



World Ecology Report

Critical Issues in Health and the Environment

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SPECIAL FOCUS

Our Vulnerable Children

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"Our citizens cannot thrive if the very air we breathe, the water we drink, and food we eat and resources we rely on are at risk. We can keep wasting water, pumping out carbon dioxide and destroying species. Or we can act now to protect the planet."

Madeleine K. Albright,
former US Ambassador
to the UN



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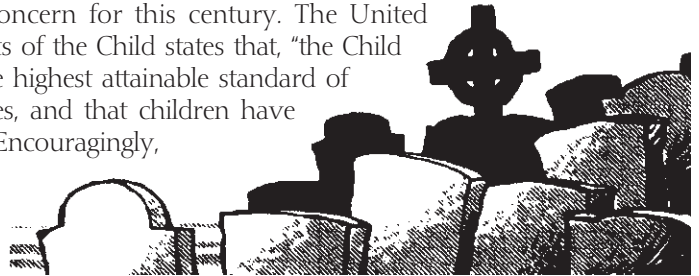
*"A child in danger is a child that **cannot** wait."*
Kofi Annan,
Secretary General,
United Nation

Children living in the United States today are the beneficiaries of many scientific advances of the twentieth century. Smallpox has been eradicated, immunizations have protected children from the polio virus and antibiotics have "cured" what were once life threatening diseases. Children in other developed nations have been similarly fortunate.

This has not been the case (except very selectively) in the developing world. The World Resources Institute reports that, in the Least Developed Countries, one in five children do not live to see their fifth birthday—mostly because of avoidable environmental threats to health. That translates into roughly 11 million avoidable childhood deaths each year. Hundreds of millions of others, both children and adults, suffer ill health and disability that undermine their quality of life and hopes for the future.

Very few people see the connection between the health of our habitat and the health of its inhabitants...particularly our children. Say the word "environment," and the images that pop into most people's minds will be things like logged-out rainforests, oil spills in Alaska, or endangered whales or pandas. Our idea of the environment is usually as something "out there," to be enjoyed or preserved or overcome—not as an integral part of our daily existence and human health.

Fortunately, environmental health risks to children are increasingly being recognized as a critical concern for this century. The United Nations Convention on the Rights of the Child states that, "the Child has the right to enjoyment of the highest attainable standard of health and to health care facilities, and that children have the right to a safe environment." Encouragingly, 198 countries have signed the convention including all UN member nations except the USA and Somalia.



SOURCE: World Press Review

Promoting Environmental Health

The World Health Organization defines environmental health as follows:

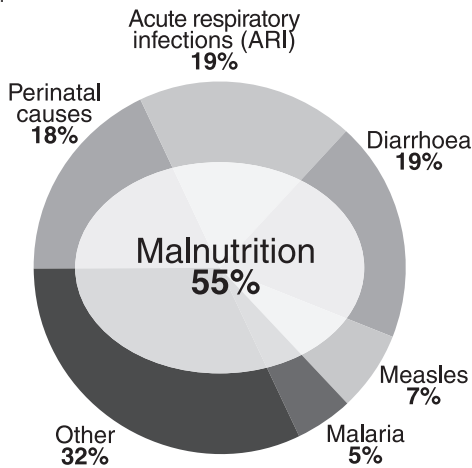
"Environmental health includes both the direct pathological effects of chemicals, radiation and some biological agents and the effects (often indirect) on health and well-being of the broad physical, psychological, social and aesthetic environment, which include housing, urban development, land use and transport."

Promoting children's environmental health requires protecting them from exposures to toxins and microorganisms in water, air, soil, food, and the objects which children contact. These exposures may be intentional or inadvertent as well as accidental. The immediate environment of children often includes a range of health hazards from lack of access to clean safe water, inadequate sanitation, lack of nutritious food, and inadequate waste management systems.

Children may be affected as well by broader environmental pressures from climate change, persistent organic pollutants, and the thinning ozone layer. Suggested indirect effects on human health include decreased immunity and vaccine efficacy, and decreased crop and plankton availability.

Malnutrition and Child Mortality

If a child is even mildly underweight, the mortality risk is increased. WHO estimates that malnutrition is associated with over half of all child deaths that occurred in developing countries.



SOURCE: UNICEF State of the World's Children, 1998

Environmental Hazards to Human Health

Environmental hazards to health fall into two broad categories. The first is a lack of access to essential environmental resources—chief among them sufficient and clean water, food, shelter, fuel, and air. The second broad category is exposure to hazards in the environment. These hazards include biological agents—microorganisms such as bacteria and viruses and parasites—that contribute to the huge global burden of infectious diseases. Biological agents are implicated in diseases from diarrhea to acute respiratory infections, to malaria, to ulcers, and to some cancers. Also included are noxious chemical and physical hazards in the environment. Some pollutants, such as pesticides and industrial solvents, are created by human activities. Others, including arsenic or ultraviolet (UV) radiation, occur naturally in the environment, although exposure can be exacerbated by human activities. These pollutants can undermine health in various ways, by contributing to cancer or birth defects or by damaging the body's immune system, which renders people more susceptible to a variety of other health risks.

In the past several years, scientists have become increasingly aware that environmental changes, locally and regionally, as well as globally, can exacerbate both types of environmental health problems. Development projects such as the building of dams and roads can displace local populations, for instance, altering agricultural practices, undermining nutrition, and increasing the spread of infectious diseases. On a global scale, greenhouse warming threatens to render certain land unsuitable for agriculture or even habitation, and also to increase the range of disease-carrying insects and animals.

As citizens of this planet we should be concerned not just

with today's environmental health threats, which are clearly substantial, but also with the extent to which human activities are altering the environment and what those changes portend for human health. Environmental change is an inevitable consequence of economic development and people's desires to improve their quality of life. In pursuit of a better life, forests and grasslands are converted to farms, homes, and commercial spaces; raw materials are extracted for energy and commerce; and waterways dammed and diverted. Pollutants are dispersed into air, water, and soil. In the process, the face of the planet has been transformed.

Without question, the benefits of economic development have been enormous. Economic growth and social progress of the past several decades have ushered in an era of untold prosperity and health in many regions of the world. Globally, per capita gross domestic product (GDP) has jumped from US \$2,257 to US \$3,168 in the past 25 years; life expectancy has climbed from 57.9 years to 65.6 years. Yet, economic development has had unintended consequences as well—namely, environmental degradation and increased threats to human health. Unless consideration is given in advance to the consequences of economic growth—especially the rapid growth now underway in many parts of the world—environmental threats to human health will surely intensify, undermining the gains that development typically brings.

Children's Unique Vulnerability

The central theme of a pivotal report by the U.S. National Academy of Sciences in 1993 was that children are not "little adults"—a fact already known to legions of parents, teachers, and others worldwide. Infants and children are different from adults because they are growing and developing. Environmental hazards affect children differently than adults. Their bodies are not fully mature, and, therefore, may not be capable of detoxifying certain harmful compounds. The very nature of children's behavior—highly curious and physical—can also put them at increased risk. That children are uniquely vulnerable to environmental hazards is well established in the scientific literature. In fact, the World Health Organization recommended more than a decade ago that, "when health risks from chemicals are evaluated, the special characteristics of infants and children must be recognized."

- **Greater Exposure:** Pound for pound, children breathe more air, drink more water, and consume more food than adults. This higher rate of intake means that children will receive higher doses of whatever contaminants are present in the air, water, or food. In addition, infants have a relatively greater surface area of skin than adults, thereby increasing their potential dermal absorption of certain compounds.

- **Differential Intake:**
 - Children ages one through five eat three to four times more per unit of body weight than the average adult American. The average one-year-old drinks twenty-one times more apple juice and eleven times more grape juice,

and eats two to seven and a half times more grapes, bananas, apples, pears, carrots and broccoli than the average adult.

- Infants and children drink more than two and a half times as much water daily as adults do as a percentage of body weight. (An infant living solely on formula consumes about one-seventh of his or her own weight of water each day, which corresponds to approximately three gallons, or thirty-five cans of soda, for a 155-pound adult man.)

- The air intake of a resting infant is twice that of an adult under the same conditions.

- A typical newborn weighs one-twentieth of the weight of an adult male, but the infant's surface area is one-eighth as great. Therefore, the total area of skin that could be exposed to a chemical (by swimming or bathing in polluted water or rolling in dirt) is two and a half times as great per unit of body weight in the infant as in the adult.

• **Childhood Behavior:** The typical nature of children's behavior also increases their exposure to environmental toxicants. An infant frequently explores objects by placing them in his or her mouth. This common hand-to-mouth behavior increases an infant's ingestion of substances in soil, household dust, floors and carpets, and on the objects themselves. In recognition of this, the U.S. Environmental Protection Agency (EPA) recently proposed assuming that children aged three to five years old put their hands to their mouths an average of one and a half times per hour. As children grow, their endless curiosity and lack of fear can further increase their exposure to environmental hazards. With considerable physical energy, children can explore locations without regard for the consequences of their actions. At rest, children's breathing rates are faster than those of adults, and children's greater levels of physical activity can increase their breathing rates even further.

Children often play at ground level. In contrast, an adult's common breathing zone is four to six feet above the floor. Children will receive greater inhalation and dermal exposure to chemicals present on floors, carpet, grass, or dirt. Also, heavier chemicals such as lead and particulates will settle and accumulate in the air at ground level.

• **Increased Susceptibility:** Human infants and children differ from adults not only in their size but also in the relative immaturity of their biochemical and physiological functions. Childhood is characterized by rapid physical and mental growth. Accordingly, certain organs may not be fully developed and may be more vulnerable to injury. Children absorb, metabolize, and excrete compounds differently than adults.

• **Rapid Growth and Development:** The fetus is particularly sensitive to environmental toxicants. Chemicals can affect the children born to women exposed during pregnancy, while the women remain unaffected. For example, the children of women from Michigan who ate two to three meals of fish contaminated with PCBs per month for six years before pregnancy had lower birth weights, memory deficits at seven months and four years of age, and cognitive deficits persisted at eleven years of age. In Iraq, children

"Human rights cannot be secured in a degraded or polluted environment. The fundamental right to life is threatened by soil degradation and deforestation and by exposures to toxic chemicals, hazardous wastes and contaminated drinking water.... Environmental conditions clearly help to determine the extent to which people enjoy their basic rights to life, health, adequate food and housing, and traditional livelihood and culture. It is time to recognize that those who pollute or destroy the natural environment are not just committing a crime against nature, but are violating human rights as well."

Klaus Toepfer, Executive Director of the United Nations Environment Programme at the 57th Session of the Commission on Human Rights, Geneva, 2001

born to women who during pregnancy inadvertently ate seed grain treated with mercury to prevent fungus had severe developmental and mental deficits.

An infant gains weight more rapidly during the first four to six months after birth than at any other time during his or her life. Typical newborns double their weight during the first five to six months and by their first birthday will weigh three times their birthweight.

The growth of integral parts of the central nervous system (brain) and the immune system (thymus) proceeds most rapidly in the first six years of life. At age six, a child's weight is only about 30 percent of an adult's, but the child's thymus is approximately the size of the adult's, and the brain is about 80 percent of adult size.

Many organs are not fully developed at birth and continue developing for years. The nervous system, lungs, immune system, and reproductive organs undergo extensive growth and development in utero and throughout infancy and early childhood. For example, sex organ development is not complete until puberty; myelination, the insulating of the nerve fibers, of the brain is not complete until adolescence; and the alveoli, or terminal air sacs in the lung where oxygen from the air enters the blood, continue to increase in number until adolescence.

• **Differential Absorption, Metabolism, and Excretion:** Infant's and children's pathways of absorption, metabolism, and excretion of compounds are different from those of adults. In some instances, children may be more susceptible than adults due to their increased rates of absorption or decreased rates of elimination of foreign compounds. In other cases, the opposite may be true. Children will absorb about 50 percent of lead ingested, whereas adults will absorb only about 10 to 15 percent. Kidneys are the principal pathway for elimination of most chemicals from the body. At birth an infant's kidney's filtration rate is a fraction of adult values, and by age one the rate is at adult levels.

Recent molecular epidemiological data indicate that infants and children retain greater amounts of certain environmental toxicants. In a study of Polish newborns and their mothers, biomarkers, levels of polycyclic aromatic hydro-

carbon (PAH)-induced DNA damage, were measured. Among newborns exposed to PAHs in utero, the level of DNA damage was comparable to the level in their mothers, even though the estimated dose to the fetus was one-tenth of that to the mother. Similarly, in young children (under two years of age), levels of an indicator of exposures to PAHs (1-hydroxypyrene glucuronide) in urine were higher than in their mothers. Another study investigated PCB levels in individuals residing on a Mohawk reservation downstream from pollution sources on the St. Lawrence River. PCBs were found in the breast milk and urine of women who ate fish caught in the river. The PCB concentrations in the urine of breast-fed infants were ten times higher than in the urine of their mothers.

• **Longer Lifetimes:** Children have more years of future life than most adults. Therefore, they have more time to develop any chronic diseases that might be triggered by early environmental exposures. Many diseases initiated by chemical hazards require decades to develop. Early childhood exposure to certain carcinogens or toxicants may be

more likely to lead to disease than the same exposures experienced later in life.

The Scope of the Threat to Our Children

Some facts and figures will serve to document the extent of the problem in developing countries:

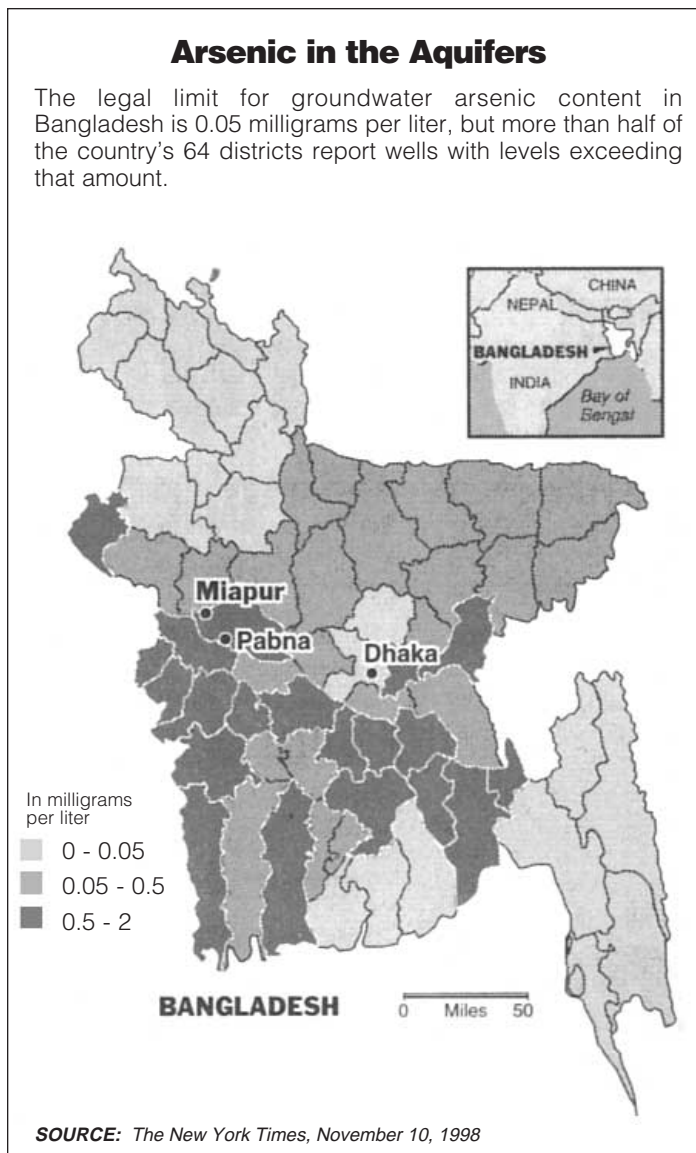
- Water pollution in Uzbekistan has led to a substantial increase in birth defects and complications in pregnancy.
- Pesticide exposures in Central Sudan have been linked to 22% of hospital stillbirths.
- Air pollution in Ukraine has been linked by epidemiologists to 21% of all illness affecting women and children.
- Nuclear contamination in Chelyabinsk, Russia, has reportedly led to a 20+% increase in cancer rates and in birth defects.
- In Guatemala, pesticide residues in breast milk are reported to be 250 times the amounts allowed in cow's milk.
- Almost one third of the global burden of disease can be attributed to environmental risk factors. Over 40% of this burden falls on children under 5 years of age—who constitute 12% of the world's population.
- Air pollution from inappropriate combustion of fossil fuels for heating and cooking is linked to respiratory infections, which cause up to 20% mortality in children under five.
- Lack of access to safe drinking water, poor sanitation and hygiene are the main causes of diarrhoeal disease that kill around 2,000,000 children under 5 years of age every year.
- About 120,000,000 children work full time and as many as 70% of them work in dangerous environments.

Towards a Healthier Future for our Children

In July 1999, the World Health Organization Department for Protection of the Human Environment (PHE) set up a Task Force for the Protection of Children's Environmental Health in response to the growing concern expressed by the G8 states and other nations. The Task Force's activities aim to raise awareness on the subject and promote the recognition and evaluation and mitigation of the main, emerging and re-emerging environmental threats menacing our children's health.

The World Health Organization (WHO) is organizing the International Conference on Environmental Threats to the Health of Children which will be convened in Bangkok on March 3-7, 2002. This five day conference will address new scientific data and research results on the special vulnerability of children to environmental hazards. Princess Chulabhorn Manirol of Thailand who will serve as President of the Conference stated, "Children represent the future of countries but are especially vulnerable to environmental threats. We must protect their health and development by promoting safe environments."

SOURCES: World Health Organization; United Nations Environment Programme Global Environmental Outlook 2000; The U.S. Environmental Protection Agency; World Resource Institute; INCHES; Environmental Health Perspectives; Gallon Environmental Letter; Natural Resources Defense Council; National Institutes of Health; Bioscience



Health Threats to America's Children

The U.S. Environmental Protection Agency has catalogued and is researching eleven direct health threats to America's children. Asthma is the leading cause of hospital admissions for American children.

1. Lead poisoning is a top environmental health hazard for young children, affecting as many as 1.7 million children age five and under, according to Centers for Disease Control and Prevention (CDC) data. Although lead-based house paint has long since been taken off the market, children living in older homes are threatened by chipping or peeling lead paint, and excessive amounts of lead-contaminated dust. More than 80 percent of U.S. homes built before 1978—some 64 million—contain lead paint. Lead poisoning in children causes IQ deficiencies, reading and learning disabilities, impaired hearing, reduced attention spans, hyperactivity, antisocial behavior, and other problems.

2. Pesticides pose a risk for children both as household chemicals and in food, particularly because children consume higher amounts of fresh produce than adults. Some pesticides can cause cancer, central nervous system damage, or respiratory illness. Each year, more than 100,000 children accidentally directly ingest pesticides. EPA receives an average of 24,000 pesticide hotline calls each year, two-thirds of which are from parents concerned about pesticides' dietary or household risks for children.

3. Asthma deaths are on the rise in children and young people, increasing by a dramatic 118 percent between 1980 and 1993, according to the CDC. Many of the most common air pollutants can cause or contribute to respiratory illnesses, including asthma, which is now the leading cause of hospital admissions for our nation's children. More than 25% of the nation's children live in areas that don't meet national air quality standards.

4. Drinking water contaminants pose a risk to children, particularly to infants, who drink more fluids per pound of body weight—and who may be more vulnerable to the effects of microbial contaminants like cryptosporidium. EPA estimates that last year, a total of 30 million Americans drank water from systems that violated one or more public health standards—and roughly 13 million of them are served by systems that do not filter their water and thus may not adequately protect against microbial contaminants. In Milwaukee in 1993, hundreds of thousands of residents became severely ill and 100—including children—died after the drinking water became contaminated with cryptosporidium.

5. Polluted waters not only affect children when they swim in our lakes and streams, but also when they eat certain freshwater fish. Hundreds of beaches are closed each summer due to raw sewage and other contamination. All over America, warning signs are posted near thousands of rivers, lakes and streams, raising special concerns that pregnant women, children, and others with sensitive or compromised immune systems should not eat fish caught in the water because of contamination. From January to September 1994, some 1,500 fish advisories were posted—with 73 percent of them related to mercury contamination. Exposure to high doses of methyl mercury during pregnancy and the first few months of life may pose particular threats to a child's developing nervous system.

6. Toxic waste dumps are a neighborhood blight and a health hazard to our communities, especially to our children. Parents should not have to worry that their children will be exposed to toxic waste when playing in their neighborhood, yet one in four Americans—including 10 million children under the age of 12—lives within four miles of a toxic waste dump and our cities are littered with thousand of abandoned industrial sites.

7. PCBs, or polychlorinated biphenyls, were banned by EPA in 1977 because they cause cancer; some 20 years later, however, this toxic chemical continues to persist in the environment, often in contaminated fish. Children whose mothers have high levels of PCBs when pregnant may develop learning disabilities and experience delayed development.

8. Second-hand tobacco smoke dramatically affects children. A recent Center for Disease Control (CDC) study estimates that children exposed to tobacco smoke in their homes have more days of restricted activity, more days of bed confinement, and miss more school days annually than other children, primarily due to acute and chronic respiratory conditions.

9. Overexposure to the sun's harmful ultraviolet light can damage children's skin as they spend time playing outdoors. The American Academy of Dermatology estimates that up to 80% of a person's lifetime exposure to potentially damaging ultraviolet light occurs before the age of 18. Ultraviolet rays pose a threat to children because severe sunburns experienced in childhood increase the likelihood of developing malignant melanoma, the most deadly kind of skin cancer. Last year there were an estimated one million new cases of skin cancer in the United States.

10. Potential Effects on the Endocrine System from Pesticides and Industrial Chemicals: In recent years, increasing scientific and public attention has been focused on the potential effects of synthetic chemicals on the hormone system. These chemicals—which have been labeled "endocrine disrupters"—may pose a major health concern for children. Although there is considerable scientific uncertainty, it is clear that a number of chemicals, including organochlorine pesticides such as DDT and chemicals such as PCBs, can cause endocrine disruption in wildlife and laboratory animals. Because very low levels of chemicals that block or mimic reproductive and thyroid hormones can determine the course of prenatal development, concern exists about the potential for birth defects and alterations of normal growth and development in children. Endocrine disrupters may also play an important role in reproductive cancers.

11. Potential Effects from Particulate Matter Air Pollution: Epidemiological studies indicate that exposure to particulate matter—fine particles in the air, such as soot or dust—at levels below the current national ambient air quality standard can be associated with adverse effects on public health. Studies have identified children as a sensitive population to particulate matter, both in general and for those with respiratory illness. Reports of restricted activity days, school absences, increased respiratory symptoms, and decreased lung function have all been associated with children's exposure to particulate matter.

HEALTH AND ENVIRONMENT

A Review of Global Issues

The state of human health globally serves as a key indicator for the conditions of the natural environment and the success of sustainable development. The World Health Organization estimates that poor environmental quality contributes to 25 percent of all preventable ill health in the world today. Better health management can be effective in addressing some of the most pressing sustainability issues including poverty eradication, production and consumption. Sound public health systems form the basis for national and international security.

1. Climate Change

Climate change has been predicted to cause increases in average temperature of Earth's surfaces. Adverse impacts on human health may result from human induced climate change, a change that is due to human activities that alter the chemical composition of the atmosphere through the buildup of greenhouse gasses—primarily carbon dioxide, methane, and nitrous oxide. These human activities include the large-scale burning of fossil fuels. The heat-trapping property of these gases is undisputed. If atmospheric concentrations of greenhouse gases continue to increase, the average global temperature will increase by 1 to 3.5 degrees Celsius by the year 2100.

Nearly all of the potential adverse health effects of projected climate change are significant, real-life problems that have long persisted under stable conditions. According to *Climate Change and Human Health*, a 1996 report by a Task Group of the WHO, the most serious effects of climate change to human health would be the increase in the incidence of vector-borne infectious diseases and extreme weather events, and the rise in sea level. The shifts of climate change could result in shifts in the ecological systems that allow for an increase of vector-borne diseases such as

malaria, a disease for which no vaccine exists, has affected more than 500 million people in 90 countries, causing 1.5-2.7 million deaths per year (WHO 1997). In addition, an increase in extreme weather events can injure humans directly and indirectly. For example, Bangladesh experienced an abnormally bad typhoon that killed nearly 750,000 people and remains vulnerable to such disasters. The mixing of sewage and drinking water that occurs during flooding, waterborne

diseases such as diarrheal diseases are likely to increase with climate change.

2. Water Quality and Scarcity

Water scarcity and lack of quality water pose tremendous problems for the world population. According to the United Nations University report, half of the world's approximately 6 billion people lack proper sanitation, and 1.2 billion do not have access to clean drinking water. Today, up to 300 million people face severe water shortages, and by 2050 two-thirds of the world's population could face water shortages (UN Conference on Water and Sustainable Development). According to the UNEP GEO-2000 review, if present consumption patterns continue, two out of every three persons on Earth will live in water stressed conditions by the year 2025.

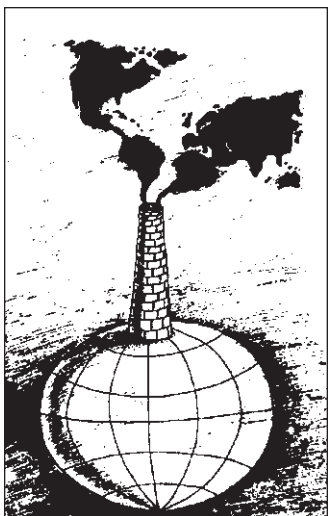
Nearly half the human population suffers from diseases related to insufficient or contaminated water. Virtually all such people live in developing countries, and the majority of sufferers in developing countries are poor. Moreover, water-borne bacterial contamination has the most devastating impact on the women and children who lack basic food and speedy access to doctors and medicine. Some statistics of water borne diseases include Schistosomal (worm) eggs, which infect some 200 million people per year through drinking water that contains the parasitic worm *Dracunculus medinensis*. Millions of people per year contract diseases transmitted by insects whose larvae live in water. More than 250 million people per year thus contract malaria; 90 million, filariasis; 30 to 60 million, dengue fever; and 18 million, river blindness.

Moreover, there are social problems that are linked to water scarcity and lack of clean water. Regions that face water scarcity will be unable to achieve food self-sufficiency. As competition grows among urban and rural water users, countries and regions, environmental and health security will become an increasingly important element in national defense. Disputes over water, for example, are potential causes for conflict. Dams, irrigation systems, desalination plants and reservoirs could be direct targets in war.

3. Health Impacts of Air Pollution

Air pollution is a major environmental health problem affecting the developing and the developed world alike. The pollutants consist of gaseous pollutants, odors, and SPM (suspended particulate matter) such as dust, fumes, mist, and smoke. With population growth, energy generation, industrialization and increased vehicle use, outdoor air pollution has worsened in most large cities in many developing nations and especially in Asia.

The Health Exposures to Air Pollution (HEAP) are considerable. On a global basis, estimates of mortality due to outdoor air pollution run from around 200,000 to 570,000 (HEAP). According to the WHO, industries without proper control are a major source of air pollution. Adverse health effects include coughing, bronchitis, heart diseases, and lung cancer. Many of air pollution's health effects, such as bron-



SOURCE: World Press Review

chitis, tightness in the chest, and wheezing, are acute or short term, and can be reversed if air pollution exposures decline. Other effects appear to be chronic such as lung cancer and cardiopulmonary disease. The most vulnerable groupings are infants and elders. In Latin America, exposure of some 81 million city residents, more than one quarter of all city dwellers in the region to high air pollution levels is believed to cause an estimated 65 million days of illness each year (HEAP).

Indoor air pollution poses a great threat to health as it is released in close proximity to people. In developing nations, some 3.5 billion people continue to rely on biomass for their energy requirements. These traditional energy usages include wood, charcoal, agricultural, residue, and animal waste. Women and children are most susceptible to this threat. Indeed, the World Bank has designated indoor air pollution in developing countries as one of the four most critical global environmental problems. Indoor air pollution causes illnesses such as acute respiratory infections in children, chronic obstructive lung diseases such as asthma and chronic bronchitis, lung cancer and stillbirths and other problems at birth. In South Africa, investigators found that Zulu children living in homes with wood stoves were almost five times more likely to develop a respiratory infection severe enough to require hospitalization.

4. Ozone Depletion

The ozone layer normally functions as a natural filter, absorbing most of the sun's burning ultraviolet rays. With the thinning of the ozone, which has been well documented, an increase in UV radiation has reached the earth's surface, where it disrupts biological processes and damages a number of materials. Although difficult to quantify, the harmful health effects that are influenced by an increased flux in UV radiation (especially UVB) include skin cancer (non-melanoma and melanoma skin cancers), premature aging of the skin, cataracts, and diminished cellular immunity. Furthermore, the decreased immunity may cause increased severity of infections, less effective vaccinations and perhaps an increase in non-Hodgkin's lymphoma. To illustrate the seriousness of the effects of UVB, scientists have confirmed that non-melanoma skin cancer is caused by UVB and that a sustained 10% depletion of the ozone layer would lead to a 26% percent increase in non-melanoma skin cancer. This could mean additional 300,000 cases per year worldwide.

However, there is the possibility that human health would not only be directly affected by the increased levels of ambient UVB radiation, but also be indirectly affected by changes to the environment because of stratospheric ozone depletion. For example, UVC radiation contributes to photochemical smog: it can increase ozone at ground level and thus aggravate respiratory afflictions. A potentially more dramatic effect could stem from a decrease in food production because of the effects of stratospheric ozone depletion on certain plants and animals. These indirect health effects are, however, less easily quantified than the direct effects on human.

Estimated annual losses (gains) in the event that atmospheric CO₂ concentrations reach twice-pre-industrial levels

\$US billions	EU	USA	Ex-USSR	China	OECD	World
Coastal protection measures	0.1	0.2	0.0	0.0	0.5	1.1
Loss of coastal land	0.3	2.1	1.2	0.0	8.1	14.0
Coastal wetlands*	4.9	5.6	1.2	0.6	16.9	31.6
Other ecosystems	9.8	7.4	2.3	2.2	25.5	40.5
Agriculture	9.7	7.4	6.2	7.8	23.1	39.1
Forestry	0.2	1.0	0.6	0.0	3.0	3.4
Energy industry	7.0	6.9	(0.7)	0.7	20.5	23.1
Water management	14.0	13.7	3.0	1.6	34.8	46.7
Mortality	21.9	16.6	3.9	4.9	57.3	82.0
Air pollution	3.5	6.4	2.1	0.2	11.9	15.4
Emigration	1.0	0.5	0.2	0.6	2.0	4.3
Tropical cyclones	0.0	0.2	0.0	0.1	1.1	3.0
Total	72.4	68.0	20.0	18.7	204.7	304.2
<i>Percentage of GDP</i>	<i>1.6</i>	<i>1.4</i>	<i>0.8</i>	<i>6.1</i>	<i>1.4</i>	<i>1.5</i>

*Includes losses to fishing

SOURCE: UNEP, Vol. II, #3, 2001

Global consumption of ozone-depleting substances (ODS) has declined, thanks to a phase out by industrialized countries and the recognition of responsibilities by developing countries. Even with the decline of ODS, UNEP still predicts that past emissions of ODS will result in increases in UVB that will lead to the adverse health effects that have been described.

5. Emerging and Re-emerging Infectious Diseases

Once hoped to be eliminated as a public health problem, infectious diseases remain the leading cause of death worldwide. Dramatic changes in society, technology and the environment together with the diminished effectiveness of certain approaches to disease control have propelled the world into a new era; the spectrum of infectious diseases is expanding and many infectious diseases once thought conquered are actually increasing. Emerging infectious diseases are newly identified and previously unknown infections, which cause public health problems either locally or internationally. Some emerging infectious diseases include the Ebola virus, which had its first outbreaks in 1976 and was later discovered and reported in 1977. Cases have been confirmed in four countries in Africa (Côte d'Ivoire,

POPs

There is clearly a need for further research, but the threats that POPs pose to human health and the environment are sufficiently dangerous to warrant swift and effective action. *The stakes are simply too high to delay—action on POPs must begin now.*

12 POPs are internationally recognized as needing immediate global action:

pesticides

aldrin
chlordane
DDT
dieldrin
endrin
heptachlor
mirex
toxaphene

industrial chemicals

hexachlorobenzene (also a pesticide)
PCBs (polychlorinated biphenyls)

unintended byproducts

dioxins
furans

SOURCE: UNEP for Life on Earth—Persistent Organic Pollutants (POPs), a Serious Threat to Human Health and Environment, 2000, e-mail: pops@unep.ch

Democratic Republic of Congo, Gabon and Sudan). Human immunodeficiency virus (HIV) is another emerging infectious disease discovered in the early 80's. It has been estimated that since the start of the epidemic, 30.6 million people worldwide have become HIV infected and nearly 12 million have died from AIDS or AIDS-related diseases (WHO).

Another emerging public health issue in the areas of infectious diseases is the rapidly growing number of bacteria becoming increasingly resistant to a wide range of antibiotics. In many regions, the low cost, first choice antibiotics have lost their power to clear infections of *Escherichia coli*, *Neisseria gonorrhoea*, *Pneumococcus*, *Shigella*, *Staphylococcus aureus*—increasing the cost and length of treatment of many common diseases including epidemic diarrhoeal diseases, gonorrhoea, pneumonia and otitis (WHO).

Re-emerging infectious diseases are the reappearances of diseases which are known, but which have formerly caused few infections. An example of such a disease is Dengue fever. Dengue fever was prevalent in many parts of South-East Asia in the 1950s; however, it re-emerged in the Americas in the 1990s.

Several factors have contributed to the emergence and re-

emergence of infectious diseases. Globalization of movement and travel, overpopulation of cities with poor sanitation, international trade in food, food preparation and distribution, exposure of humans to disease vectors, alteration of the environment, and climatic changes which have a direct impact on health. Other factors include a deteriorating public health infrastructure that cannot satisfy the needs of a growing world population.

6. POPs/Persistent Organic Pollutants

The persistent organic pollutants (POPs) are chemicals that resist degradation in the environment. They include a group of highly stable synthetic compounds utilized in agriculture as pesticides and in industry or generated inadvertently as by-products of combustion or industrial processes. They constitute a problem of world interest since they are highly persistent in the environment, moving to unsuspected sites far from their places of origin, where they accumulate in the tissues of most living organisms, poisoning humans and various forms of wildlife. POPs are toxic even at extraordinarily low concentrations; they can attach to intercellular receptor sites and trigger potentially harmful effects. Today, thousands of new compounds are entering the environment every year, and only few of them have been tested for toxicity. At the same time, due to globalization, these substances are more and more widely used in all spheres of life of modern societies—as pesticides in agriculture, in food processing, in production of packaging, in medicine, for production of toys, etc.

POPs are now understood to be one of the most dangerous threats to human health and the environment today. Reliable evidence has been gathered associating human exposure to specific POPs or classes of POPs with cancers and tumors at multiple sites; neurobehavioral impairment including learning disorders, reduced performance on standardized tests and changes in temperament; immune system changes; reproductive deficits and sex-linked disorders; a shortened period of lactation in nursing mothers; and diseases such as endometriosis, increased incidence of diabetes, and others.

Particularly disturbing is the concentration of these substances in human tissue and breast milk. These substances can be passed to the developing fetus through the placenta and to the young infant through breast milk. Even at very low concentrations (parts per trillion), these substances can have profound impacts on the development of the brain and reproductive system of children. Moreover, these substances can be passed to the young child and developing fetus while they are in their most crucial stages of development.

The environmental stress of the world's growing overall population aggravates each of the problems identified. Population growth rates have slowed on average world wide, but the increasing numbers of people particularly in the poorest areas of the developing world continue to challenge gains in environmental health.



DID YOU KNOW?

More people worldwide are now displaced by natural disasters than by conflict, according to a new study by the Worldwatch Institute titled *Unnatural Disasters*, (Worldwatch Paper 158). In the 1990s, natural catastrophes like hurricanes, floods, and fires affected more than two billion people and caused over \$608 billion in economic losses worldwide. This study found that the devastation from such natural disasters is increasingly caused by ecologically destructive practices. The projected effects of global warming, i.e., more frequent and extreme storms and sea level rise, carry the potential for greater losses than in the past. One in three people—approximately 2 billion people—now live within 100 kilometers of a coastline. Thirteen of the world's

19 megacities (with over 10 million inhabitants) are in coastal zones. Asia has been hardest hit by natural disasters. Between 1985 and 1999 90 percent of all people affected by disasters with 77 percent of deaths from disasters and 45 percent of recorded economic losses from disasters.

19 megacities (with over 10 million inhabitants) are in coastal zones. Asia has been hardest hit by natural disasters. Between 1985 and 1999 90 percent of all people affected by disasters with 77 percent of deaths from disasters and 45 percent of recorded economic losses from disasters.

SOURCE: News Advisory from the Worldwatch Institute, October 9, 2001, "Human Actions Worsen Natural Disasters"

Scientists have detected a 40% reduction in the average thickness of Arctic ice over the past 40 years. An estimated 27% of the world's coral reefs are now severely damaged, up from 10% in 1992.

SOURCE: Worldwatch News Release, *The Hard Numbers On Climate Change*, Washington, D.C., July 16, 2001, www.worldwatch.org.

More than 60 percent of African women are illiterate, and discrimination is the cause, according to Julienne Ondziel, rapporteur on women rights for both the OAU and the African Commission on human and people's rights. Gender discrimination in access to education produces the high illiteracy rates among African women who make up more than half of the population of Africa. In the 1970s, Tanzania had reached about 90 percent adult literacy level but these gains dropped to about 70 percent in the 1990s according to Tanzania's Vice President.

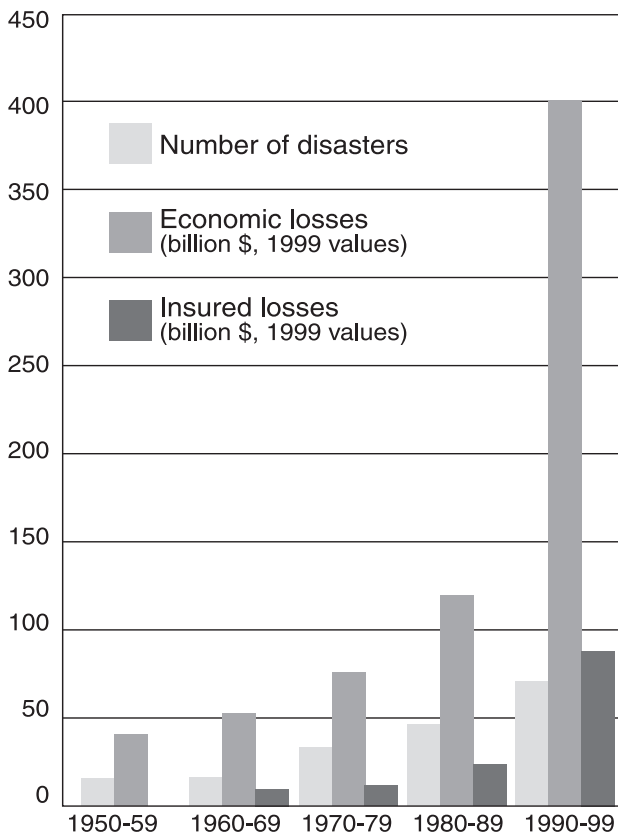
SOURCE: Africa News; October 10, 2001; October 11, 2001; International News online

According to the United Nations Population Fund (UNFPA), roughly 350 million couples lack access to a full range of modern contraceptives. Millions of others are missing the most rudimentary knowledge about contraceptives. Consequently, there are approximately 100 million unwanted pregnancies each year, with a fifth of these ending in unsafe abortion. More than half-a-million women a year die from dangerous abortion procedures. According to International Planned Parenthood Federation, improving access to contraception in the developing world will take a lot of money, even though the devices themselves are cheap, because aid agencies need large quantities of contraceptives and donor countries are cutting back on their budgets. UNFPA says that international efforts to provide contraceptives to all those who need them will be short of \$100m a year by 2015 unless donors increase their contributions.

SOURCE: *The Economist*, October 11, 2001

A recent nutrition study conducted by the Food and Agriculture Organisation (FAO) in Cote d'Ivoire found that women need 30 percent more energy than their male counterparts. The study noted that women work two to three hours longer than men. The researchers observed the practices of 1,787 women and 1,565 men over a seven-day period in the Northern Savane, West and East Forest regions of Cote d'Ivoire. Covering a full range of agricultural activities, the research determined how work energy was distributed in this population during a part of the agricultural year, according to FAO. The study found out that women per-

Weather Related Disasters and Economic and Insured Losses
 1950-1999



SOURCE: UNEP, *Our Planet*, Vol. 11, #3, 2001

formed all the domestic tasks as well as working in agriculture while men worked only in agriculture. FAO conducted the study in collaboration with the Minnesota-based Mayo Clinic.

SOURCE: UN Office for the Coordination of Humanitarian Affairs 2001

■ Findings from the recently released UN Food and Agriculture Organization Report titled *World Markets for Organic Fruit and Vegetables*.

The value of total organic food sales: US, US\$8,000 million; Germany, US\$2,100 million; UK, US\$1,000 million; Italy, US\$1,000 million; France, US\$850 million; and

Switzerland, US\$450 million.

Organic produce is still a very small share of the total food market, but gains have been made within many countries in the past few years. Sales values have increased in most markets at an annual growth rate of 20 to 30 percent. In 1987, five farmers in Argentina were growing organic foods. Today, the organic sector is valued at US\$20 million. The report was released at a conference in Trinidad and Tobago on organic horticulture in the Latin American and Caribbean region.

SOURCE: UN Food and Agriculture Organization Press Release, Rome, 13 November 2001, www.fao.org

CHERNOBYL UPDATE

Iodine Deficiency Disorders (IDD) in the World

"After the accident, an increase of childhood thyroid cancer has been observed in Belarus and Ukraine, but no increase has been observed in Russia. It is highly likely that childhood thyroid cancer has been caused by the Chernobyl nuclear power plant accident. However, other causes should also be sought." Shigenobu Nagataki, M.D. Chairman, Radiation Effects Research Foundation, Hiroshima, Japan.

Since this area of Eastern Europe, especially the Carpathian mountain districts, continues to have iodine deficiency, there is a possibility that the radiation dose to the thyroid after the Chernobyl accident may be a contributing factor to the significant increase in the incidence of thyroid cancer noted in the area beginning in the 1990s. This article will focus on iodine deficiency which increases the potential for mental health disorders and affects over 740 million people, 13% of the world's population.



Cretin from iodine deficiency.

Global IDD Status

People at risk:	2.2 Billion
Total Goiter Rate:	13%
Iodized Salt Use:	68%

The majority of research into the behavior of iodine in the environment has been connected to the nuclear industry and the threat posed by radionuclides of iodine in the environment. In the aftermath of Chernobyl, I-131 has readily found its way through the food chain to humans where it has concentrated in the thyroid and may have led to thyroid cancer. Research in this field has yielded a much better understanding of the migration of iodine in the environment.

The Agenda of the 1990 World Summit for Children determined to eliminate Iodine Deficiency Disorders, which pose a serious public health problem in 130 countries. IDD is the world's most prevalent cause of brain damage. It jeopardizes children's mental health, which starts before birth. Serious iodine deficiency during pregnancy may result in stillbirths, abortions and congenital abnormalities such as cretinism, an irreversible form of mental retardation. A less severe but significant effect of IDD is the level of mental impairment that lowers intellectual abilities at home, school and work.

Iodizing table salt (at 5 US cents a year) is one of the best and least expensive methods of preventing IDD. The target is the elimination of IDD through universal salt iodization. Improvement in iodine status has been significant where salt iodization has been implemented. Over the last decade, the number of counties with salt iodization programs doubled, rising from 46 to 93. Today 68% of the 5 billion people living in countries with IDD have access to iodized salt. The result is the global decrease of mental retardation, cretinism and goiter.

SOURCES: WHO: *World Health Report, 2001*; International Council for Control of Iodine Deficiency Disorders (ICCIDD) *Journal, Vol. 15, #2, May 1999*



GOOD NEWS!

■ On 30 October 2001, the Aarhus Convention entered into force. Officially known as the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, it is popularly referred to by the Danish city, Aarhus, where it was adopted in 1998 by 39 countries and the European Community. The Aarhus Convention is as

much an environmental rights convention as it is a freedom of information statute. The Convention recognizes citizens' rights to information, participation and justice, and aims to promote greater accountability and transparency in environmental matters. The Convention has a three-pillar structure that strives to: (1) Allow the public greater access to environmental information held by public authorities; (2) Provide an opportunity for people to express their opinions and concerns on environmental matters and ensure that decision-makers take account of the public perspectives; and (3) Provide the public with access to review procedures when their rights to information and participation have been breached, and in some cases to challenge more general violations of environmental law. These underlying principles are derived from Principle 10 of the Rio Declaration on Environment and Development (1992).

SOURCE: United Nations Environment Programme (UNEP), Nairobi, 6 November 2001

■ The UN Climate Change Convention and the operational details of the Kyoto Protocol have been finalized, opening the way for nations to ratify the Protocol and bring it into force. The meeting in Marrakesh, Morocco also adopted the Marrakesh Ministerial Declaration as an input into the World Summit on Sustainable Development in Johannesburg, September 2002. The Declaration emphasizes the contribution that action on climate change can make to sustainable development and calls for capacity building, technology innovation, and cooperation with the biodiversity and desertification conventions. The finalized Kyoto rulebook specifies how to measure emissions and reductions, the extent to which carbon dioxide absorbed by carbon sinks can be counted towards the Kyoto targets, how the joint implementation and emissions trading systems will work, and the rules for ensuring compliance with commitments. The conference also elected 15 members to the Executive Board of the Clean Development Mechanism (CDM). The CDM is mandated to promote sustainable development by encouraging investments in projects in developing countries that reduce or avoid emissions. Developed countries then receive credit against their Kyoto targets for emissions avoided by these projects. The 1997

Kyoto Protocol will enter into force and become legally binding after it has been ratified by at least 55 Parties to the Convention. So far, 40 countries have ratified, including one industrialized country (Romania). The next series of meetings, to be known as COP 8, will be held from 23 October to 1 November 2002.

SOURCE: United Nations Framework Convention on Climate Change Secretariat Press Release, www.unfccc.int.

■ World fossil fuel consumption declined 0.2% in 2000, but fossil fuels still account for 90% of commercial energy use, with 25% of world energy derived from coal and 41% from oil; global oil use was up 1.1% in 2000. World coal consumption was down 4.5% in 2000; China, which also accounts for 25%, used 3.5% less coal in 2000 than in 1999. Wind power is the world's fastest growing energy source over the last decade, and grew by 30% in 2000. Wind power accounts for less than 1 percent of electricity worldwide, but recently passed 15% in Denmark. Production of solar electric cells jumped 45 percent in 2000; by comparison, nuclear generation increased by just 0.5%. Global carbon emissions fell for the third straight year in 2000, to 6.3 billion tons (-0.6%). Global carbon emissions increased 6% in the decade



Use of briquettes can reduce the cutting of trees for fuelwood. The briquettes are made from agricultural waste which is compressed using a simple lever-operated press.

SOURCE: Choices, UNDP, April 1998

of the 1990s, compared to the 15% gain in the 1980s, 29% in the 1970s, and 58% in the 1960s.

SOURCE: *Worldwatch News Release, The Hard Numbers On Climate Change, Washington, D.C., July 16, 2001, www.worldwatch.org*

■ The Kenya National Cleaner Production Center demonstrates how smart management can cut industrial waste and pollution. UNDP, the UN Industrial Development Organization (UNIDO) and the UN Environment Programme (UNEP) joined with the Kenya Research and Development Institute last year to set up the centre, officially launched in Nairobi recently. Based at the Institute, the centre promotes cleaner production practices and technologies that save money and help protect the environment. It also helps companies adhere to Kenya's Environmental Act, which requires reporting on raw materials used, products produced and waste generated. The center covers a number of sectors, including agricultural products, cement, chemicals, iron and steel, mining, pharmaceuticals, pulp and paper, electric power, textiles, leather tanneries, as well as municipalities and tourism.

SOURCE: *UN Development Program (UNDP), Newsfront, Friday, 2 November 2001, www.undp.org*

■ Four new children's environmental health research centers in the US will focus on childhood autism and behavioral problems such as attention deficit disorder. They will join the eight centers established in 1998 which research the links between the environment and children's health. A new center at the University of Illinois at Champaign/Urbana will assess the impact of exposure to mercury and PCBs among two groups of Asian-Americans in Wisconsin, whose diets are heavy in fish from the Great Lakes. At the University of California at Davis and the Robert Wood Johnson Medical School of the University of Medicine and Dentistry of New Jersey, researchers will study environmental factors that may be related to autism. The research centers are a response to the possibility that the exposure of unborn and newborn infants to various metals, chemicals or vaccines may trigger autism. Severe autism in children is manifested as a withdrawn state in which a child does not interact with his or her surroundings or with other people.

SOURCES: *US Environmental Protection Agency (EPA); National Institute of Environmental Health Sciences (NIEHS)*



Talgar Camp Redwood 2001, Kazakhstan. Supported by World Information Transfer (WIT).

WIT's 10th International Conference on Health and Environment, United Nations, April 25-27, 2001

(Papers published in the previous issue available upon request.)



Panel, April 25th, L to R: Christine Durbak, William Rom, Adnan Amin, David Kort



Henry Winkler, star of movies and TV, April 26th Luncheon Speaker



WIT Representatives, L to R: Mohamed El-Banna, Christine Durbak, Claudia Strauss, Carolyn Comitta, Wendy Caledon, Alan Geoghegan



*Sergei Ling,
Ambassador from Belarus*



VOICES

■ The United Nations Population Fund (UNFPA) released its annual *State of the World Population 2001* report, in November. The report titled *Footprints and Milestones: Population and Environmental Change*, focuses on environmental changes, poverty alleviation and reproductive health. The report finds that ensuring women's reproductive health and rights are critically important, both to improve the well-being of

growing human conditions and to protect the natural world. World population, now 6.1 billion, has doubled since 1960 and is projected to grow by half, to 9.5 billion, by 2050. By 2050, 4.2 billion people will be living in countries that cannot meet people's daily basic needs. Chapter 5 of this report discusses Health and the Environment. Further information is available at www.unfpa.org.

■ UNICEF's *The State of the World's Children 2002* focuses on leadership that turned the commitments made at the 1990 UN Summit on Children into positive actions and also the leadership necessary to ensure the right of every child to live in peace, health and dignity. Presenting models of leadership from individuals and agencies, organizations and alliances, this report spotlights the 'Say Yes for Children' campaign and the United Nations Special Session on Children.

■ The UN General Assembly Special Session on Children, postponed after the terrorist attacks against the United States, is tentatively scheduled for early May 2002. The Special Session, dedicated to children and adolescents, has defined two objectives: (1) a review of the achievements in the implementation of the Declaration and Plan of Action adopted at the 1990 World Summit for Children; (2) a renewed commitment and a pledge for action for children in the next decade. Two UN documents relate directly to the two objectives of the Special Session: (1) the report of the UN Secretary-General, *We the Children*, assesses the progress made over the last decade in fulfilling the goals of the Declaration and Plan of Action adopted at the 1990 World Summit for Children and makes recommendations for further action. An accompanying statistical review presents the most recent data on children's rights and well-being, based on data from 150 countries; (2) the outcome document of the Special Session, *A World Fit for Children*, includes a Declaration and a Plan of Action to improve child well-being over the next ten years.

"Humanity is part of nature and all parts of it—not just humankind— have an inherent right to exist"

Her Majesty Queen Noor of Jordan

*Nadia Matkiwsky,
Executive Director,
Children of Chernobyl
Relief Fund,
and Roland DeSilva,
Executive Board of WIT,
April 26th Luncheon*



*Janet Davison,
Vice President,
International Federation
of Red Cross and Red
Crescent Societies*



*Cary Granat, President,
Walden Media, April 27th
Luncheon Speaker*



World Information Transfer's **11th International Conference on Health and Environment: Global Partners for Global Solutions** will take place on April 25 and 26, 2002, at UN headquarters. The theme will be **Childhood Antecedents to Adult Illness**. Visit our web site for updated information and registration. www.worldinfo.org

POINT OF VIEW (continued from page 16)

Most New Yorkers are keenly aware that the destruction of the World Trade Center contaminated the City's air and may pose long term health hazards. Residents, emergency workers and those engaged in removing the woeful debris of Ground Zero have been exposed to toxicants in varying degrees. Since the duration of exposure to the elevated levels was fairly short, the overall risk to residents in the area is judged to be quite small. However, the differential impact to vulnerable populations—children and older persons in particular—remains unknown.

All of the waste from the World Trade Center is potentially laced with toxicants. Initially a 6-story 1.2 million-ton pile of rubble, Ground Zero is made up of concrete, steel beams, remains of businesses and business equipment. It is also the burial ground for thousands of people. What is not part of Ground Zero was incinerated or pulverized including thousands of plastic computers, acres of flammable carpet and padding, as well as tons of office furniture. Dust spread high and wide from the collapsed towers settling over a large area of lower Manhattan.

The toxicants include:

Asbestos. Asbestos was used to fireproof the North Tower to about the 40th floor and its elevator shafts. EPA tests since October 12 have shown asbestos levels within the acceptable range though at least 27 earlier readings had shown levels above the standard. Although amounts of asbestos vary at Ground Zero, the exposure is constant. The long-term health risks of asbestos exposure include lung cancer and malignant mesothelioma, a lung condition particular to asbestos.

Particulate matter. Huge clouds of dust from pulverized concrete and other materials and smoke from the monstrous fires ignited by filled tanks of jet fuel billowed far into the air and settled everywhere. Particles of varying size and composition, some laced with chemical toxicants, continue to pose hazards for residents in the area and workers at Ground Zero. Particulate matter can exacerbate asthma, bronchitis, some cardiovascular conditions particularly in children and the elderly. EPA air quality monitoring has fallen within standard levels, but when hourly measurements are considered, occasional peaks of fine particulates have been recorded that surpass the acceptable levels, often at night.

Mercury. Small amounts of mercury and toxic gas were released when approximately 1,000,000 fluorescent light bulbs from World Trade Center hallways and offices exploded. Mercury can cause neurological damage.

Lead. Lead may have been released from the destruction of the thousands of computers and monitors, which can contain up to four pounds of lead. Because there was so much computer equipment, lead contamination may be significant. Investigations are being conducted to determine if lead based paint was used to rustproof the buildings' steel beams as was the practice when the Twin Towers were built.

Preliminary testing on the dust and paint chips from Ground Zero indicates the presence of lead. Low levels of lead in children can cause neurological damage and can be transferred from exposed women to her child during pregnancy.

PCBs (polychlorinated biphenyls). Although the US banned the manufacture of PCBs in 1977, electrical equipment made before that year may have been in the World Trade Center on September 11. Current information from EPA tests on air samples indicates that PCBs were not detected in the areas surrounding Ground Zero. However, some samples at the recovery site contained PCBs. This may suggest that the toxicant is released when a piece of rubble is dislodged.

PBDEs (polybromo diphenyl ethers). Cousins to PCBs, these bromated fire retardants form a new class of toxic chemicals. PBDEs are found at very high levels in computers, carpets and the foam padding inside furniture, and like PCBs, persist for years in the environment, accumulate in the food chain and concentrate in fatty tissues.

Combustion Products. By products from the jet fuel and gigantic fireballs include dioxin, benzene, furans, and polycyclic aromatic hydrocarbons and carbon dioxide.

Noise pollution from the heavy machinery used round the clock in the rescue and cleanup efforts is also a concern.

The health hazards from combined exposures are not yet known, nor are the long-term consequences of varying degrees of exposure especially at vulnerable developmental stages of growth. Because children live closer to the ground than adults, touch hand to mouth more often, and have a low body weight, similar exposure to toxins tends to affect children more significantly than adults.

New York Mayor Rudy Giuliani spoke to the UN General Assembly October 1 about the terrorists' attacks on the World Trade Center. He said, "In some ways, the resilience of life in New York City is the ultimate sign of defiance to terrorism. We call ourselves the Capital of the World in large part because we are the most diverse City in the world, home to the United Nations. The spirit of unity amid all our diversity has never been stronger..."

If governments can utilize the City's post 9-11 "resilience of life" and its "spirit of unity" to push health security into prominence in all international deliberations, they will have moved the UN into the 21st century.

Easier than this, perhaps, is considering the logic of rebuilding the UN as a healthy building in the redevelopment of Lower Manhattan. Green buildings such as 4 Times Square (built by Robert Fox, President of Fox and Fowle Architects) follow principles of energy conservation. There is no better way to underscore the 21st century importance of health. There is no better way to champion the significance of Sustainable Development. Moreover, such a move would reinforce the deep kinship, well understood by Secretary General Kofi Annan, between the UN and NYC.

SOURCES: *Environmental Health Perspectives* Volume 109, Number 11, November 2001 (on line version updated Nov 12); Landrigan, Dr. Philip. "Health Consequences of the 11 September 2001 Attacks," *Environmental Health Perspectives* Volume 109, Number 11, November 2001; Rachel's Environment & Health News #736; Mayor Giuliani's speech to the UN General Assembly, October 1, 2001.

World Information Transfer is a Non-Profit, Non-Governmental Organization in Consultative Status with the United Nations, Promoting Health and Environmental Literacy.

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**Knowledge brings new choices.
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World Information Transfer, Inc., (WIT) is a not-for-profit, non-governmental organization in consultative status with the United Nations, promoting environmental health and literacy.

In 1987, inspired by the Chernobyl nuclear tragedy, WIT was formed in recognition of the pressing need to provide accurate actionable information about our deteriorating global environment and its effect on human health to opinion leaders and concerned citizens around the world.

WIT exercises its mandate through:

1. The publication of the *World Ecology Report*, a quarterly digest of critical issues in health and environment, published in five languages and distributed to opinion leaders around the world, and for free in developing countries.

2. The annual international conference on *Health and the Environment: Global Partners for Global Solutions* held at United Nations headquarters in New York since 1992. The world's leading authorities in the field of environmental medicine and science share their latest findings and discuss possible solutions with leaders in governments, business, organizations, and the media.

3. Development and distribution of CD-ROM projects focusing on sustainable development and human health and research on health issues as they relate to the environment.

4. Providing humanitarian relief to areas devastated by environmental degradation. Supplies and equipment are sent to schools, hospitals and orphanages in areas contaminated by the Chernobyl fallout.

5. Centers for Health & Environment providing centralized scientific data pertaining to health and sustainability issues. The objective of the Centers is to promote ongoing research, education and implementation of corrective programs. The first center was opened in Kiev, Ukraine, in 1992 and moved to Lviv, Ukraine, in 1996 to K. Levyckoho 11a, #15, telephone/fax: 322-76 40 59. The second opened in Beirut, Lebanon, in 1997, at Bir Hasan, United Nations Street, Al-Salaam Building, telephone: 961-1-853657.

WIT currently operates from headquarters in New York City with regional offices in Australia, Belgium, Canada, Costa Rica, Egypt, France, Germany, Holland, India, Iraq, Israel, Lebanon, Nigeria, Russia, Switzerland, Ukraine and USA.

WIT is on the Board of Congo (Conference of Non-Governmental Organizations) in Consultative Relationship with the United Nations.

We have not inherited the world from our forefathers...we have borrowed it from our children. -Kashmiri Proverb

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POINT OF VIEW: New York Lessons

We, at World Information Transfer headquarters in New York City, extend our deepest gratitude to Mayor Rudy Giuliani, the Fire Department of NY (FDNY), the New York Police Department (NYPD) and the Emergency Management Service workers.

The backdrop for the United Nations changed profoundly on September 11th. The UN Secretary General Kofi Annan recognized this fact immediately after the terrorist attacks against America. He demonstrated the deep connections between the UN and its host city when he visited the site of hellish devastation in lower Manhattan showing the UN's diplomats and bureaucrats that the terrorists had hit home. Annan reinforced the symbolism shared by the United Nations building and the Twin Towers as landmarks of the New York City skyline. With his hard hat, walking with the City's Mayor and the State's governor, Annan from Ghana became a New Yorker. And the City, always serving as an international beacon of hope and mastery, has proven to the world what can be done by effective leaders.

The extraordinary rescue effort in New York was the largest ever (as far as we are aware) with approximately 20,000 people being saved by the New York Fire and Police Departments and Emergency Management Services. The



SOURCE:
www.greatbuildings.com

City's public health systems, tested to the brink by the attacks and then by anthrax, point out the strategic relationship of sound public health systems to national security.

New York City has long been a symbol of possibility, of innovation and creative excellence, of winning against impossible odds. That resolute New York spirit emboldened by the New York Yankees baseball team this Fall exemplifies the determined feelings of so many in New York to get on with life, to create the "new normal", and to do it all better. In many ways New York represents the best dreams and



SOURCE:
Robert Quackenbush, photographer

goals of people everywhere who want to give their children choices for their futures.

The New York experience in the face of terror holds several lessons for the United Nations.

First is the recognition that health security stands at the core of national security.

Second is the emphasis on the health of children since poor childhood health leads to a weakened adult labor force.

Third is the admission that just as the

terrorists leave their countries and make their homes among us, national borders are porous and easily pierced by pollutants and disease. The penetration of HIV/AIDS in Africa has been pointing to these lessons.



HOW YOU CAN HELP:

WIT is a non-profit, international, non-governmental organization, in consultative status with the United Nations, dedicated to forging understanding of the relationship between health and environment among opinion leaders and concerned citizens around the world. You can help us with your letters, your time, and/or your donations.

World Information Transfer **WORLD ECOLOGY REPORT**

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"Never doubt that a small group of thoughtful committed citizens can change the world. Indeed it's the only thing that ever has."

Margaret Mead

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