000 children exposed to tobacco smoke at home.

Chemicals in tobacco smoke ¹

...carbon monoxide, carbon dioxide, carbonyl sulfide, benzene, toluene, formaldehyde, acrolein, acetone, pyridine, 2-methylpyridine, 3-vinylpyridine, hydrogen cyanide, hydrazine, ammonia, methylamine, dimethylamine, nitrogen oxides, N-nitrosodimethylamine, N-nitrosodiethylamine, N-nitrosopyrrolidine, formic acid, acetic acid, methyl chloride, particulate matter, nicotine, anatabine, phenol, catecholamine, hydroquinone, aniline, 2-toluidine, 2-naphthylamine, 4-aminobiphenyl, benz[a]anthracene, benz[a]pyrene, cholesterol, γ-butyrolactone, quinoline, harman, N'-nitrososnicotine, NNK, N-nitrosodiethanolamine, cadmium, nickel, zinc, polonium-210, benzoic acid, lactic acid, glycolic acid, succinic acid....

Ironically, many of the tobacco's toxic air pollutants with known damaging effects on health are only regulated when they come from a source other than tobacco smoke.

Fortunately, children and adults can be protected from this harmful exposure with actions taken by individuals and countries. Public education builds support for smoke-free laws and educates smokers to smoke outdoors and away from others, particularly children. At both local and national levels, cost-effective legislation can make all indoor public places and workplaces smoke-free. Smoke-free environments are beneficial because they reduce tobacco use overall. They also change behavior: people whose workplaces are smoke-free are more likely to make their homes smoke-free, even if they are smokers. With good public policy, children and their caregivers can enjoy clean air with every breath they take.

Policy Actions—Reducing Children's Exposure to Tobacco Smoke

- Enact legislation to make all indoor public places and workplaces 100% smoke-free and join the 21 countries in the Americas that have already ratified the World Health Organization Framework Convention on Tobacco Control (which also refers to exposure to tobacco smoke) to make this an Americas-wide agreement.
- Educate the public about the dangers of second-hand smoke for children and adults and how to prevent exposure; use education to build support for comprehensive smoke-free laws.
- Require all tobacco packaging to carry large, image-based warnings about second-hand smoke (as well as the many hazards of smoking). See examples of warnings at: http://www.paho.org/English/AD/SDE/RA/Tob_pack_warnings.htm.

Related Millennium Development Goals

Goal 3: Promote gender equality and empower women

Target 4: Eliminate gender disparity in primary and secondary education preferably by 2005 and in all levels of education no later than 2015

Goal 4: Reduce child mortality

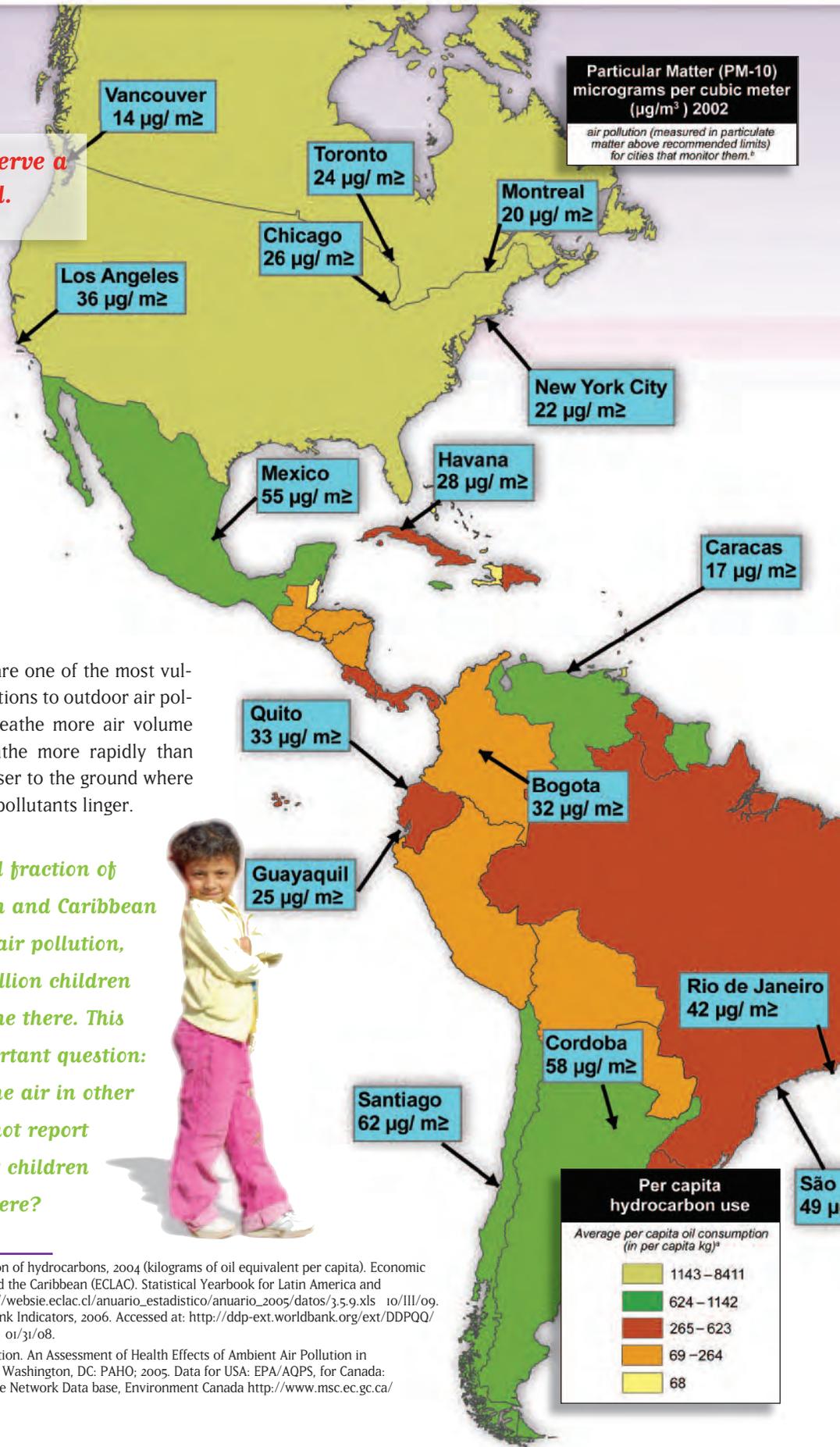
Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate

1. California Environmental Protection Agency, Air Resources Board and Office of Environmental Health Hazard Assessment, Air Toxicology and Epidemiology Branch. Proposed Identification of Environmental Tobacco Smoke as a Toxic Air Contaminant, SRP Approved Version. Sacramento, CA: EPA; June 24, 2005. Available at: <http://www.arb.ca.gov/toxics/ets/finalreport/finalreport.htm>.



9 Controlling Air Pollution Supports Good Health in Children

Our children deserve a smoke-free world.



Active children are one of the most vulnerable populations to outdoor air pollution—they breathe more air volume per body weight, breathe more rapidly than adults, and breathe closer to the ground where particulates and other pollutants linger.

... Only a small fraction of Latin American and Caribbean cities monitor air pollution, yet some 57 million children live and breathe there. This raises an important question: how clean is the air in other cities that do not report and how many children are exposed there?



Sources: a) Per capita consumption of hydrocarbons, 2004 (kilograms of oil equivalent per capita). Economic Commission for Latin America and the Caribbean (ECLAC). Statistical Yearbook for Latin America and the Caribbean. Accessed at: http://websie.eclac.cl/anuario_estadistico/anuario_2005/datos/3.5.9.xls 10/11/09. For the US and Canada, World Bank Indicators, 2006. Accessed at: <http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers> 01/31/08.

b) Pan American Health Organization. An Assessment of Health Effects of Ambient Air Pollution in Latin America and the Caribbean. Washington, DC: PAHO; 2005. Data for USA: EPA/AQPS, for Canada: National Air Pollution Surveillance Network Data base, Environment Canada http://www.msc.ec.gc.ca/natchem/particules/index_e.html.

Effects of air pollution on child health

- Respiratory infections
- Wheezing and troubled breathing
- Onset and exacerbation of asthma
- Reduced lung function
- Low birthweight
- Perinatal death

Cities and urban areas pose the greatest outdoor air pollution threat in the Americas because of the great number of vehicles on their roads. In Latin America and the Caribbean, older fleets of cars and buses are typically on the road, many of which have no pollution controls, such as catalytic converters. Often, emission standards for vehicles are either nonexistent or not enforced. Diesel fuel used by trucks, buses, and some cars tends to have a high sulfur content that results in heavy particulate emissions.

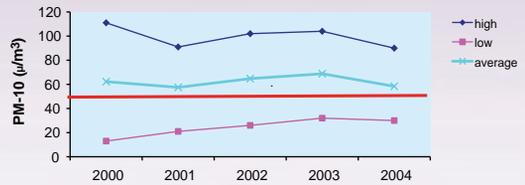
Data collected and averaged for 16 cities in Latin America and the Caribbean over five years show that average particles in the air consistently exceed WHO's standard of 50 micrograms per cubic meter.

Factories, coal-fired plants, and the use of biomass fuel for cooking and heating also are sources of air pollution. In many parts of the Region, climate and topography conspire to trap pollution in certain areas. For example, prevailing winds from the ocean can push cool, moist air inland. This denser air flows under warmer air, which effectively traps it and any pollution in the area. Mountains, too, can serve to trap cooler air, allowing pollution to hover. Cities along or near the Pacific coast, such as Santiago, Chile, and Los Angeles, California, are particularly prone to this phenomenon, which makes it even more important for them to control pollution.

Paulo
g/m³

Graph 22

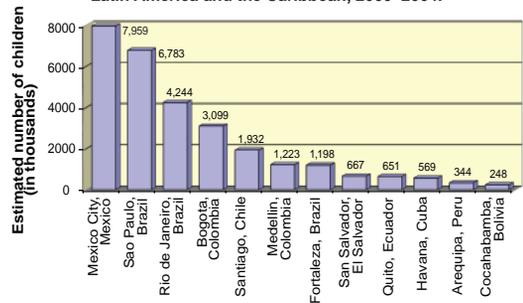
Particulate matter concentrations (standard average, 50µm³), selected cities in the Americas, 2000–2004.



Source: Pan American Health Organization. An Assessment of Health Effects of Ambient Air Pollution in Latin America and the Caribbean. Washington, DC: PAHO; 2005. p. 24.

Graph 23

Estimated number of children under 19 years old who live in cities that exceed their country's air pollution standards (annual average concentration of PM-10) at least in one year, Latin America and the Caribbean, 2000–2004.



Source: Pan American Health Organization. An Assessment of Health Effects of Ambient Air Pollution in Latin America and the Caribbean. Washington, DC: PAHO; 2005. p. 24. ECLAC data for proportion of children found at

<http://websie.eclac.cl/sisgen/ConsultaIntegrada.asp?idAplicacion=1>
 United Nations Population Division. World Urbanization Prospects: World Data: The 2005 Revision Population Database. Accessed at: <http://esa.un.org/unup/p2kodata.asp> Except for information for Cochabamba, Encyclopedia Britannica. Accessed at: <http://www.britannica.com/new-multimedia/pdf/wordato28.pdf> 10/13/06.

Some large cities in the Americas are monitoring air quality and are working to keep pollution levels down by imposing standards on industrial emissions and replacing the vehicles sold in their countries with more energy efficient and less polluting vehicles. The removal of lead from gasoline also greatly helped to improve the healthfulness of air in the Americas.

Asthma is the most common chronic disease in children and the number one reason why children miss school in the United States of America.

Policy Actions—Making the Air More Breathable:

- Monitor air pollution in large and industrial urban areas in order to set good health standards for air quality and inform the public about the quality of the air.
- Reduce the sulfur content in diesel fuels.
- Increase access to and efficiency of mass transit systems in mid-sized and large cities.
- Promote the use of more fuel-efficient vehicles and cleaner fuels.
- Develop air pollution advisories and educate the general public about their meaning, stimulating public interest and action to safeguard children from dangerous levels of air pollution.

**Related Millennium
Development Goal****Goal 7: Ensure environmental
sustainability**

Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation



10 End Childhood Lead Poisoning and other Chemical Exposure

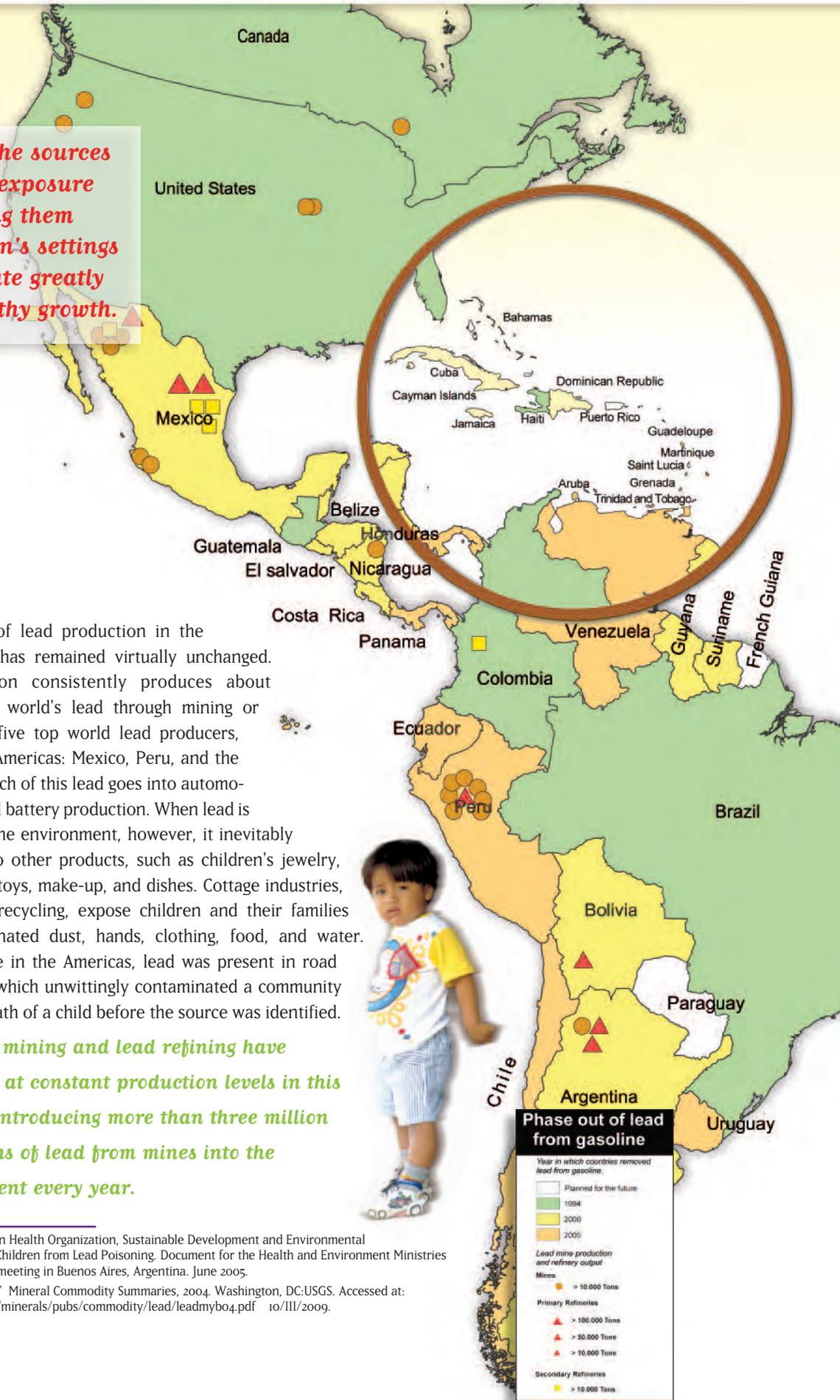
Identifying the sources of chemical exposure and removing them from children's settings will contribute greatly to their healthy growth.

The level of lead production in the Americas has remained virtually unchanged. The Region consistently produces about one-third of the world's lead through mining or refining. Of the five top world lead producers, three are in the Americas: Mexico, Peru, and the United States. Much of this lead goes into automobile and industrial battery production. When lead is introduced into the environment, however, it inevitably finds its way into other products, such as children's jewelry, candy wrappers, toys, make-up, and dishes. Cottage industries, such as battery recycling, expose children and their families through contaminated dust, hands, clothing, food, and water. In an island state in the Americas, lead was present in road paving material, which unwittingly contaminated a community and led to the death of a child before the source was identified.

Both lead mining and lead refining have remained at constant production levels in this century, introducing more than three million metric tons of lead from mines into the environment every year.

Sources: a) Pan American Health Organization, Sustainable Development and Environmental Health Area. Protecting Children from Lead Poisoning. Document for the Health and Environment Ministries of the Americas (HEMA) meeting in Buenos Aires, Argentina. June 2005.

b) Peter N. Gaby. "Lead." Mineral Commodity Summaries, 2004. Washington, DC:USGS. Accessed at: <http://minerals.usgs.gov/minerals/pubs/commodity/lead/leadmyb04.pdf> 10/11/2009.



Effects of exposure to lead on children's health

Perinatal

Premature birth,
miscarriage, low birthweight

In childhood

Reduced intelligence

Harm to kidneys and other organs

Impaired growth

Compromised red-blood-cell
development

Death

Sources of lead exposure in the Americas

Main sources

- paints and glazes (both in their manufacture and in their use),
- battery manufacturing and recycling,
- drinking water delivered by lead pipes and taps.

Other sources

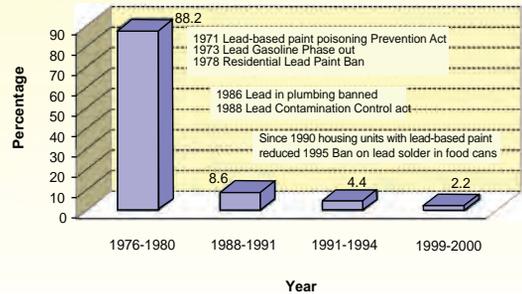
- lead mining, ore crushing and grinding,
- lead solder and soldering of lead products,
 - lead, copper, and zinc smelters,
 - some artisan crafts,
 - some cosmetics,
- food in cans sealed with lead solder,
 - some traditional medicines,
 - some jewelry.

Industrial sources

- welding and cutting operations,
- construction and demolition,
 - rubber manufacturing,
 - plastics manufacturing,
 - printing,
 - radiator repair,
- production of gasoline additives,
 - solid waste combustion,
 - organic lead production.

Graph 24

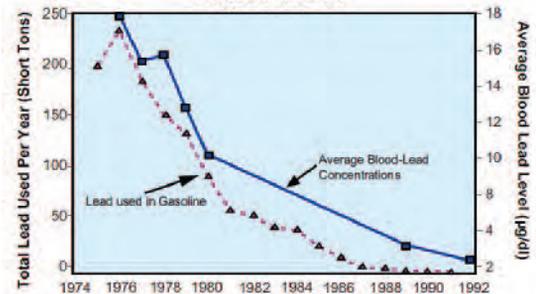
Estimated percentage of children 1–5 years old with lead blood levels $\geq 10\mu\text{g}/\text{dL}$, United States of America, 1976–1980, 1988–1991, 1992–1994, and 1999–2000.



Source: Centers for Disease Control and Prevention. MMWR 2003;52(SS10): 1-21.

Graph 25

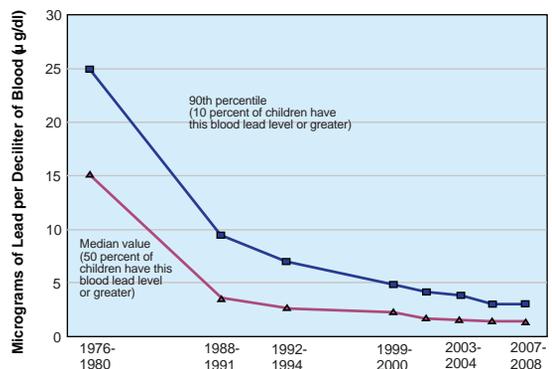
Relationship between the phase-out leaded gasoline in on-road vehicles and the decline in children's blood-lead levels in the U.S.



Source: Peter N. Gaby. "Lead." Mineral Commodity Summaries, 2004. Washington, D.C.: USGS. p. 23-26. Accessed at: <http://minerals.usgs.gov/minerals/pubs/commodity/lead/leadmybo4.pdf> 10/23/2006.

Graph 26

Concentrations of lead in blood of children ages 5 and under.



Source: U.S. EPA. America's Children and the Environment. www.epa.gov/envirohealth/children.

Chemical	How children are exposed	Effects on children's health
Mercury	Passed through the placenta and in breast milk; by breathing, eating, and drinking; through some dental, medical, and cosmetic uses.	Fetal brain damage, mental retardation, blindness, seizures, inability to speak; impaired nervous and digestive systems, kidney damage.
Fluoride	By breathing, eating, and drinking; through dental procedures, including use of fluoridated toothpastes and rinses.	Small amounts can prevent tooth decay; large amounts cause permanent, visible tooth damage and brittle bones.
Arsenic	Passed through the placenta to the fetus and low levels can be carried in breast milk; by breathing, eating, and drinking.	Lower intelligence, birth defects, fetal death. Anemia, nausea, vomiting, abnormal heart rhythm, skin irritation. Skin, lung, bladder, liver, kidney, or prostate cancer.

Sources: United States Department of Health and Human Services, Agency for Toxic Substance and Disease Registry. ToxFAQs™ for Mercury. Atlanta, GA: ATSDR; April 1999. Accessed 10/11/09 at <http://www.atsdr.cdc.gov/tfacts46.html>

ibid. ToxFAQs™ for Fluorine, Hydrogen Fluoride, and Fluorides. Accessed 10/11/09 at: <http://www.atsdr.cdc.gov/tfacts11.html>.

ibid. ToxFAQs™ for Arsenic. Accessed 10/11/09 at: <http://www.atsdr.cdc.gov/tfacts2.html>.

There is no safe level of lead exposure.

Lead poisoning is completely preventable, provided that the sources are known and avoided. Fortunately, leaders in the Americas have made fighting lead poisoning a priority. Ongoing focus and determination will eliminate the threat of lead poisoning to the Region's children.

How to avoid harmful exposure

Carefully handle and dispose of products that contain known harmful chemicals (for example, mercury thermometers, fluorescent light bulbs, treated wood, traditional or natural medicines, etc.)

Do not vacuum spilled mercury—it will turn to gas and increase exposure.

Supervise your child's tooth brushing and make sure he or she does not swallow products with fluoride.

Use bottled water if your area has high levels of fluoride or arsenic in the soil or drinking water.

Contact authorities if a large amount of a harmful chemical has been spilled.

Teach children not to play with poisons or harmful chemicals.

Teach children to stay away from waste dumps and industrial areas that use or produce harmful chemicals.

Policy Actions—Eliminating Childhood Lead Poisoning

- Develop and implement a public awareness campaign informing on the dangers of lead exposure to children; incorporate this information into educational curricula across the Region and distribute them to health clinics and centers, vocational training centers, and other key information and education venues so that people everywhere will know about the dangers of lead.
- Develop a strategy, to be implemented at the national or subnational level, to reduce and eliminate lead contamination and exposure from sources other than gasoline.
- Provide technical assistance to develop and conduct lead exposure assessments, including blood screening for lead in children and occupationally exposed workers, following the World Bank's screening design.
- Collect lessons learned from countries that have encountered lead contamination problems and share these with all countries, including information on lead sources, the magnitude of the problem, interventions, project implementation, and evaluation of the results.
- Increase the participation of toxicological centers of information and assessment in the development childhood lead poisoning prevention policies.
- Involve all interested parties in efforts to reduce lead exposure, including non-governmental organizations, small and large businesses, health care providers, community groups, and others.

Instead of going to school, Miguel crawls through the mine's crannies in search of gold ore with other kids his age and some of the men from his community. He does not have a helmet; he carries no flashlight and no radio. No one brings a first aid kit. They don't think of what could go wrong. After all, so far, no one Miguel knows has been killed in a mine. Luckily, this time, too, everyone gets out, carrying loads of rocks to a nearby table. For the rest of the day, Miguel and his friends work with a mercury solution to leach gold from ore. They save the gold and throw the rock and liquid into a nearby stream. Before eating lunch, the kids wash their hands off in the same stream. Someone grabs a bucket and scoops up some of the stream water for the group to drink. All day, Miguel and his friends breathe in the mercury vapors, absorb the liquid mercury into their hands, and ingest mercury in their water and food.

Beyond this acute exposure, the overall population in the Americas is exposed to mercury from coal burning to produce energy. The mercury is deposited into bodies of water, contaminating fish which, in turn, are consumed by humans. Arsenic and fluoride are also found in high concentrations in parts of the Americas. While it is impossible to avoid all exposure to hazardous elements, reducing children's exposure and risk is important.

Policy Actions—Safeguarding Children from Chemical Exposure

- Provide assistance to child workers in informal gold mines to increase safety and reduce exposure to mercury.
- Increase public awareness about chemical concerns; for example, provide information on where high concentrations of arsenic or fluoride are located.
- Develop and broadcast food and water advisories where mercury, arsenic, or other known contaminants affect large fish or other foods or water.
- Reduce emissions from coal burning plants that produce electricity.

Related Millennium Development Goal**Goal 7: Ensure environmental sustainability**

Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation



11 Keeping Children Away from Pesticides

Pesticides can be useful, but they can be harmful to children, either as acute poisonings or at low doses over time.

Does your city's mayor order spraying to get rid of mosquitoes? Should the farmer use chemicals he bought at the nearby store? Must the home gardener use fertilizer or can he or she garden with organic products? Does the mother set off the pesticide fogger in the house or call an exterminator? When is it best to use a chemical and when are there other ways to get rid of pests? These everyday questions are relevant everywhere in our Region.

The Region of the Americas spends nearly US\$ 3 billion each year on pesticides that go into the food and other products the population buys. Not only can pesticides harm the Region's environment, they also pose risks to anyone who breathes, ingests, or absorbs them. These chemicals are designed to kill living organisms, and children are particularly vulnerable to them. Pesticides undoubtedly have important uses, but how much is too much?

Average kg per inhabitant of pesticide input. Reports of the ministries of health and of agriculture in selected countries. Accessed at: <http://faostat.fao.org/site/423/DesktopDefault.aspx?PageID=423>.



Effects of pesticide poisoning on children's health

High-level and severe (acute)

Headaches, dizziness, muscle twitching, weakness, nausea, respiratory distress, convulsions, coma, and even death.

Low-level and long-term (chronic)

Skin and eye irritation; effects on the nervous system, cardiovascular system, respiratory system, gastrointestinal tract, liver, kidneys, reproductive system and blood.

Some pesticides may affect children's hormonal systems, and also physical and neuro-behavioral development in childhood or adolescence.

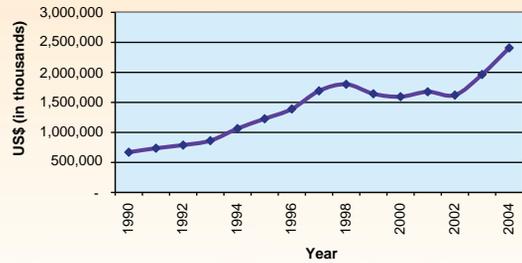
In answering these questions, what is best for children should be given great consideration. Children who live in agricultural settings are the most vulnerable to pesticide exposures. Chemicals used on plants soak into groundwater or run off with the rains. Crop dusting or spraying contaminates the air that children breathe. Children who work in agriculture may touch plants that have been sprayed, absorbing the chemicals through their skin. Children of farm workers also may be exposed through their parents' clothing or hands.

Urban or suburban children also can be exposed to pesticides. Most households in the Region use some form of pesticide, be it an insect repellent; bug, weed, or rodent killer; disinfectants; or garden chemicals. After they are applied, pesticides can stick to floors, carpets, and the ground. They can soak into the food they are applied to, linger in the air, and rub off exposed shoes and clothing. In poorer areas, pesticide packages may be opened and repackaged in smaller units without safety labels, directions for use, or poisoning information.

Acute poisonings show their effect right away. In the Americas, pesticides containing organophosphates and

Graph 27

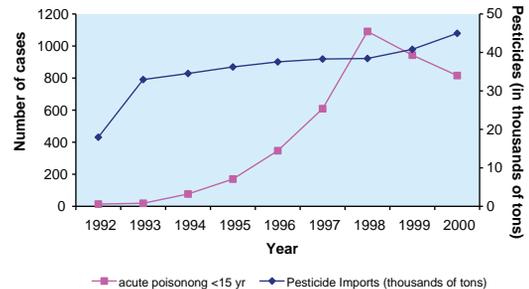
Trend in the cost of pesticide imports, Latin America and the Caribbean, 1990–2004.



Source: FAOSTAT © FAO Statistics Division 2006. Accessed at: <http://faostat.fao.org/site/423/DesktopDefault.aspx?PageID=42310/III/2009>.

Graph 28

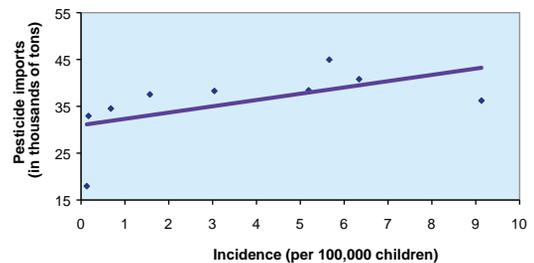
Incidence of pesticide poisoning in children under 15 years old and trend in pesticide imports, Central America, 1992–2000.



Source: OPS/OMS Situación Epidemiológica de las intoxicaciones agudas por plaguicidas en el Istmo Centroamericano. San José Costa Rica, 2002.

Graph 29

Correlation between the incidence rate of pesticide poisoning in children under 15 years old and the import of pesticides, Central America, 1992–2000.



Source: OPS/OMS, Situación Epidemiológica de las intoxicaciones agudas por plaguicidas en el Istmo Centroamericano. San José Costa Rica, 2002.

carbonates are most often the culprits in poisonings. Unfortunately, pesticide poisonings in the Region often are not diagnosed. In fact, the Pan American Health Organization estimates that pesticide poisoning cases are under-reported by 50% to 80% regionwide. And, while acute poisonings become immediately apparent, lower dose, long-term exposure in children can go unnoticed for a long time. Data on these chronic exposures is not readily available throughout the Americas. Keeping children safe from pesticides in their homes, schools, and public places and minimizing their exposure as much as possible safeguards them from ill effects of pesticides that may not show up for years to come.

Policy Actions — Protecting Children from Pesticides

- Ban the import and use of the most dangerous pesticides.
- Reduce pesticide use through regulation, and put in place special restrictions for the more dangerous pesticides.
- Control pesticide residues allowable in food and drinking water, targeting safety guidelines for the most vulnerable population sets, such as infants and children.
- Educate communities and workers about alternatives to pesticides, proper use of pesticides, safety precautions, and emergency care.
- Educate health workers and agricultural workers on how to recognize and manage pesticide poisonings.
- Establish and support at least one poison control center.
- Sign and implement the Treaty on Persistent Organic Pollutants (POPs) and include children's health in the POPs national implementation plan.

Related Millennium Development Goal

Goal 7: Ensure environmental sustainability

Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation

How to prevent poisonings

Children and adolescents should not work with pesticides or chemicals.

All poisons should be stored out of children's reach.

Children should be removed from areas to be treated with pesticides.

Pesticide devices, such as rodent bait, should be inaccessible to children.

Pesticides should be kept in their original, labeled, childproof packages.

Children should be taught to stay away from pesticides and poisons.



12 Don't Bug Me!

Children can be more vulnerable than adults to vector-borne diseases; environmental factors greatly influence the spread of vectors.

Vector control was well in hand in the Americas, with mosquitoes and other insects that carried known diseases having been almost completely eliminated in many parts of the Region. For example, by 1962, 18 countries and many Caribbean territories had rid themselves of dengue. Without the necessary political commitment, however, dengue spread uncontrolled until, by 2001, every country in the Region except for Canada and Chile reported the disease's reappearance.¹ With priority shifting to other public health concerns and masses of persons migrating to cities and living in substandard housing, it did not take long for Chagas' disease to spread across the Region. Malaria, too, has been an ongoing problem in the Region with the vector occurring in tropical areas. The disease's incidence tends to track with poor economies and lack of development.

Malaria has not been eradicated in the Americas. In Belize's areas at risk for malaria, 50% of the population suffers

Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2006. Washington, DC: PAHO; 2006.



Effects of vector-borne diseases on children's health

- **Malaria:** kidney and liver failure, compromised blood cells.
- **Chagas':** brain damage and death in acute stage.
- **Dengue:** high fever, headache, bleeding, bruising, and death in acute cases of dengue hemorrhagic fever.

from the disease; in Haiti's at risk areas, 59% of the population does.

It should be noted that malaria is not found throughout the subregions, but rather is located in specific areas of specific countries.

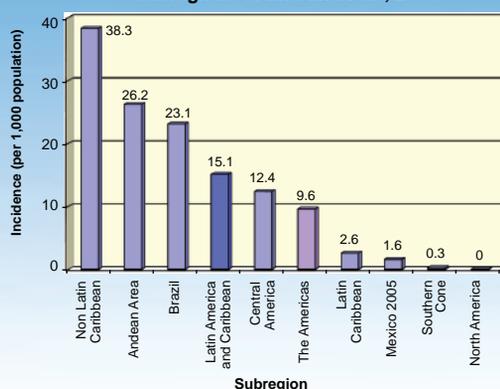
For example, in the non-Latin Caribbean, only two countries have malarious areas, and nearly 90% of the reported malaria cases occur in and around the Amazon.



Since the 1990s, concrete efforts to control vector-borne diseases have vastly improved the situation. Although there are no vaccinations against any of the three vector-borne diseases described above, there is prevention medicine available for malaria, as well as treatment for all three. In addition, there is a broadly accepted understanding that community education and participation will lead to improved vector control by ridding the pests of their breeding grounds. Chagas' incidence has been reduced from 90 million severe cases in the 1990s to between five and nine million cases at this writing. "Intensive work with improved diagnostics, management, and treatment will lead to better health and a better future for millions of children in the Americas."²

Graph 30

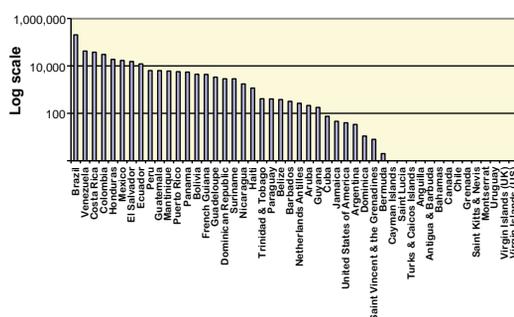
Annual malaria parasite incidence in malarious areas, subregions of the Americas, 2006.



Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2006. Washington, DC: PAHO; 2007.

Graph 31

Number of dengue cases, Region of the Americas, 2006.



Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2005. Washington, DC: PAHO; 2005.

Children are more vulnerable to many vector-borne diseases

- More than 95% of the dengue hemorrhagic fever cases are in children under 15 years old.³
- Chagas' acutely affects younger children and can cause death. After age 10, Chagas' becomes a chronic, life-long disease that can cause heart and digestive problems.⁴
- Young children are particularly vulnerable to malaria because they have not yet built up immunity against the disease.⁵

Policy Actions—Reducing Disease Vectors

- Eliminate disease vectors by involving communities in removal vector breeding opportunities.
- Increase the public's education about pest eradication and initial care of vector-borne diseases.
- Improve housing, especially in areas that have houses with thatched roofs or are made of mud or adobe.
- Improve access to safe water and sanitation and remove standing water from the area near houses.
- Screen blood supplies for vector-borne diseases.

Related Millennium Development Goals

Goal 6: Combat HIV/AIDS, malaria, and other diseases

Target 8: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

Goal 7: Ensure environmental sustainability

Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation

Goal 8: Develop a global partnership for development

Target 17: In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries

1. Pan American Health Organization. Health in the Americas, 2002 edition, Vol. 1. Washington, DC: PAHO; 2002, p. 251.
2. Dr. Roberto Salvatella, Pan American Health Organization, head of Chagas eradication effort. Interview. December 8, 2006.
3. Pan American Health Organization. Health in the Americas , 2002, Vol. 1. Washington, DC: PAHO; 2002 p. 251.
4. Centers for Disease Control and Prevention, Division of Parasitic Diseases. Fact Sheet for the General Public: Chagas Diseases. Atlanta, GA: CDC. (Revised September 21, 2004) Accessed at: http://www.cdc.gov/NCIDOD/DPD/PARASITES/chagasdisease/2004_PDF_Chagas.pdf.
5. National Center for Infectious Diseases, Division of Parasitic Diseases. Malaria: The Impact of Malaria, a Leading Cause of Death Worldwide. Atlanta, GA: CDC, revised September 13, 2004. Accessed on March 10, 2009 at: <http://www.cdc.gov/malaria/impact/index.htm>.



13 Garbage Dumps Are No Place for Kids

Preventing children from working and living in garbage dumps requires action from all members of society, from the national government to private citizens.

No child should live in a garbage dump. No family should have to derive its income from digging through the trash of others. And yet, for some 500,000 people in the Americas, this lifestyle is a daily reality. Migration from rural zones to mid-sized and large cities has created areas of extreme poverty in the Region's countries. Families are unable to secure jobs and, in order to survive, must resort to sorting through tons of garbage every day, competing, sometimes aggressively and violently, to be the first to get to a new delivery. Every family member suffers disease, injury, and deprivation from this life in the dumps. Children live in utter filth, cannot attend school, and have little potential to move beyond their surroundings even as they grow older.

Most of the garbage in the Region is tossed into unmanaged, open-air garbage dumps or deposited into waterways.



Source: Pan American Health Organization, Sustainable Development and Environmental Health Area, Pan American Center for Sanitary Engineering and Environmental Sciences (CEPIS). Report on the Regional Evaluation of Municipal solid Waste Management Services in Latin America and the Caribbean. Washington, DC: PAHO; 2005.

<http://www.cepis.org.pe/residuossolidos/evaluacion/e/paises/Region/index.html>

Information for Brazil comes from Ministerio da Saude. Vigilancia em Saude Ambiental. Indicator E4, 2006.

Effects of living in garbage dumps on children's health

- Parasites
- Infectious diseases
- Allergies
- Poisonings
- Accidents and injuries

Of the almost 370,000 tons of garbage that is produced daily in the Region, 44% comes from medium and small cities that have the greatest difficulty managing solid waste. Poor areas are at the bottom of the priority list for municipal garbage collection. They also present the greatest logistical difficulties, with streets and other infrastructure in poor condition. In addition, in most of the Region, hazardous waste is simply mixed with municipal waste.

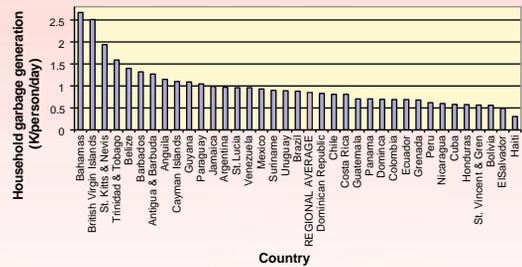
Even as municipalities struggle to collect and dispose of garbage, they usually cannot identify the cost to do this nor can they establish a budget to that end.

Some municipalities or groups have tried to increase recycling or to reduce household waste. A youth environmental group, called Ecoclub, has worked on community education and sensitization efforts regarding garbage and how to sort for recycling, which has helped to reduce the total amount collected and disposed of by municipalities.

Every day, nearly 370,000 tons of garbage are produced in Latin America and the Caribbean—equivalent to the weight of 27,000 school buses!

Graph 32

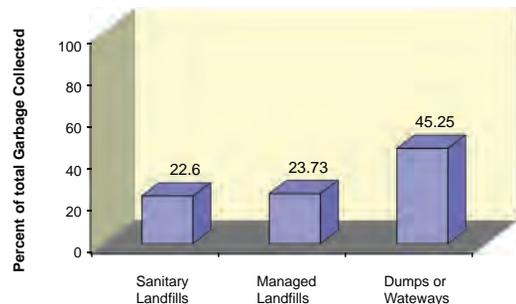
Average garbage generated per household, Latin America and the Caribbean and regional average, 2005.



Source: Pan American Health Organization, Sustainable Development and Environmental Health Area, Pan American Center for Sanitary Engineering and Environmental Sciences (CEPIS). Report on the Regional Evaluation of Municipal solid Waste Management Services in Latin America and the Caribbean. Washington, DC: PAHO; 2005. <http://www.cepis.org.pe/residuossolidos/evaluacion/e/paises/Region/index.html>.

Graph 33

Final disposition of solid waste, Latin America and the Caribbean, 2005.



Source: Pan American Health Organization, Sustainable Development and Environmental Health Area, Pan American Center for Sanitary Engineering and Environmental Sciences (CEPIS). Report on the Regional Evaluation of Municipal solid Waste Management Services in Latin America and the Caribbean. Washington, DC: PAHO; 2005. <http://www.cepis.org.pe/residuossolidos/evaluacion/e/paises/Region/index.html>.

"Angélica is a 10-year-old girl whose unemployed parents left the countryside five years ago to live in the city of Olinda, in Brazil's northeastern state of Pernambuco.

Circumstances forced the family to live in Olinda's garbage dump, where they constructed a home from pieces of cardboard and plastic. It is there, among the food and trash unwanted by others, that Angélica and her two younger sisters have lived, played and worked."

Excerpted from http://www.unicef.org/infobycountry/brazil_1920.html accessed 10/11/2009.

Policy Actions—Dealing with Trash at All Levels

As a way to improve the garbage situation in Latin America and the Caribbean, actions can be taken to reduce the amount of waste produced, improve collection and disposal, and work throughout society to remove children and other scavengers from open dumps.

- A UNICEF-sponsored program in Brazil has had great success in removing children from garbage dumps. Lessons learned from this multi-sector project—in which national, state, and local governments have actively participated—can be replicated elsewhere in the Region.
- Countries and municipalities must develop and implement multisector programs to stop children from scavenging in garbage dumps. These programs might involve family social assistance and inclusion programs, school enrollment efforts, other governmental, nongovernmental, and private-enterprise provisions designed to meet basic needs, among others.
- Establish or increase a solid waste management authority at the national and municipal levels, to provide regulation, assistance, coordination, and sustainability to garbage management.
- Offer market incentives to better manage garbage, such as supporting recycling and garbage reduction initiatives at the household level, and providing technical and financial assistance to cities for solid waste management plans.
- Increase society's participation in waste management, promotion of recycling, reduction and reuse of waste, and opening everyone's hearts and minds to help remove scavenging children from garbage dumps.

Related Millennium Development Goals

Goal 1: Eradicate extreme poverty and hunger

Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger

Goal 7: Ensure environmental sustainability

Target 9: Integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources

Target 11: To improve the lives of at least 100 million slum-dwellers by 2020.

Living in a Supportive Community

4



Many individuals, communities, countries, and international organizations have demonstrated their commitment to improving the environment and children's well-being. The Millennium Declaration urges the world's governments to make environmental management and health systems' transformation priorities in all regions,¹ and efforts at every level—from local to international—are making important differences. At the same time, there are still many challenges to overcome. Economic crises, disease outbreaks, demographic shifts, and competing national political priorities often require immediate attention and action, and at times can overshadow the longer-term need to prevent disease, improve physical settings, and secure a healthy future for our children.

1. United Nations Development Program, U.N. Millennium Project. Investing in Development: A Practical Plan to Achieve the Millennium Development Goals. New York: UNDP; 2005. Available at: <http://www.unmillenniumproject.org/reports/fullreport.htm>. Accessed on 12 March 2009.



14 Moving to the City

National and municipal leaders must take action to protect children from the negative environmental impacts of increasing urbanization, offering them safe and healthy spaces in which to live and grow.

In the Americas, the overall trend is a growing population. In 1959, an estimated 339 million people lived in the Region; by 2005, the population had grown to 892 million; and by 2050, this number is expected to reach 1.2 billion.¹ Births, deaths, and migration affect the rate of population growth. In the Americas, even while birth rates are decreasing, the population is also living longer. Some countries, such as the United States, have undergone a significant increase in population size due to immigration from other countries. As births, longer life spans, and migration increase the overall size of the Region's population, the number of people seeking places to live with adequate public services infrastructure also grows. In their search for decent jobs, housing, and schools, and access to running water, sanitation services, and electricity, many of the poorest segments of the population have migrated from rural areas to large urban cities. In 1950, only New York City had more than 10 million inhabitants. Now six of the world's so-called mega-cities are located in the Region of the Americas.



Source: World Bank. Data & Statistics. Urban Development. Available at: <http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/0,,contentMDK:20394948menuPK:1192714pagePK:6413315opiPK:64133175theSitePK:239419,00.html>. Accessed on 12 March 2009.

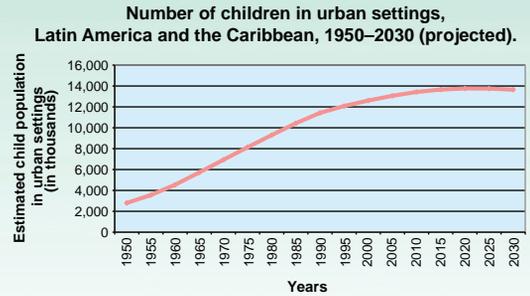
A child speaks: How does this stress me?

- There is not room for all of us at my house.
 - We don't have running water or toilets in or near our home.
 - We don't have electricity and use an indoor cooking fire.
- We live too close to streets that are noisy and full of traffic.
 - If we need a car and get one to use, it's old and not very safe.
- There is a lot of garbage that is created in our neighborhood and no one collects it—so we either burn it or leave it outside.
 - Disease spreads quickly in our home and from one house to another in the neighborhood.
 - We can't easily get to school or to other services we need.
 - Our parents cannot find good jobs. They have to sell things on the street and we have to help them.
- Where we live is not safe, and especially, it would not be safe if a hurricane, flood, earthquake, or other disaster were to happen.

Only 200 years ago, most of the world's population lived in rural settings. In the new millennium, close to 50% of the world lives in an urban environment. By 2030, it is projected that 60% or more of the global population will live in or around cities.

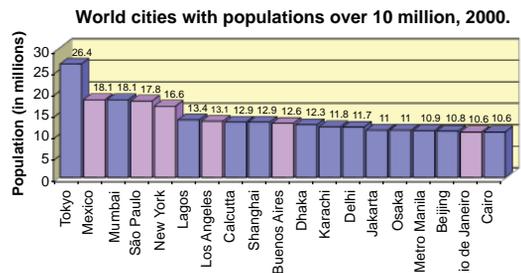
In fact, the Americas is the most urbanized region of the world. Mexico City is the world's second-most populated city, with 19.2 million residents; it is followed in the Region by New York City, with 18.5 million residents, and São Paulo with 18.3 million.² In 2005, 78% of the population of Latin America and the Caribbean lived in urban centers; over the next 25 years, this figure is expected to increase, approxi-

Graph 34



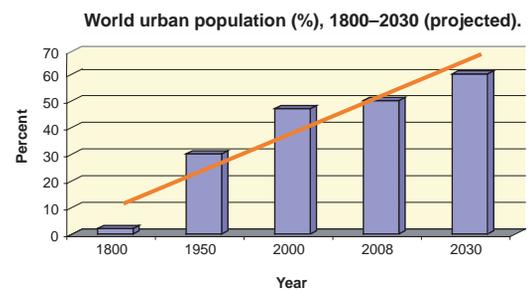
Source: Economic Commission for Latin America and the Caribbean. Statistical Yearbook for Latin America and the Caribbean 2005. Table 1.1.1: Total population. Table 1.1.4: Structure of the total population, by age groups. Table 1.1.11: Percentage of urban population. Santiago, Chile: United Nations; 2006. Available at: http://websie.eclac.cl/anuario_estadistico/anuario_2005/eng/index.asp. Accessed on 12 March 2009.

Graph 35



Source: United Nations Human Settlements Program (UN-HABITAT). Urbanization: Facts and Figures. Available at: http://www.unhabitat.org/downloads/docs/3160_99185_back-grounder5.doc. Accessed on 12 March 2009.

Graph 36



Source: United Nations Human Settlements Program (UN-HABITAT). Urbanization: Facts and Figures. Available at: http://www.unhabitat.org/downloads/docs/3160_99185_back-grounder5.doc. Accessed on 12 March 2009.

imating the current 87% figure for the urbanized population of North America.² The populations of not only mega-cities, but also mid-sized cities, are burgeoning as more and more rural residents relocate to urban areas.

Of 19 cities in the world with populations over 10 million, six are found in the Region of the Americas.

The increasing urbanization trend is accompanied by higher rates of urban poverty, with children disproportionately suffering the burden. More susceptible to diseases, children suffer from diarrheal diseases due to lack of clean drinking water and adequate sanitation services, as well as asthma and other upper and lower respiratory tract infections caused by inhaling polluted air indoors and outside. Inadequate housing also encourages the spread of vectors; 95% of Chagas' disease cases are found among children. Lack of schools in peri-urban settlements, unsafe conditions in and nearby shelters, insufficient food, poor indoor and outdoor air quality—all of these environmental hazards, especially when magnified in urban slums, disproportionately affect children's health and compromise their future. In light of the continued urbanization trend expected for Latin America and the Caribbean in the future, ignoring this problem is not an option. Instead, national policy-makers need to begin taking concrete steps to ensure a healthy future for children throughout the Region.

Policy Actions—Planning Cities for the Future

- Invest in urban planning to provide energy, water, and sanitation infrastructure; other needed public goods and services; green spaces; access to adequate schools and health centers; and emergency response capacity.
- Invest in rural energy, water, and sanitation infrastructure, and other needed public goods and services, in order to make living outside of urban settings a viable option.

Related Millennium Development Goals

Goal 1: Eradicate extreme poverty and hunger

Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than US\$1 a day

Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger

Goal 2: Achieve universal primary education

Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

Goal 3: Promote gender equality and empower women

Target 4: Eliminate gender disparity in primary and secondary education preferably by 2005 and in all levels of education no later than 2015

Goal 7: Ensure environmental sustainability

Target 9: Integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources

Goal 8: Develop a global partnership for development

Target 16: In cooperation with developing countries, develop and implement strategies for decent and productive work for youth

1. United Nations, Department of Economic and Social Affairs, Population Division. World Population Prospects: the 2004 Revision. Volume III: Analytical Report. New York: United Nations; 2006 (ST/ESA/SER.A/246). Available at: http://www.un.org/esa/population/publications/WPP2004/WPP2004_Vol3_Final/WPP2004_Analytical_Report.pdf. Accessed on 13 March 2009.

2. United Nations, Department of Economic and Social Affairs, Population Division. Population Challenges and Development Goals. New York: United Nations; 2005 (ST/ESA/SER.A/248). Available at: http://www.un.org/esa/population/publications/pop_challenges/Population_Challenges.pdf. Accessed on 13 March 2009.

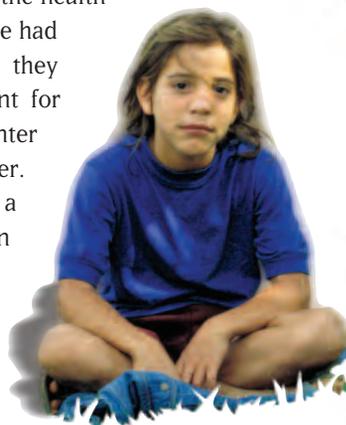


15 Adequate Shelter Offers Children a Safe Base

All children need healthy and safe homes to live in as a base for learning, developing, and preparing to assume their future role in society.

Julia's family joined thousands of others the day they took over a plot of land on the edge of this small city. She, her mother, and seven siblings built the tiny shack from discarded materials they found on the ground. They had no electricity, no running water, and only a dirt floor. They had no screens in the window openings and no furniture. They cooked behind the shack on an open fire, not far from the place they had designated as the toilet area. The city struggled to provide services to the settlement, allowing children to enroll in school and providing free access to the health clinic. It took years, but one day, Julia's house had a light bulb dangling from the ceiling. Still, they could not afford an electric heating element for cooking. A standpipe was installed in the center of the settlement, bringing untreated water. Julia considered herself lucky. She lived in a country that invested in social services and in a community of people who cared.

Mass migration from rural to urban areas, population growth, and poverty lead to



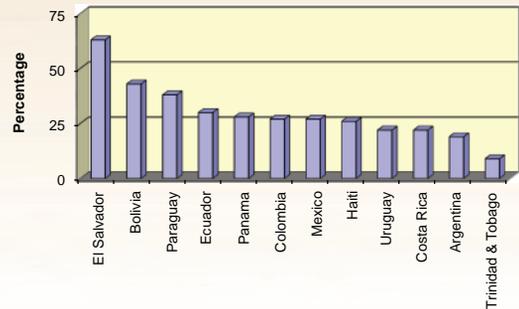
Source: World Bank. World Development Indicators 2005. Washington, DC: World Bank; 2005. Available at: <http://devdata.worldbank.org/wdi2005/cover.htm>. Accessed on 13 March 2009.

Effects of poor housing and living in slums on children's health

- Chagas' disease
- Malaria
- Dengue
- Yellow fever
- Diarrheal diseases
- Respiratory diseases

Graph 37

Proportion of population living in overcrowded urban housing, selected countries, Region of the Americas, latest data available (1998–2003).



Source: World Bank. World Development Indicators 2006. Washington, DC: World Bank; 2006. Available at: <http://devdata.worldbank.org/wdi2006/contents/Indexofindicators.htm#O>. Accessed on 13 March 2009.

homelessness and the formation of squatter developments. This results in or exacerbates poor urban planning and is a problem confronted today by most mid-sized and large cities in Latin America. Estimates revealed that in Latin America and the Caribbean in 2003, more than 18 million housing units were considered inadequate, with the number growing every year. A high urban migration rate, poverty, insufficient public services planning and investment, unsecured legal titles to property, natural disasters, and civil wars and social disturbances are some

of the key causes leading to inadequate and unsafe housing and an insufficient number of dwellings in the Americas. In tracking the Millennium Development Goals, the Economic Commission for Latin America and the Caribbean has estimated that 127 million people lacked adequate housing in the Region in 2003, while the United Nations Children's Fund estimates that there are more than 50 million children who are homeless in the Americas. Given this situation, action must be taken to ensure that all residents in the Region

have the opportunity to live in dignified and adequate shelters, a commitment accepted by member governments of the United Nations at Habitat II, the 1996 U.N. Human Settlements Program's second world housing conference held in Istanbul, Turkey.

Policy Actions—Providing Safe Shelter for Children

- Provide adequate housing that satisfies a variety of children's needs in an integral fashion, including a safe location (i.e., at a suitable distance away from industry, traffic, and places of known natural disaster

A child speaks: If I have no home ...

- There is no place for me to eat, bathe, sleep, and play.
- I probably won't have a school I can attend.
 - I may get sick more often and will not have a place to recover.
 - My parents will not get good jobs.
 - I will not have adequate clothing.
 - I will likely not have enough food.
 - I will not have caring friends.
- I will not be protected from bad weather or violence in the streets.

... What future do I have?

potential); adequate physical construction and design (i.e., structures made of suitable building materials and providing sufficient space); access to basic public services of acceptable quality (water, sanitation, and clean, efficient energy sources); as well as other types of facilities that promote children's healthy growth and development (schools, playgrounds, and other recreational areas; green spaces; and health care centers).

- Support health impact evaluations of public housing and urban development policies.
- Strengthen local and national epidemiological surveillance systems to better monitor and evaluate health status and risk factors associated with housing conditions.
- Encourage public health research to better understand the relationship between housing and children's health.
- Develop community-based healthy housing programs that promote increased public awareness, information exchange, broad-based action, and collective participation.
- Upgrade and refocus housing guidelines and codes to highlight and prioritize the importance of children's health and safety.

Related Millennium Development Goals

Goal 1: Eradicate extreme poverty and hunger

Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than \$US 1 a day

Goal 7: Ensure environmental sustainability

Target 11: Have achieved by 2020 a significant improvement in the lives of at least 100 million slum dwellers



16 Preparing for Disaster

Planning for disaster before it strikes can save millions of lives and protect natural and economic resource bases.

In the days and hours before Hurricane Katrina (August 2005) made landfall in the southern U.S. state of Louisiana, information abounded regarding the storm's expected impact—particularly on New Orleans, the largest city—which included predictions of massive flooding and major losses of life and property. Yet a lack of planning and preparation—both long- and short-term—left nearly 1,600 dead and hundreds of thousands stranded without food, water, or shelter in the storm's wake.

Tropical Storm Jeanne nearly obliterated the city of Gonaives, Haiti, in September 2004, claiming more than 2,800 lives and affecting 80% of the population. It destroyed more than 4,500 homes, contaminated water supplies, damaged nearly all of the schools, closed down the hospital, and forced many survivors to remain for days on their rooftops due to massive landslides of mud and debris that filled the city.

Since 1980, devastating earthquakes have killed nearly 10,000 people in the Region, from northern



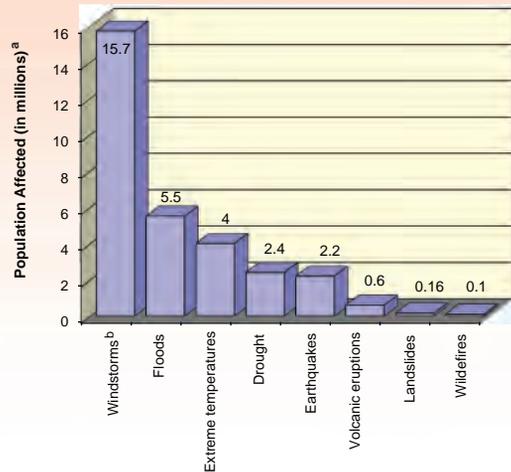
Source: World Health Organization Collaborating Center for Research on the Epidemiology of Disasters, Emergency Events Database (EM-DAT). Brussels: Université Catholique de Louvain. Available at: <http://www.emdat.be>. Accessed on 16 March 2009.

Types of disasters

- Drought
- Earthquakes
- Epidemics
- Extreme temperatures
 - Famine
 - Floods
- Mass-casualty industrial and transport-related accidents
 - Landslides
- Volcano eruptions
 - Wildfires
- Windstorms
- Tsunamis

Graph 38

Population affected by disasters, by disaster type, Region of the Americas, 2000–2006.



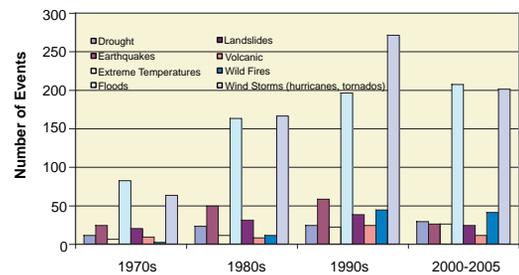
^a Includes injuries, deaths, and homelessness.

^b Includes hurricanes and tornados.

Source: World Health Organization Collaborating Center for Research on the Epidemiology of Disasters, Emergency Events Database (EM-DAT). Brussels: Université Catholique de Louvain. Available at: <http://www.emdat.be>. Accessed on 16 March 2009.

Graph 39

Selected disasters, by type, Region of the Americas, 1970–2005.



Source: World Health Organization Collaborating Center for Research on the Epidemiology of Disasters, Emergency Events Database (EM-DAT). Brussels: Université Catholique de Louvain. Available at: <http://www.emdat.be>. Accessed on 16 March 2009.

In the 21st century alone, the lives of millions of people in the Americas have been affected by natural disasters. Predictions by scientists and disaster experts of more extreme weather events in the near future serve as a wake-up call for governments and communities to develop disaster preparation and mitigation plans now, before disaster strikes.

California to Central America to Peru, as well as numerous other locations.¹ Over the past couple of decades, tropical storm activity has increased, producing a large number of major hurricanes responsible for considerable loss of life, property, public infrastructure, and natural habitats and ecosystems. Volcanic eruptions have wiped out entire villages. Droughts, tidal waves, fires, windstorms and technological disasters, such as chemical spills or transport accidents, have also claimed countless lives and left hundreds of thousands of others injured and/or experiencing such personal and economic loss that they have been unable to cope and recover without recurring to health services and other public services.

For the 1991–2005 period, the Region of the Americas figures prominently among the world's countries experiencing disaster events causing the most severe economic damage, by share of gross domestic product, with the Caribbean and Central America being the most affected.²

Children are particularly vulnerable to the health effects of disasters because they are dependent upon adults around them before, during, and after a disaster and may not fully comprehend advance disaster warnings. Their incomplete physical development also makes them more susceptible

to communicable, food, water, and vector-borne diseases that often spike in the aftermath of disasters.

The good news is that the increasing availability of timely information is on our side. Historical data and new technical capabilities within the Region and around the globe provide useful knowledge and offer insight that enable government officials at all levels to better predict, plan for, and deal with disasters and their aftereffects. Preventing and turning around environmental degradation can lessen the impact of disasters, as can improvements in urban planning.

Policy Actions—Planning Before Disaster Strikes

- Identify in advance the natural and technological vulnerabilities of countries and particular localities, and take the necessary steps to correct or overcome these, thereby mitigating to the degree possible the aftereffects of disasters.
- Observe principles of effective urban planning to ensure that natural resources are protected and conserved and that housing and other physical structures are not located in disaster-prone areas.
- Educate communities and raise awareness about disaster preparedness and mitigation; inform the general public about concrete steps to be taken in responding to different types of disasters.
- Provide emergency response training, as needed, to all front-line personnel who will coordinate disaster response efforts, including those at health care facilities, police and fire stations, schools, the workplace, and community centers.
- Invest in or upgrade public infrastructure, such as sanitation and water delivery systems, to ensure the maintenance of services in time of disasters

Related Millennium Development Goals

Goal 7: Ensure environmental sustainability

Target 9: Integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources

-
1. World Health Organization Collaborating Center for Research on the Epidemiology of Disasters, Emergency Events Database (EM-DAT). Brussels: Université Catholique de Louvain. Available at: <http://www.emdat.be>. Accessed on 16 March 2009.
 2. World Health Organization Collaborating Center for Research on the Epidemiology of Disasters, Emergency Events Database (EM-DAT). Disaster statistics: top 50 countries. Brussels: Université Catholique de Louvain. Available at: <http://www.unisdr.org/disaster-statistics/pdf/isdr-disaster-statistics-50top-countries.pdf>. Accessed on 17 March 2009.



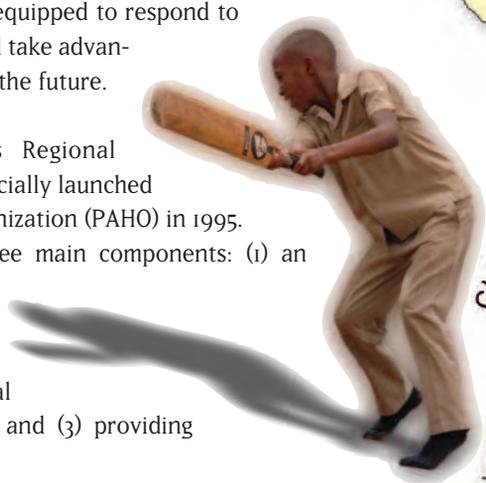
17 Schools Can Promote and Safeguard Environmental Health

By incorporating environmental health education into their curricula, schools can become models for environmental health and safety activities and awareness.

Following a 1948 civil war, Costa Rica approved a new Constitution that abolished the military, upheld democracy, bolstered human rights, and supported social services. One outcome was strong public funding for schools throughout the nation. The country now enjoys a 96% literacy rate, with 99% of its children attending school through the sixth grade and 71% attending through the ninth grade. Costa Rica and other countries throughout the Americas are committed to promoting the completion of basic schooling, in the firm belief that children who are educated will be better equipped to respond to life's demands and challenges and take advantage of opportunities now and in the future.

The Health-Promoting Schools Regional Initiative in the Americas was officially launched by the Pan American Health Organization (PAHO) in 1995. The Initiative is focused on three main components: (1) an integrated approach to health education, including the teaching of life skills; (2) the creation and maintenance of healthy physical and psychosocial environments; and (3) providing

Sources: United Nations Development Program and World Bank data.



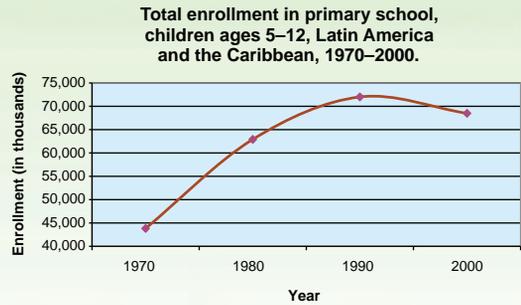
Components of a healthy school's physical environment.	
Provision of basic necessities	<ul style="list-style-type: none"> • Shelter • Warmth • Water • Food • Light • Ventilation • Sanitary facilities • Emergency medical care
Protection from biological threats	<ul style="list-style-type: none"> • Molds • Unsafe or insufficient water • Unsafe food • Vector-borne diseases • Venomous animals • Rodents and hazardous insects • Other animals (e.g., dogs)
Protection from physical threats	<ul style="list-style-type: none"> • Traffic and transport • Violence and crime • Injuries • Extreme heat and cold • Radiation
Protection from chemical threats	<ul style="list-style-type: none"> • Air pollution • Water pollution • Pesticides • Hazardous waste • Hazardous materials and finishes • Asbestos, paint • Cleaning agents

Source: World Health Organization. The Physical School Environment: An Essential Component of a Health-Promoting School. Geneva: WHO; no date (Information Series on School Health, Document 2). Available at: http://www.who.int/school_youth_health/media/en/physical_sch_environment_v2.pdf. Accessed on 18 March 2009.

health services and healthy food choices, psychological guidance, and opportunities for physical activity and the development of active lifestyles. Ninety-four percent of the countries in the Region have developed or are working on health-promoting school strategies, stressing the acquisition of skills that strengthen children's self-esteem and the capacity to adopt and maintain healthy behaviors and lifestyles throughout their lives.

Where a child attends school is important for the modeling of the health and safety concepts advocated by the Health-Promoting Schools Regional Initiative. A healthy

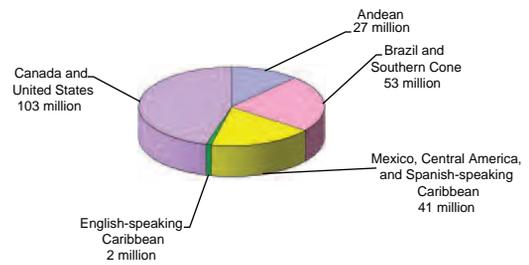
Graph 40



Source: Economic Commission for Latin America and the Caribbean. Statistical Yearbook for Latin America and the Caribbean 2005, Table 1.3.10: Enrollment in first-level education. Santiago, Chile: United Nations; 2006. Available at: http://webpie.eclac.cl/anuario_estadistico/anuario_2005/eng/index.asp. Accessed on 17 March 2009.

Graph 41

School-aged population,^a by subregion, Region of the Americas, 2005.

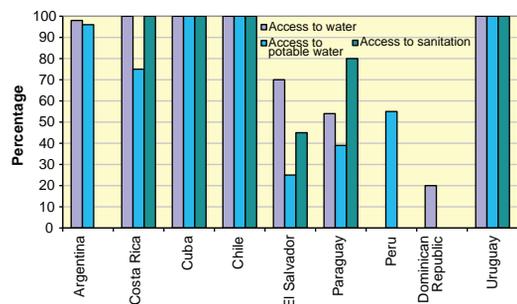


^a 5–19 years old.

Source: United Nations, Department of Economic and Social Affairs, Population Division. World Population Prospects: The 2006 Revision. Highlights. New York: United Nations; 2007 (ESA/P/WP.202). Available at: http://www.un.org/esa/population/publications/wpp2006/WPP2006_Highlights_rev.pdf. Accessed on 18 March 2009.

Graph 42

Schools with access to water and sanitation services, selected Latin American countries, 2004.



Source: Pan American Health Organization, Area of Sustainable Development and Environmental Health. Health-Promoting Schools Regional Initiative, 2004 survey.

and safe physical school environment is one in which the school building and all of its contents—including physical structures, infrastructure, and furniture—are composed of appropriate and nonhazardous materials. This environment further encompasses the site on which the school is located, and the surrounding environment, including the air, water, and materials with which children may come in contact, as well as nearby land uses, roadways, and other hazards. None of these elements, including the use and presence of chemicals and biological agents, must in any way endanger, harm, or compromise children's health.¹

When given the opportunity to learn and increase awareness about their physical surroundings, children are empowered to find ways to improve their school and other daily settings, share this knowledge with their families and communities, and seek their involvement and support, as well. In 1992, a group of middle-school students in Argentina set about raising community environmental awareness with the creation of a household waste sorting and recycling project. By 1995, these young volunteers had established the foundation for a broader, more organized movement known as Ecoclubes, and soon Chile and Panama had formed their own groups under this banner. In 1998, PAHO gave its official endorsement to the initiative, and now there are local Ecoclubes chapters in twenty Latin American countries, six European nations, and four African countries.² The movement has created opportunities for tens of thousands of young people to learn about the environment and develop their leadership capacities as promoters of community health and participation and environmental awareness.

Policy Actions—Incorporating Safe and Healthy Environments into Schools

- Include allocations in government budgets to support health-promoting school activities.
- Promote multi-sector and community-based approaches to strengthen primary and secondary educational curricula in the areas of health promotion, development of life skills, and environmental protection.
- Adopt available tools, such as those found in the World Health Organization's Information Series on School Health,³ for use in elementary school curricula.
- Sponsor and provide support to the creation of Ecoclubes at elementary and secondary schools.
- Conduct nationwide environmental assessments of schools to determine their level of compliance with acceptable standards for student health and safety, and take all steps possible to correct deficiencies.

Related Millennium Development Goals

Goal 2: Achieve universal primary education

Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

Goal 3: Promote gender equality and empower women

Target 4: Eliminate gender disparity in primary and secondary education preferably by 2005 and in all levels of education no later than 2015

1. World Health Organization. The Physical School Environment: An Essential Component of a Health-Promoting School. Geneva: WHO; no date (Information Series on School Health, Document 2). Available at: http://www.who.int/school_youth_health/media/en/physical_sch_environment_v2.pdf. Accessed on 18 March 2009.

2. For more information, please visit the official Web site at www.ecoclubes.org.

3. Available for downloading at http://www.who.int/school_youth_health/resources/information_series/en.



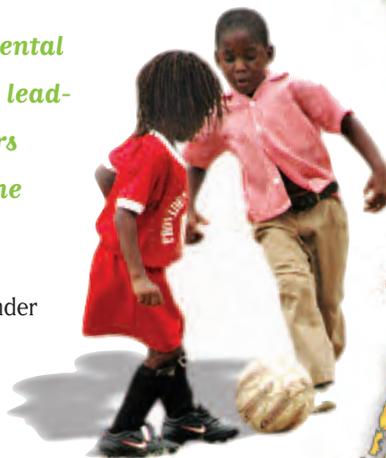
18 Children Playing and Staying Safe

Governments can play a key role in educating the general public about children's safety and injury prevention.

Young children explore by touching and putting things in their mouths, which can lead to burns and poisonings. Older children explore new surroundings, play, run, jump, cycle, skateboard, participate in sports and other physical activities, and generally seek out new adventures and experiences. The danger for children of all ages is when they do not have or apply the necessary judgment when participating in these activities, injuries can easily result.

Road traffic injuries and accidental drownings were among the two leading contributors to healthy years of life lost in the Americas at the end of the past decade.'

In 2002, an estimated 38,000 children under the age of 15 were killed by unintentional injuries in the Americas. An estimated 11,000 of these injuries were from road



Source: World Health Organization. Global burden of disease estimates. Geneva: WHO; 2004.

traffic accidents.² In fact, an estimated 11% of all injuries in the Region occur among children under the age of 15.² Most injuries occur in or around a child’s home, where he or she may play in the street or in other unsafe areas and have access to household chemicals, medicines, fires used for cooking, swimming pools or other bodies of water, and other everyday surroundings that pose hazards to children’s safety.

Road traffic accidents are a number-one concern for childhood injuries, both vehicular accidents as well as those involving child pedestrians and cyclists. The highest mortality rate from accidental drowning in the Americas is found among children under 5 years of age.² Burns from fires also rank among the top five causes of injuries of children in the Region. This group likewise suffers disproportionately from injuries from falls taking place at home as well as on school playgrounds.³ Toxic exposures or poisonings are similarly most likely to occur either at home or school, where most of a child’s day is spent.

Children often lack the psychological development and maturity necessary to fully understand the concepts of “injury” and “death” and to manage dangerous situations effectively. They need the guidance and supervision of adults to develop the skills that will enable them to properly identify and assess situations that can potentially cause them harm or cost them their lives.

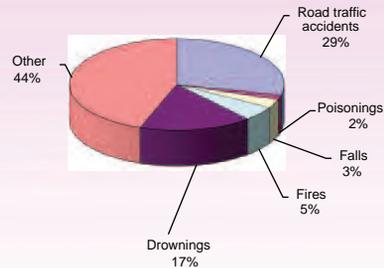
In the Americas, boys have a higher tendency to be injured and to die from their injuries than girls. In fact, more than one-third of all deaths in boys aged 5–14 are due to unintentional injuries and, of these injuries, 40% are due to road traffic accidents.

Policy Actions—Keeping Children Safe

- Improve road design and maintenance and enforce vehicle and road safety rules, such as speed limits, use of seatbelts and infant/child car seats, and strict anti-drinking-and-driving laws.

Graph 43

Proportionate mortality due to unintentional injuries, by injury type, children aged 0–14,^a Region of the Americas, 2002.

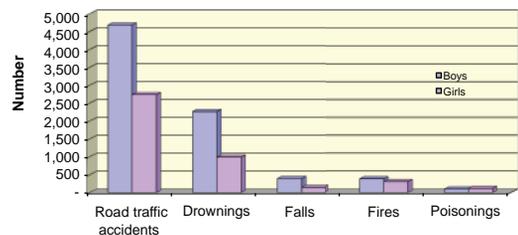


^a N = 38,192.

Source: World Health Organization. Global burden of disease estimates. Geneva: WHO; 2004.

Graph 44

Estimated deaths from unintentional injuries, by injury type, children aged 5–14, by sex, Region of the Americas, 2002.



Source: World Health Organization. Global burden of disease estimates. Geneva: WHO; 2004.

- Install road signs near schools, reduce speed limits in school zones, and employ other traffic techniques near schools and in residential neighborhoods to protect children from speeders and other traffic violators.
- Improve emergency health care, as well as information systems for recording and reporting case data for accidents and other unintentional injuries, disaggregated by age and sex.
- Establish safe play areas for children that are protected from high traffic and industrial areas.
- In schools, develop safety curricula to teach children not to play in the streets; to wear proper helmets when riding a tricycle, bicycle, or scooter; to use sidewalks; and to cross the street only at marked intersections.
- Develop, adopt, and enforce child protection and safety laws.
- Develop and disseminate educational campaigns that promote behavioral change in the areas of home and playground safety, safe driving, and injury prevention.

Related Millennium Development Goals

Goal 4: Reduce child mortality

Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate

-
1. Pan American Health Organization. Volume I: Health Conditions in the Americas. 2002 Edition. Washington, DC: PAHO; 2002 (Scientific and Technical Publication 587).
 2. World Health Organization. Global burden of disease estimates. Geneva: WHO; 2004.
 3. World Health Organization. World report on child injury prevention. Geneva: WHO; 2008. Available at: http://www.who.int/violence_injury_prevention/child/injury/world_report/en/. Accessed on 12 May 2009.



19 Promote Child Safety through Fair Labor Standards

Child beggars and other underage child workers live their lives in unhealthy environments. Adolescents who work need to secure fair and safe jobs that do not interfere with educational opportunities.

A child who must have been about four years old was sitting alone in the middle of a pedestrian mall in Buenos Aires. Her face was filthy, as were her ragged clothes and bare feet. Her beautiful dark eyes looked up at the passersby as she rattled her little tin can, imploring, "Please? Can you help?" In an informal interview with city residents, it was learned that this little girl, along with several other child beggars, were rounded up every morning by a person with a pickup truck from a poor peri-urban area, brought to the city, and stationed in various places to beg. A portion of their earnings paid off the transportation "service," and the rest of their alms went to a parent or caretaker waiting at home. The child would be punished if she did not earn enough money at the end of the day. She would be sent out each morning for the same task; never attending school; never taking a bath; barely eating enough to survive; exposed to dirt, pollution, inclement weather, and diseases.



Source: International Labor Organization, United Nations Children's Fund, World Bank. Understanding Children's Work: An Inter-Agency Research Cooperation Project on Child Labour (Web site). Available at: <http://www.ucw-project.org/>. Accessed on 20 March 2009.

Children who work experience ...

- **Malnutrition**
- **Anemia**
- **Fatigue**
- **Exposure to dangerous tools and machinery**
- **Exposure to harmful chemicals**
- **Illiteracy**

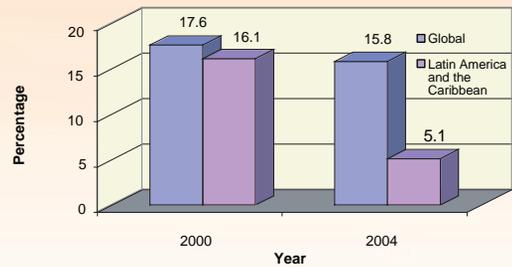
According to the United Nations Children's Fund, there are 100 million street children worldwide, half of which are found in Latin America.' However, while the proportion of child workers in Latin America and the Caribbean remains high, it is nonetheless lower than global figures.

This child and hundreds of thousands like her clearly do not enjoy the necessary support from families, schools, and society as a whole that would enable them to secure better opportunities for the future.

The 1989 Convention on the Rights of the Child, contains an article that shields children from unfair labor practices. Article 32 requires countries to protect children from economic exploitation, and from any type of work that is potentially hazardous, harmful to the child's health and development, or that interferes with the child's education.² According to the International Labor Organization, five out of 100 children under the age of 15 in Latin America and the Caribbean are employed in mining, agriculture, domestic services, and other formal and informal sector activities. Girls are often encumbered with household chores that consume most of their days, remaining unpaid and unable to go to school. For example, in Nicaragua, it is estimated that 93% of working children ages five to 14 are employed in this way. Girls more than boys tend to be victims of unpaid, full-time work.

Graph 45

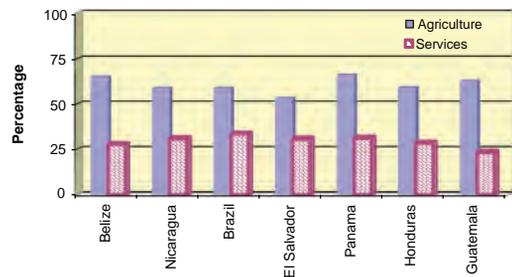
Proportion (%) of child laborers, Region of the Americas and globally, 2000 and 2004.



Source: International Labor Organization, United Nations Children's Fund, World Bank. Understanding Children's Work: An Inter-Agency Research Cooperation Project on Child Labour. (Web site). Available at: <http://www.ucw-project.org/>. Accessed on 20 March 2009.

Graph 46

Percentage of children aged 5–14 working in agriculture and the services industry, selected countries, Region of the Americas, 2005.



Source: International Labor Organization data.

Cycle of poverty and its effects on children

Poverty → urbanization → family disintegration → loss of safety nets; unemployment, violence, and abuse → child abandonment → street children exploitation → poverty → crime

While a devastating scenario—not only for the individual child but also for the future strength of human capital fueling the Region's economic growth—some bright spots do exist. Latin America and the Caribbean, in comparison with the rest of the world, have seen a sharp decrease in the number of child workers. The World Bank, United Children's Fund, and the International Labor Organization have each promoted efforts to establish labor standards, eliminate the exploitation of children, improve schooling opportunities for this group, and remove them from the most hazardous forms of labor.

Policy Actions—Safeguarding Children from Economic Exploitation and Dangerous Work Environments

- Achieve intersectoral and interregional coordination to develop and provide child protective services so that child begging and other forms of child exploitation and slavery are eliminated throughout the Americas.
- Create a working group on children within the Inter-American Conference of Ministers of Labor of the Organization of American States to assess the situation of child labor and develop a plan of action to protect children, specifically considering underage labor (under 15 years, as established by International Labor Organization Convention 138),³ dangerous forms of labor (ILO Convention 182),⁴ and child begging and other informal sector employment.
- Establish and enforce a minimum employment age policy, as well as other effective mechanisms to protect children from dangerous jobs and exploitation.
- Develop programs targeted to children and youth—including street children—that provide opportunities for education and skills development and viable alternatives to the unsafe and unhealthy conditions this group currently faces. Investing in at-risk children is not only a question of social justice and human rights protection, but can also yield potential economic benefits for the future. Reaching out to street children is likely to have a positive spillover effect (in terms of turning them into productive participants of society and preventing crime), whereas not investing in this group is likely to have a negative spillover effect (in terms of increased crime rates and poverty).

Related Millennium Development Goals

Goal 1: Eradicate extreme poverty and hunger

Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger

Goal 2: Achieve universal primary education

Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

Goal 3: Promote gender equality and empower women

Target 4: Eliminate gender disparity in primary and secondary education preferably by 2005 and in all levels of education no later than 2015

Goal 8: Develop a global partnership for development

Target 16: In cooperation with developing countries, develop and implement strategies for decent and productive work for youth

1. World Bank. Child Labor. Regional Activities: Latin America and the Caribbean. Available at: <http://www.world-bank.org/sp/childlabor/lac.asp>. Accessed on 20 March 2009.

2. United Nations, Office of the High Commissioner for Human Rights. Convention on the Rights of the Child. Geneva: UNHCHR; 1989. Available at: <http://www.unhcr.ch/html/menu3/b/k2crc.htm>. Accessed on 23 March 2009.

3. International Labor Organization. ILO Convention 138 Concerning the Minimum Age for Admission to Employment. Geneva: ILO; 1973.

4. International Labor Organization. ILO Convention 182 Concerning the Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labour. Geneva: ILO; 1999.

Types of work employing children, selected Latin American countries.

Argentina	Brick manufacturing, market vending, leatherworking, agriculture, ice manufacturing
Bolivia	Mines, sugarcane cultivation, other agricultural work, construction, street jobs
Brazil	Coal mining, quarrying, garbage collecting, housekeeping
Chile	Mining, agriculture, street jobs
Colombia	Mining, agriculture, housekeeping
Costa Rica	Housekeeping, construction, prostitution, banana cultivation, maquiladoras, shellfish processing
Dominican Republic	Agriculture, housekeeping, garbage collecting, prostitution
Ecuador	Floriculture, street jobs, construction
El Salvador	Maquiladoras, fireworks manufacturing, construction, coffee cultivation, prostitution, street jobs, garbage collecting
Guatemala	Limestone quarrying, other types of mining, coffee cultivation, fireworks manufacturing, housekeeping, maquiladoras, construction, moving heavy loads, garbage collecting
Honduras	Leatherworking, baked goods production, maquiladoras, lumbering, construction, pharmaceutical and chemical production
Mexico	Retail food services (bars and cafés), metal making, mechanical workshops, brick manufacturing, agriculture
Nicaragua	Agriculture (coffee, banana, rice, tobacco, cotton, cattle); street jobs
Panama	Street jobs, housekeeping, sugarcane cultivation, moving heavy loads
Paraguay	Street jobs, housekeeping
Peru	Gold ore mining and processing, other types of mining and quarrying, brick manufacturing, construction, steel making, cocaine processing, fireworks manufacturing, garbage collecting
Venezuela	Garbage collecting, street jobs, construction

Source: International Labor Organization, International Program on the Elimination of Child Labor.

Offering Children a Secure Future



Investments in children's environmental health bring together three important facets of the Millennium Development Goals:

- *improving the lives of children*
- *improving the environment*
- *achieving sustainable economic growth*

Policies to improve children's environmental health also work to alleviate poverty and hunger, enhance primary education, promote girls' matriculation into primary and secondary schools, reduce child mortality, and prevent major diseases such as malaria, Chagas', and dengue.

The 2005 report Investing in Health: A Practical Plan to Achieve the Millennium Development Goals states that Latin America and the Caribbean are among the best situated of developing regions in terms of their ability to meet the Goals. Infant mortality and under-five mortality are decreasing, and the two subregions are on track for meeting the 2015 under-five mortality target. At a 2005 meeting in Argentina, the ministers of health and the environment of the Americas agreed to set forth a regional plan to protect children from environmental hazards. Strong and sustained political commitment will lead to healthy and productive lives for the Region's 302 million children, now and in the years to come.

1. United Nations Development Program, U.N. Millennium Project. Investing in Development: A Practical Plan to Achieve the Millennium Development Goals. New York: UNDP; 2005. Available at: <http://www.unmillenniumproject.org/reports/fullreport.htm>. Accessed on 12 March 2009.



20 Striving for Equality in Health and Environment

Opportunities for poverty alleviation bring better health and enhance children's possibilities of a brighter future.

The Region of the Americas has been called the most inequitable of the world. Here live the world's richest and also those among its poorest. In 2004, average annual per capita income averaged from US\$ 41,440 in the United States to US\$ 400 in Haiti.¹ Within any given nation, there are large regional variances, as well, in terms of wealth distribution, land ownership, education, and availability and quality of basic infrastructure.

Even in the wealthiest countries, not all children have an equal chance of survival and often the differences divide along ethnic lines. In the United States, an infant who is African-American or Native American has a greater likelihood than infants of other ethnicities of dying before he/she reaches his/her first birthday.

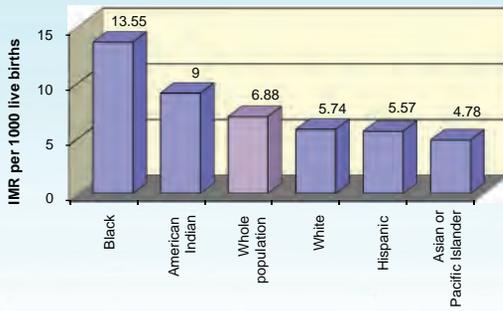


Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2006. Washington, DC: PAHO; 2006.



Graph 47

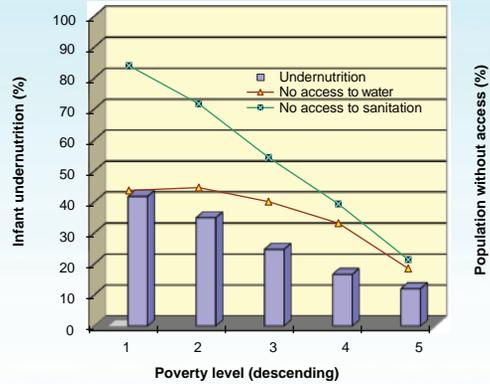
Infant mortality rates, by ethnic group and nationwide, United States, 2001–2003.



Source: Based on data from: Table 3. Infant mortality rates by race and Hispanic origin of mother: United States and each State, Puerto Rico, Virgin Islands, and Guam, 2001–2003 linked files. In: Mathews TJ, MacDorman MF. Infant Mortality Statistics from the 2003 Period Linked to Birth/Infant Death Data Set. National Vital Statistics Reports 2006;54 (16):1–30.

Graph 48

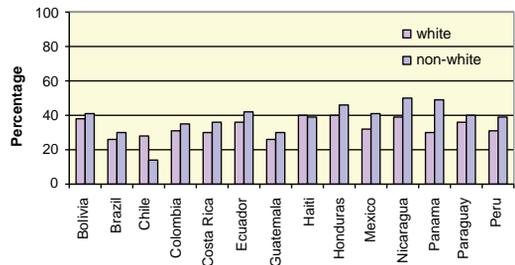
Urban population without access to water and sanitation services and affected by undernutrition, by percentage and poverty level, Peru, 2001.



Source: Government of Peru, Ministerio de la Mujer y Desarrollo Social, Fondo Nacional de Cooperación para el Desarrollo Social.

Graph 49

Proportion of children aged 0-14 in white and non-white households, selected countries, Region of the Americas, various years.^a

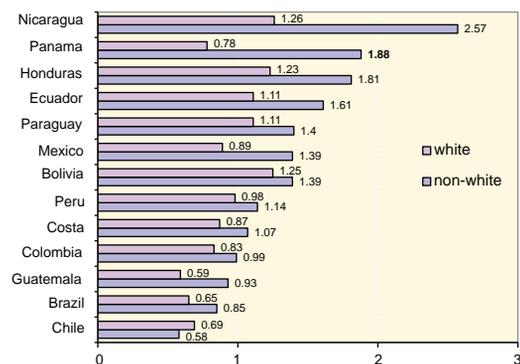


^a Bolivia, 2002; Brazil, 2002; Chile, 2000; Colombia, 1999; Costa Rica, 2001; Ecuador, 1998; Guatemala, 2002; Haiti, 2001; Honduras, 2003; Mexico, 2002; Nicaragua, 2001; Panama, 2002; Paraguay, 2001; Peru, 2001.

Source: Busso M, Cicowiez M, Gasparini L. Ethnicity and the Millennium Development Goals. New York: United Nations Development Program; 2005. Available at: <http://www.undp.org/latinamerica/publications.shtml>. Accessed on 25 March 2009.

Graph 50

Number of children under age 12 per family, selected Latin American countries, 1999–2002.



Source: Busso M, Cicowiez M, Gasparini L. Ethnicity and the Millennium Development Goals. New York: United Nations Development Program; 2005. Available at: <http://www.undp.org/latinamerica/publications.shtml>. Accessed on 25 March 2009.

Ethnicity and geography are typically reliable indicators of child health throughout the Region. From the northernmost to southernmost part of the Americas, an indigenous or Afro-descendent child will tend to live in a rural area and experience greater poverty than his or her white counterpart. The non-white child tends to live in a larger family. In urban Latin America and the Caribbean, a white child has, on average, 20% more access to hygienic restrooms.² The non-white child is more likely

to come from an uneducated or less educated family that earns, on average, a lower wage than its white counterparts.

The child is less likely to enroll in school and if he/she does enroll, will be less likely to finish his/her elementary-level education. Children of ethnic minorities are more likely to die before they reach their fifth birthdays, tend to live in more degraded physical environments, have available lower-quality schools, and lack access to medical care.

Throughout the Americas, indigenous people are particularly marginalized and often lack a voice of advocacy, with children in this group bearing the brunt of discrimination and lack of opportunities for the future.

The inequality that persists in the Americas jeopardizes individual opportunity and hurts national prosperity. Children with innate talents might not find a way to reach their full potential. This entraps the child in a cycle of poverty in which, without adequate education there are fewer opportunities to earn a decent wage and break the cycle, resulting in poverty that is perpetuated over gener-

ations. At the national and international levels, unmet human potential negatively affects economic growth and development by decreasing overall production potential and compromising the ability of countries with lower growth and development levels to take advantage of opportunities for innovation and efficiency. Increasing equality improves economic growth over the long term, while providing opportunities nearly instantly to children and paving the way for future generations to prosper.³ All children deserve the chance to achieve their full potential and to become full and active participants in the economy and society.

Policy Actions—Breaking the Poverty Traps

- Develop policies that actively promote equality in each country's health and education systems.
- Increase fairness and transparency in governance at the municipality, provincial, and national levels.
- Improve fairness and openness in land tenure and legal title to land, thereby increasing the proportion of households with access to secure tenure.
- Develop and implement targeted policies to enable all ethnic groups to have equal access to societal goods and economic opportunities.

Related Millennium Development Goals

Goal 1: Eradicate extreme poverty and hunger

Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than US\$1 a day

Goal 2: Achieve universal primary education

Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

Goal 3: Promote gender equality and empower women

Target 4: Eliminate gender disparity in primary and secondary education preferably by 2005 and in all levels of education no later than 2015

Goal 4: Reduce child mortality

Target 5: Reduce by two-thirds, between 1990 and 2015, the under-5 mortality rate

Goal 5: Improve maternal health

Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio

Goal 7: Ensure environmental sustainability

Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation

Target 11: Have achieved by 2020 a significant improvement in the lives of at least 100 million slum dwellers

1. Pan American Health Organization. Health Situation in the Americas: Basic Indicators 2006. Washington, DC: PAHO; 2006.

2. Busso M, Cicowiez M, Gasparini L. Ethnicity and the Millennium Development Goals. New York: United Nations Development Program; 2005. Available at: <http://www.undp.org/latinamerica/publications.shtml>. Accessed on 25 March 2009.

3. World Bank. World Development Report 2006: Equity and Development. Washington, DC: World Bank; 2005.



