Internationally recognized experts examined a range of health and environmental conditions in post conflict situations during the 13th International Conference on “Health and Environment: Global Partners for Global Solutions”. Organized by World Information Transfer (WIT), the conference was co-sponsored by the Government of Croatia, the Government of Ukraine, the World Health Organization, UNAIDS, Physicians Weekly and Walden Media. The conference was also organized in collaboration with the United Nations Environment Programme (UNEP). Dr. Christine K. Durbak, Founder and Chair of WIT and CEO of Physicians Weekly served as Conference Chair and Dr. Bernard D. Goldstein, Dean, School of Public Health, University of Pittsburgh, served as Conference Co-chair. WIT’s annual Conference took place at United Nations Headquarters in New York on April 29th and 30th, 2004.

In his introductory remarks, Ambassador Vladimir Drobnjak of Croatia noted that his country had, “gained a great deal of experience in post-conflict management.” Ambassador Kuchinsky of Ukraine connected the global war on terror to the ongoing tragedy of Chornobyl. Dr. Micovic, of the Rijeka Public Health Institute of Croatia, presented the details of the topic Ambassador Drobnjak indicated, and Deputy Minister Kapitula of Ukraine Ministry of Emergencies addressed ongoing public health effects of the Chornobyl nuclear tragedy. Dr. Leitner, Assistant Director General of the World Health Organization gave an overview of the work WHO has done to mitigate the human suffering caused by Chornobyl.

UN Under Secretary-General Chowdhury provided information on the impact of war to the physical environment and the attendant public health consequences in the world’s poorest countries, while Dr. Concha-Eastman of PAHO discussed the theme as it applied to violence in Central and South America.

UNEP director, Dr. Adnan Amin provided an overview of the work UNEP has done in the aftermath of war and in so doing reviewed the legacy war imposes on natural resources.

Because war contributes to the spread of HIV/AIDS, the global pandemic was the topic of the
conference’s second session. Dr Teguest Guerma, Associate Director, HIV/AIDS Department, World Health Organization, presented the UN’s “3 x 5” Initiative. Dr. Kathryn Anastos, Montefiore and Lincoln Medical Centers in New York City, discussed treatment and prevention for females; Dr. Marie Charles, founder of the non-profit organization, ICEHA, and Dr. David Scott Rubin, Weill Medical College, Cornell University, presented papers on current antiretroviral therapies.

Dr. Bernard D. Goldstein addressed the conference luncheon on April 29 and discussed the pros and cons of the Precautionary Principle as it is being applied in international trade arrangements. Dr. William N. Rom, Chief, Pulmonary Division, NYU Hospital, and former Fellow in Public Health in the office of Senator Hillary Clinton, spoke on US health care policy formation at the April 30th luncheon where the K. Kovshevych Foundation Young Leadership Award was presented.

World Information Transfer, Inc., (WIT) is a not-for-profit, non-governmental organization, in General Consultative Status with the United Nations, dedicated to studying the connection between environmental degradation and human health. Since 1992, WIT has held this annual international Conference at United Nations Headquarters in New York.

Linking Conflict with Environment and Population

Statement by Dr. Christine K. Durbak, Chair and Founder, WIT; CEO, Physicians Weekly

It is an honor and privilege to once again address this gathering.

I would like to begin by expressing our deep appreciation to all those who have made this 13th International Conference on Health and Environment: Global Partners for Global Solutions possible: the Government of Ukraine, H. E. Valery P. Kuchinsky; the Government of Croatia, H. E. Vladimir Drobnjak and Irena Zubcevic; WHO; UNAIDS; UNEP; Physicians Weekly; and Walden Media. I am personally also very grateful to our Board and representatives of World Information Transfer whose assistance was invaluable.

UN Secretary General Kofi Annan said, “Unless the government and people of a country are genuinely willing to confront the problems that may cause conflict, there is not much that even the best-informed and most benevolent outsiders can do.”

Our organization, World Information Transfer, is dedicated to studying the connection between environmental degradation and human health and in identifying solutions to remediate our environment, and by so doing, improving health and the quality of life of the Earth’s citizens.

Conflicts devastate the environment. A German officer in 1918 described Flanders as, “dumb, black stumps of shattered trees which still stick up where there used to be villages. Flayed by splinters of bursting shells, they stand like corpses upright. Not a blade of grass anywhere. Just miles of flat, empty, broken and tumbled stone.”

It was no different in the first Gulf War where 111,000 civilians died...70,000 of them children under the age of 15. Many of these deaths resulted from the destruction of Iraqi infrastructure, particularly power plants which led to break-downs in water purification and sanitation causing outbreaks of infectious diseases like cholera, typhoid, malaria, polio, and hepatitis. In southern Somalia, civil war and anarchy have raged since 1991. Life expectancy has dropped to 47 years. In the last four years, over 70,000 cases of cholera have been reported.

Throughout the world, an estimated 30 million land mines in 80 countries remain buried and unexploded. Land mines have a “half life” of 50 years thereby posing an ongoing threat to the living and the unborn. Every year, 15,000 to 20,000 people are killed or maimed by these “souvenirs” of past conflicts. Eighty percent of those injured or killed are civilians and fully one third of the casualties are children.

But it’s the testing and manufacture of the nuclear bomb which has been responsible for some of the most profound and persistent environmental damage to life on earth. The complex mixture of contaminants found on many military sites is dynamically moving through the environment. Radiation problems affect those living near nuclear weapons’ plants, and repair and maintenance of many installations and equipment are dangerously inadequate. Nuclear waste, which accompanies weapons production, threatens environmental degradation as toxic chemicals slowly contaminate soil, air and water, assisted by wind and rain. Human exposure to the toxic by-products of nuclear military facilities, via testing or the food chain, results in miscarriages, malformed fetuses, high infant mortality and congenital disorders, leukemia and other cancers, tumors, thyroid disorders, and complex debilitating and life-shortening syndromes. The number of reports of such harmful effects on health, habitat and biodiversity – always at risk in war – continues to grow.

Traditionally, the third segment of our program focuses on the Chornobyl tragedy... A constant reminder of the Cold War and the dangers associated with letting the nuclear genie of its bottle during the Second World War! In addition to the horrible human toll of conflict, there is an equally great ecological cost. Klaus Toepfer, the Executive Director of the United Nations Environment Programme (UNEP) addressing the issue of “war and the environment” had this to say.

“One can easily clean up the language of war—‘collateral damage, friendly fire, smart bombs’—but cleaning up the environmental consequences is a far tougher task. Undoubtedly, it is the loss of human life, the suffering of those made homeless and hungry that must be our primary, first, concern. But all too often the impact on the Earth’s life support systems is ignored, at our peril, as the growing expertise of UNEP’s Post Conflict Assessment Unit is suggesting. Environmental security, both for reducing the threats of war, and in successfully rehabilitating a country following conflict, must no longer be viewed as a luxury but needs to be seen as a fundamental part of a long lasting peace policy.”

Examples of the tremendously damaging impact of conflict on our habitat are, unfortunately, everywhere. For example, all along the coast of Somalia huge sand dunes, 20 miles across, have crept from the sea towards the main coastal highway. “When the dunes hit the road, a new road will need to be built,” says a Red Cross agronomist. “There used to be government plans to stop them. Now there’s nothing. The communication breakdown will be a social disaster.” The UN, encouraging self-sufficiency and seawater fish in...
forces or armed groups. In addition, soldiers are typically young, sexually active men who are likely to seek commercial sex. Even during peacetime, they have sexually transmitted infection (STI) rates two to five times greater than those of civilian populations. During armed conflict their rate of infection can be up to 50 times higher. Under certain circumstances some armed forces already impose mandatory HIV/AIDS testing, but voluntary testing, combined with confidential counseling, support and treatment, is far more effective...and available almost nowhere.

About half of the people with HIV become infected by age 25 and are likely to die with AIDS by age 35, leaving their children to be raised by grandparents or to fend for themselves in child-headed households. More than 10 million people living with HIV today are between 10 and 24 years of age. At least 50 percent of all new infections occur in the 10-24 age group, with 7,000 new infections every day. These statistics underline the imperative to include HIV/AIDS prevention and counseling in all programs related to the reintegration of war-affected young people, especially ex-combatant and refugee children.

The earth's people and environment are battered by war, its preparation, practice and aftermath. Our natural resources are destroyed as an act of war; are used as a weapon of war; and environmental restoration is expensive and sometimes impossible. Our environment's integral involvement with war is often secret, widely ignored, and easily forgotten.

Within the next fifty years, the planet's human population will probably pass nine billion, and global economic output may quintuple. Largely as a result, scarcities of renewable resources will increase sharply. The total area of high-quality agricultural land will drop, as will the extent of forests and the number of species they sustain. Coming generations will also see the widespread depletion and degradation of aquifers, rivers, and other water resources; the decline of many fisheries; and perhaps significant climate change.

As the world's life support systems and natural resources become increasingly scarce, the possibility of conflict increases. It is against this grim prospect that we come together here in search of solutions. Solutions that alleviate scarcity; solutions that reduce the risk of conflicts that destroy people, societies, nations and our habitat; and solutions that prepare the way for our peaceful evolution.

Statement by H. E. Vladimir Drobnjak
Permanent Representative of Croatia to the UN

I would like to start by expressing words of commendation for the work of the World Information Transfer. This NGO serves as an important example of how an active NGO can contribute to an overall inclusion and prominence of civil society in the issues of sustainable development. This conference, now in its thirteenth year (and I hope this number will be fortunate for this endeavor), is a parallel event for the annual meeting of the UN Commission on Sustainable
Development and has contributed to better understanding of the linkages between health and environment. Croatia feels honored to be among the co-sponsors of this event, together with Ukraine, the World Health Organization, and Physicians Weekly.

My presentation is more of an introductory speech to one of the main panelists who is coming from Croatia. Let me just say that Croatia, through the unfortunate history of the early 90’s as a nation forged in the war of independence, gained a great deal of experience in post-conflict management. We are still dealing with the consequences of a war that was imposed on us - from psychological traumas and refugees to land mines and an endangered environment - but I must emphasize that we are very proud of the results we have achieved so far.

Croatia, today, serves as a guarantor and generator of stability in the region and promoter of good neighborly relations. The part of the world I come from looks much better and much more prosperous than ten or fifteen years ago. This is a tribute to the international community’s effort in the region, but it is primarily a tribute to the people living in Croatia and in the surrounding region.

Croatia is a country rich with natural beauty and is one of the most popular European tourist destinations. Tourism is Croatia’s bread and butter. Therefore, we are putting a heavy emphasis on the environmental and health issues for more reasons than one. Croatia is particularly sensitive when it comes to the protection of the environment. We are trying to share the lessons learned in these domains with the international community for the benefit of all of us. Croatia thinks that in the field of post-conflict management and in the field of environment, which are sometimes much interconnected, we can really share more than a single thought with you.

I think that when a diplomat has experts at his side, it is usually wiser to give the experts the floor. On an occasion like this one, a diplomat should speak only when experts don’t have much to say, and our expert has a lot to say. Let me introduce Dr. Vladimir Micovic from Rijeka, Croatia.

Rijeka, for those of you who are unfamiliar with local geography, is the biggest merchant port on Croatia’s side of the Adriatic. Born in 1958, Dr. Micovic’s field of research is environmental health and epidemiological research methodology. He heads the Public Health Institute of Croatia and is also the chair of the Environmental Health Department at the University of Rijeka Medical School. His list of fellowships with universities and programs is a lengthy one, and includes Budapest, Hungary, Prague in the Czech Republic, Salzburg in Austria, University of York in England. Let me just conclude by thanking you once again for the opportunity given to Croatia to co-sponsor this meeting.

Croatia is a middle European country, located at the Mediterranean Sea. Its seaside impresses with over a thousand islands, while Croatia’s “backlands” amaze with their diversity of landscapes due to its interesting geographic position and shape of its borders. Natural and cultural heritage is visible all over the country in cities like Dubrovnik, which is under protection of the UNESCO and National parks. Their numerous botanic and endemic species qualify them for recognition as a part of the network of biosphere reserves.

The population of 4.5 million people is spread out from coastal over mountainous to flatland regions. In spite of its wonderful environment – because of its history – Croatia carries the greatest emigration rate around the world after Ireland.

After the falling apart of Yugoslavia and the announcement of Croatian independence, armed conflict started in 1991. This was the time when many expressions found their way into our daily language, like “genocide” to present the attempt of extinguishing a Nation, or “ecocide” to present the extent of damage to the habitat of living things including the killing of species.

Only in 1995 peace was finally reached. The first bitter numbers of, so-called, direct consequences of war were counted up to:

- 12 thousand people killed;
- 35 thousand wounded;
- 180 thousand homes destroyed;
- A devastated economy with 27 billion dollars of material damage.

Life does not turn back to normal from the point when gunshots are not to be heard any more. Long term physical, psychological and adverse health effects are closely connected to the damage of social fabric and infrastructure including displacement of people. These are followed by the damage to the environment and environmental health as well as by the drainage of financial, human, and other resources away from public health and other socially productive activities. And not least, a very important devastating consequence is the fostering of cultural violence.

The most important psychological problem that occurred during and after the war is Post Traumatic Stress Disorder (PTSD). PTSD and other related disorders have doubled during 3 years of the post war period with the highest noted in people who lived in areas of intensive fighting. PTSD is described as the biological response to a traumatic event. People have a-gestation, trauma, privation, dislocation, and as a result, have a psychological stress response. The response is not only physical, but also emotional and behavioral.

The most important sources of indirect consequences include:

**Displaced:** More than 250,000 people from Croatia were forced to flee their homes

**Refugees:** Mainly from Bosnia and Herzegovina represented more than 20% of the total population of Croatia

**Prisoners of War:** 6,721 persons

**Demobilized Population:** 300,000 people of whom 35,000 were still unemployed in 1999

**As Result:** At least 1,000,000 people were exposed to direct war stress, and even more were secondarily traumatized...

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The war period, and the suicide rate significantly increased during the war in certain areas of Croatia such as the region around the city of Rijeka on the Northern Croatian coast. It is of interest to note that this region was not directly affected by any direct war activities.

Other psychosomatic consequences to be mentioned were an increased number of epileptic seizures among children coming from war affected areas. Chronic PTSD patients and displaced people showed prominent changes in neuro-endocrine functions. The change of living conditions, both for soldiers and refugees, is to a large degree responsible for the 125 cases of hemorrhagic fever with renal syndromes reported in 1995. The changes in the environment put people directly at risk. The uranium enriched ammunition used is considered a causative agent in the genesis of gulf war syndrome as well as having mutagenic capacities. Together with other chemical pollutants, there is an expectation of an increase of malignancies.

Among veterans both of the Gulf and Balkan war a significant increase in the frequency of di-centric and centric ring chromosomes is found. Furthermore the ratio of breast cancer between males and females more than doubled when comparing prewar and war periods. Additionally, there are indications that the breast cancer in war environments manifests in a more aggressive phenotype.

Because there are no significant differences in incident rates of hematological malignancies among children found between counties affected and not affected by chemical warfare, the so called “population mixing theory” is supported and no clues have been found for a role of chemical and radioactive pollution. We have also found a decrease of myeloid leukemia during and Non-Hodgkin-lymphoma after the war.

From the Croatian point of view, the problem of social integration of displaced people seems to be the most prominent in long-term consequence, mainly in terms of considerable mental health risks involved. More than 250 thousand people were forced from their homes during the war. At the time, more than 20% of the total Croatian population were refugees from the neighboring Bosnia and Herzegovina.

Key environmental consequences are linked with the bad effects on environmental media – such as drinking water, waste disposal management, air quality, and food safety – including their evolution over the time. The burning of oil and chemicals from oil related industries (likely causing emission of highly toxic TCDDs); igniting forests as well as the uncontrolled exhausts of inadequately maintained vehicles had considerable adverse effects on the atmospheric environment.

Leaked oils significantly threaten water resources e.g. at the river Cetina in the South coastal part of Croatia. The soil was affected by burned chemical production facilities of different kinds (Pesticides, cosmetics, wheat, refineries, power plants, plastics and ammunition). These – soil, air and water pollution, - together with other factors, directly affected food safety.

While Nitrate and Nitrite concentrations differed not significantly between regions with and without fighting, in 1996 the first postwar year, more than 9% of all taken food samples were over the health safety tests’ limits on microbial contamination, mainly caused by improper processing and storage. Chemical pollution played only a marginal role, being caused by heavy metals or pesticides, linked possibly to the contamination of the soil.

These findings of hygienic problems – far exceeding pollution problems – are supported by over 8000 cases of food-born infections in 1997, 65 out-breaks cause by salmonella and staphylococci poisoning in 1998. Furthermore, during the war and in direct postwar time, 31 hydro epidemics occurred, each year triple the number of prewar times.

In total, the data from the general practice service shows significant increase of intestinal (80%), dermal infections (20%) and injuries (50%) compared to the pre-war period.

I wish I had never had the honor to present the consequences of war in my country. I would rather speak about its beauty and the richness of its ecological system, but the war happened and it is another reminder for all nations to pray for peace.

**Ambassador Drobnjak’s Comments**

I would like to build upon the presentation by Dr. Micovic and present a couple of very practical examples from Croatia’s experience with the impact of military and military hardware on the natural environment. In 1999, during the NATO intervention in Kosovo, Unexploded ordinance from jet fighters became a major problem. The sophisticated, armed jet fighter which does not fire on a target has to get rid of its weapons in order to land safely back at its base. The weapon has to be jetisoned somewhere and the obvious choice was designated drop zones in the Adriatic Sea. During the war, almost daily, a certain quantity of weaponry has been dropped in the Adriatic for the safety of the pilots and planes, but this was a matter of concern for us.

The Adriatic is an ecologically fragile sea. It’s rich in small fish, and although the drop zones were designed carefully in international waters, our environmentalists were very worried. Even if war takes

**In 1990/1991 an unusually high amount of forest fires at the coast caused high levels of dioxins from fire fighting chemicals**

- In 1991 Slonia 120 thousand tons of different petroleum oils spilled into the river Sava, in addition 40 thousand tons flowed into the river Drava near the town Osijek
- Furthermore PCB transformer oils in quantities of 60 to 80 tons leaked into rivers and Adriatic Sea.
- In 1992 gun powder magazines blown up caused high concentration of heavy metals in soil and plants
- Military leftovers (mines, shells, waste, including depleted uranium) 17 mines 6,000 square km=10% â in top ten worldwide
- Burial of 600 kg of various irritants near Zagreb by Yugoslavian Army (temporarily stored 19 Chemical weapons (irritants, psychochemical incapacitating agents, phosphorus etc.) at several sites
- Further more 5,000 m3 expired drugs (donated) to be disposed
place elsewhere, people and their environment can be affected, and sophisticated weaponry doesn’t necessarily make things easier. On the contrary usually you have more problems with it.

Another example occurred during the nineties when battle freight in the Adriatic, especially air craft carriers, brought with them big game fish. Fish that had a very scarce presence in the Adriatic, for example swordfish, started to occur in larger numbers. Big battle freight that arrived, perhaps, from the Arabian Sea and then spent time in the Adriatic caused an impact to the marine environment. The studies are not completed in this particular case, but the very sensitive ecological balance of seas like the Adriatic can be altered. I must also mention that sometimes a positive effect occurs. In the early nineties, the low rate of tourism helped the Adriatic Sea to bounce back significantly in terms of ecological purity.

Let me give a final example showing how even the animal life is affected through war. Plitvice is a region which is a national park very rich in animal life. Deer and deer herds were the animal species targeted the most during the war. They were targeted for food for various reasons by combatants. The wolf packs in the Plitvice region had to adjust, to the fact that their natural food, basically deer, was not in available in abundance, and they resorted to much smaller animals like rodents.

All these small details illustrate that besides the big numbers and the big political background against which war occurs, every segment of the environment is affected. There are many innocent beings, not only human beings, who suffer from war.

Before this day, the word ‘Chornobyl’ was recognizable only to a handful of nuclear energy experts.

Statement by H.E. Ambassador Valeriy P. Kuchinsky
Permanent Representative of Ukraine to the United Nations

At the outset I would like to extend my warmest greetings to all those who have gathered here, and to express our sincere appreciation to World Information Transfer, a non-governmental organization in General Consultative Status with the UN, who – for the past thirteen years – has organized the Conference on Health and Environment: Global Partners for Global Solutions, emphasizing the continuing health impacts of the Chornobyl nuclear tragedy. I would also like to express our sincere appreciation to the other co-sponsors of this conference: the Permanent Mission of Croatia to the United Nations, World Health Organization, UNAIDS, Physicians Weekly, and the UN Environment Programme whose joint efforts made this event possible.

Since ancient times, the spring has been a symbol of hope and optimism, the season of merry holidays. Regrettably, for people of Ukraine the month of April is associated with the event, which remains a heavy burden in the hearts of all its citizens. I am recalling the terrible explosion at the Chornobyl nuclear power plant on April 26, 1986, which spewed radiation throughout Europe, and spread to parts of the rest of the world.

Before this day, the word “Chornobyl” became synonymous with disaster. Eighteen years after a nuclear reactor in the small town of Prypiyat exploded and burned, its long-term implications are still being examined. Just as radioactive fallout from the explosion of Unit 4 spread across the Northern Hemisphere, so did the accident’s psychological impact change completely the international community’s perception of nuclear risk and of its potential consequences for human life.

It was not only a nuclear catastrophe, but also a test for the international community on its capability to provide adequate response to technological, ecological and humanitarian disasters of that scope. It is a tragedy, which we cannot simply erase from our memory, like we cannot erase Hiroshima and September 11.

And for my country, Chornobyl is not the pain of the past, but the problem for the present, and the challenge for the future.

The Chornobyl accident is unique because the full nature and extent of its harmful effects are still not clear, and its consequences reach far into the future. It is different from other disasters in that it may have affected people who live thousands of miles away, as the radioactive release and its insidious effects transcended national boundaries.

Unfortunately, with the passage of time – particularly since the closing of the Chornobyl nuclear power plant in 2000 – for many in the world, the problem of Chornobyl is gradually losing its acuteness and becoming just another boring issue on the United Nations agenda.

Yes, 18 years are a long period. Children born on those tragic days have grown up and a new generation has arrived. Although born years after the catastrophic event, the radioactive fallout has equally affected them. Thousands of kids across Ukraine spend their time in hospitals, rather than on playgrounds, suffering birth defects and cancer related illness. And that may be just the beginning. There is deep concern among the scientists about long-term genetic damage to future generations.

Ukraine has paid an excessively high price for the Chornobyl nuclear power plant, on three occasions. The first time was when, during the existence of the Soviet Union, despite the will of the Ukrainian people, we were forced to build the nuclear power plant in the beautiful place, in pictorial Pripyat, near ancient Kyiv. We paid again in 1991, when after gaining our independence, we had to deal alone with that tragedy that had taken the lives and health of people, poisoned the land and the air and caused massive resettlement. The third time we paid was in 2000, when, despite the economic problems we faced and the difficult situation in the energy sector, we closed the Chornobyl nuclear power plant, which had not exhausted its capacity and for whose operational safety a large amount of money had been spent. We note with regret that complying with the demands of the international community for the speedy closure of Chornobyl actually did more harm than good to Ukraine.

I would like to draw attention to the fact that every year Ukraine spends 5 to 7 per cent of its national budget on dealing with the consequences of the Chornobyl disaster, money, which could go to development, education, art, and medicine. From 1986 to 2003, we
spent more than $12 billion to that end. Ukraine continues to bear — by itself — the main social burden of dealing with the consequences of the Chernobyl disaster.

Ukraine continues to pay for it, because for us the word “Chernobyl” means 3 million of our citizens who suffered from disaster and its consequences, including 1.2 million of our children.

Chernobyl still means 160,000 people from 170 towns and villages, who had to leave their homes and be relocated outside the areas of radioactive contamination. It still means abandoned settlements, forests and fields an area of more than 4,000 square kilometers that are empty and dead.

To all the problems we have, which will be much better explained by our distinguished guests from Kyiv, I would like just to add one more problem connected with the issue of international terrorism. The Exclusion Zone surrounding the Chernobyl Nuclear Power Plant, the site of the world’s largest nuclear catastrophe, comprises 76 abandoned settlements including the towns of Prypiat and Chernobyl as well as 300 sites where nuclear waste and contaminated materials have been dumped. There still exists a great risk of unauthorized penetration into the Zone and the removal of the contaminated substances, which, inter alia, could be used by potential terrorists for their purposes. It’s a terrifying possibility.

To secure the Exclusion Zone and to ensure that such radioactive materials are kept out of reach of unauthorized persons, the Government of Ukraine has been working on numerous projects. We also transmitted an appropriate request to the Counter Terrorism Committee of the Security Council for its advice and support.

We are waiting for specific proposals in this regard.

In addition to using the Chernobyl Zone for scientific research, we can also explore the possibility of using the Chernobyl Exclusion Zone and abandoned settlements within its territory for working out practical measures on prevention of nuclear terrorism acts as well as for the training of appropriate personnel.

I think that there are overwhelming reasons for international support in this endeavor. Chernobyl is a tragedy, which raises many disturbing questions. Is any country adequately prepared to deal expeditiously and effectively with a disaster of this scale and nature? What more can be done to prevent such an occurrence?

I remember, two years ago, visiting the Museum of Chernobyl in Kyiv, the Secretary-General rightly noted: “It is particularly disturbing that few people realize the multitude of problems that are still linked to this event and its aftermath.”

This is an answer to the question why the problem of Chernobyl is gradually losing its acuteness for many countries and international organizations, including the United Nations.

We call upon the world community to rethink its response to the Chernobyl accident.

The issue, in plain terms, is not whether any international assistance was rendered. It was. The issue is whether the assistance rendered was adequate, and whether the international community can step down and consider its task fulfilled.

We need more active engagement of the United Nations, its agencies, developmental partners and donors in the implementation of the Chernobyl-related projects. In this regard, we place a lot of hope on the new United Nations Coordinator of International Cooperation on Chernobyl, UNDP Administrator Mr. Malloch Brown. We believe that this decision of the Secretary General will strengthen an excellent cooperation, which exists between the Government of Ukraine and the United Nations Development Programme.

In the amalgam of the various emergencies occurring in the world almost on a daily basis, the problem of Chernobyl commands special attention in view of its unique and persistent character.

This year’s Chernobyl week in the United Nations has started by the official event in the GA Hall, then continued by the Chernobyl Charity Bazaar and the screening of the Oscar-winning 2004 documentary “Chernobyl Heart”, and now it is finishing by the special segment of this International Conference. During the week we have heard voices of the United Nations high level officials, diplomats, filmmakers, representatives of NGOs, Ukrainian community and children.

I believe that voices of the participants of our Conference will complement these activities. Its deliberations can facilitate common understanding of the causes and consequences of the Chernobyl accident and promote the consolidation of international understanding on an issue the ramifications of which, even 18 years later, still remain to be fully understood.

### The Chernobyl Tragedy: From Past to Present

Oleksandr Kapitula, Deputy Minister, Ministry of Emergencies of Ukraine

1. Basic principles of national policy of Ukraine on victims protection from the consequences of the Chernobyl catastrophe:

- Life and health priorities of people, who suffered from Chernobyl catastrophe
- Social protection and reimbursement for people, who suffered from Chernobyl catastrophe
- Economic methods for life improvement through confessional taxation policy for those, who suffered from Chernobyl catastrophe
- Professional reeducation and qualification upgrading for suffered population
- Activity coordination of state bodies and social unions, which deal with social protection issues for suffered population

### Description of contaminated areas

<table>
<thead>
<tr>
<th>Description of areas</th>
<th>Total</th>
<th>Area 1</th>
<th>Area 2</th>
<th>Area 3</th>
<th>Area 4</th>
</tr>
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<tbody>
<tr>
<td>Number of settlements</td>
<td>2293</td>
<td>76</td>
<td>92</td>
<td>835</td>
<td>1,290</td>
</tr>
<tr>
<td>Population (thousands of persons)</td>
<td>2,293.93</td>
<td>0.12</td>
<td>9.04</td>
<td>637.23</td>
<td>1,645.54</td>
</tr>
<tr>
<td>Including infants younger 14 (thousands of persons)</td>
<td>488.69</td>
<td>0</td>
<td>1.87</td>
<td>150.16</td>
<td>336.56</td>
</tr>
<tr>
<td>Territory square (km²)</td>
<td>53,454</td>
<td>2,122</td>
<td>2,003</td>
<td>22,619</td>
<td>26,710</td>
</tr>
<tr>
<td>Including woods</td>
<td>25,357</td>
<td>1,058</td>
<td>1,315</td>
<td>14,194</td>
<td>8,790</td>
</tr>
</tbody>
</table>
International cooperation on health protection, social and radiation protection, labor protection, application of international experience for such purposes.

2. Main activities of Centers for population social and psychological rehabilitation:
   - to reduce the overall stress and nervousness among the population who suffered from the Chernobyl catastrophe
   - to render psychological relief to families and to children in schools
   - to provide activities for the professional education of youth and unemployed people in newly created economic conditions
   - to render the psychological and social support to people with low income and unprotected groups of people (victims and their families, single mothers, orphans, etc)
   - to promote the development of volunteer movements
   - to render the crisis complex solution aid
   - to provide education on ecology
   - to provide informational and analytical activity

3. The main directions in the Chernobyl construction programme:
   - Improvement of living conditions of the suffering population at radiation contaminated territories and in the areas of compact resettlement through construction of medical and educational establishments, gas pipeline installation and providing gas to apartments.
   - Creation of employment in the locations of people in compact resettlement
   - Implementation of urgent actions in the zone of compulsory resettlement

4. Setting up of further activities on the consequences of the catastrophe:
   - Monitoring of environmental radiation situation and radiation level control;
   - Works on radioactive wastes management in alienation zone (localization, radioactive waste transportation and disposal, materials decontamination, radioactive storage maintenance, non allowed dumps liquidation, etc.)
   - Water protection arrangements to reduce radionuclides’ penetration into the Prypiat River and Kyiv water storage;
   - Specialized forestry and fire-fighting arrangements;
   - Ecological and economical rehabilitation of contaminated areas

The Importance of Public Health Principles for Effective Environmental Protection

Bernard D. Goldstein, MD, Dean, University of Pittsburgh Graduate School of Public Health

My theme today is the importance of public health principles for effective environmental protection. I will attempt to illustrate the value and the complexity of the public health approach by discussing the Precautionary Principle. This is a particularly timely topic because this weekend one of the most important events of the decade will occur, the expansion of the European Community into Eastern Europe. The Precautionary Principle as a concept was developed in Europe and has been embraced by the EC. In fact, official documents state that the Precautionary Principle is “enshrined” as a central principle within the EC framework. I am going to say some negative things about how the Precautionary Principle is used by the EC. But I want to make it very clear that I strongly support the preventive approach embodied in the Precautionary Principle.

In public health we often talk about three kinds of prevention: primary, secondary and tertiary. In recognition of the suffering caused by the Chernobyl disaster, which has been cited by the co-sponsors of this meeting, I will use it as an example. Primary prevention, through appropriate design, training and management oversight, would have made sure that the Chernobyl disaster never happened. Secondary prevention would have led to the early detection of Chernobyl problems – and would include mitigating the problem through technical containment and evacuation. Tertiary prevention is basically cleaning up afterwards.

Primary prevention is what we aim for – no Chernobyl, no cigarette smoking. Unfortunately primary prevention is often overlooked and unrewarded. We appropriately honor and reward those Soviet workers who risked and gave their lives in responding to the Chernobyl disaster, and we recognize the important contributions of those who are reporting on the long term outcome. But there is little praise that would have come to the Soviet engineers who designed and operated the Chernobyl plant had no problem ever occurred. Unfortunately, that is built into public health. We pay too little attention to the problems that never happen in the first place.

The Precautionary Principle fits into this presentation because in its best manifestations it insists on primary prevention. The Precautionary Principle was developed in Germany in the 1980’s and perhaps is better translated as a “foresight principle.” A common definition is that of the
1992 Rio Declaration, “where there are threats of serious or irreversible damage, scientific uncertainty,” and I stress that last phrase “scientific uncertainty shall not be used to postpone cost effective measures to prevent environmental degradation.” As a concept it is like sustainable development - something we can all get behind. It is hard to find anyone opposed to sustainable development, just as it would be hard to imagine anyone not supporting this formulation of the Precautionary Principle. But by the very nature of it being so eminently supportable by all, it is not very biting.

What has become particularly problematic is that the Precautionary Principle is being used as a legal basis for treaties and trade decisions that suddenly are biting, that suddenly have meaning. In my view, the very positive nature of the Precautionary Principle as primary prevention is coming into question, particularly due to its use by the EC as a tool in trade decisions.

As I will be critical, let me start by emphasizing the historic importance to everyone of the many decisions being made by the EC. I envy my European colleagues in the environmental policy arena who are involved in these decisions and debates. I recently sent a copy of the US Federalist Papers to one of these colleagues. The Federalist Papers are written by some of the American founding fathers and date from the beginning of US history. They are thoughtful discussions about state vs individual rights, and the uses and abuses of power, which seem in many ways to be mirrored in Europe today. I believe that all of us can learn from the debates that are going on right now in Europe. In particular, the relation of humans and human technology to the environment is being looked at in ways that are new and fresh.

The European community has basically stated that the Precautionary Principle is enshrined in European legislation and documents, but it is never defined. This situation is very similar to a previous US legal definition of pornography. If the judge became aroused, it was, therefore, pornographic. The European community says if it has a precautionary impact, therefore, it is action under the Precautionary Principle.

Let me give a couple of troubling examples of what appear to be misuse of the Precautionary Principle in environmental, public health, and trade issues. One issue has to do with a toxin known as aflatoxin. It comes from peanuts, groundnuts and related produce. Aflatoxin unquestionably causes liver cancer and is a recognized public health problem, particularly in developing countries. Based upon the Precautionary Principle, the European Community recently has developed a much more stringent aflatoxin standard that has lowered the permitted amount of aflatoxin in produce imported into the EC. The standard is far more stringent than the UN Food and Agriculture Organization or the US or Japan or anywhere else. Based upon the EC's risk assessment, the benefit to Europe will be a decrease in cancer risk of 2 per billion people per year. But it is also estimated that this new standard will exclude $700 million of imports each year from sub-Saharan countries, some of the poorest nations in the world, and it will protect the market of Southern European growers.

A second example also comes from Africa and is related to genetically modified foods, otherwise known as “Frankenfoods”. They are an issue all over the world. It is likely if you eat a grain product today in North or South America, you’ve eaten genetically modified grain. The EC bans genetically modified foods on the basis of the Precautionary Principle, again without data demonstrating adverse affects, and the US has brought the issue to the World Trade Organization (WTO) as an unfair trade barrier. During a drought in Zambia two-thirds of the corn provided by the United Nations came from the US and therefore would include genetically modified corn. The Zambian government decided to leave the corn in warehouses. If the corn was used for seeds, it could lead to the spread of genetically modified corn, which would cause Zambia to lose its European market when the drought ended. I do not want to argue whether there is any risk from genetically modified foods, but the issue of malnourished people not receiving corn provided by the UN obviously points out the second order and third order trade-offs involved in the Precautionary Principle.

A central issue raised by the use of the Precautionary Principle for genetically modified foods is the role of public perception. There is no question that Western Europeans tend to believe that these foods are harmful. But changing public perception is the stock and trade of politicians and of advertising managers. To what extent should science decide the issues and to what extent should perception be the overwhelming determinant, particularly in a democratic society?

The use by the EC of the Precautionary Principle as a basis for a trade barrier has already been tested by the US and Canada in front of the World Trade Organization (WTO). The European Community will not allow US and Canadian beef into Europe based on the fact that we treat our calves with growth hormone which leads to more rapid weight gain. Despite no direct evidence of residual hormone in beef, or of health risk, the European Community has used the Precautionary Principle to ban import of US and Canadian beef. The WTO, in their finding in favor of the US and Canada made two interesting findings - and I am simplifying a complex issue. One was that they found that the Precautionary Principle was simply not yet ready to be an international principle to govern trade, but could be in the future. The WTO panel also pointed out that the EC permits the use of certain antibiotics to decrease respiratory disease and improve growth of swine. The residues of these antibiotics cause cancer in laboratory animals. They concluded that the only difference was that the EC had a surplus of beef and not a surplus of swine and that the Precautionary Principle was being used as a trade barrier.

The Precautionary Principle raises complicated issues that do not allow simplification. The key issue concerning the Precautionary Principle is whether or not it is good public health or simply an economic argument wrapped in the green flag of the environment. This is not just an EC issue - in the US we somehow justify our gas guzzling SUVs on the basis of automobile safety. Unfortunately, we no longer have the luxury of making major mistakes. We no longer have the buffering capacity of an almost empty world, or the ability to bury our mistakes elsewhere on the planet. If we do business as usual, if we look at things purely from our own greed, then our ability to prevent problems will be lost.

The use and abuse of the Precautionary Principle illustrates the importance of sound science and sound policy in achieving
environmental goals. In our interconnected world there are no easy decisions. Policy makers and scientists need to be alert to the complexities of environmental issues – we must recognize not only the direct effects of our actions, but the indirect effects as well. We should be held accountable if we fail.

Central to the field of public health is the focus on effectiveness, on anticipating and preventing problems. To protect human health and the environment the appropriate model is a public health model, not a medical model. Rather than diagnosing and treating disease, we should prevent disease through appropriate environmental control. If used effectively, the Precautionary Principle can contribute to effective protection of public health and the environment.

What is the value of prevention? The figure I like to use is 16 to 1, based upon an ounce of prevention is worth a pound of cure. But let’s be sure we use the right ounce, that we focus prevention on using the best science to get the right answers, and the best policies to convert what we know into effective prevention.

Environmental and Health Policy Perspectives
William Rom, M.D., M.P.H., Environmental and Health Policy Fellow, Office of Senator Hillary Rodham Clinton, Washington, D.C., 2003-04; Professor of Medicine & Environmental Medicine, NYU School of Medicine.

This past year I have had the opportunity to be a legislative fellow on the staff of New York’s Senator Hillary Rodham Clinton. She has seats on three committees: Health, Education, Labor, and Pensions (HELP); Environment and Public Works (EPW); and Armed Services. Beginning in September, she was immediately concerned about the Inspector General Report titled, “EPA’s Response to the World Trade Center Collapse: Challenges, Successes, and Areas for Improvement.” The IG Act passed in 1978, provides for independent oversight of the federal agency’s actions and decisions. The IG Report addressed several issues:

First, the Environmental Protection Agency’s (EPA’s) early public statements following the collapse of the WTC towers reassured the public regarding the safety of the air outside the Ground Zero area. However, when EPA made a September 18 announcement that the air was “safe” to breathe, it did not have sufficient data and analyses to make such a blanket statement. The White House Council on Environmental Quality (CEQ) influenced, through the collaboration process, the information that EPA communicated to the public when it convinced the EPA to add reassuring statements and delete cautionary ones. The IG was particularly concerned about uncertainties regarding the respiratory effects of WTC Dust, the extent of the public’s exposure, and the lack of health-based benchmarks. The EPA has since drafted a Risk Communication procedure to ensure that public pronouncements regarding health risks and environmental quality are adequately supported with available data and analysis and are appropriately qualified.

Second, did EPA deal with indoor air pollutants appropriately? EPA had deferred to the City that did a street and exterior building clean-up but was criticized by residents who returned to their apartments and did their own clean-up with little or no guidance. By February 2002, EPA responded by initiating a program that continued throughout the rest of 2002, cleaning up 4,150 apartments out of 23,000 exposed and did pre and post testing for asbestos as a surrogate marker. Only 150 apartments exceeded the health-based bench mark (< 1% of 29,000 samples), and another 200 had clogged sampling filters. All of these residences were offered re-cleaning and re-testing. The IG recommended that EPA implement a testing program to ensure the indoor cleanup effectively reduced health risks from all pollutants of concern and implement a verification program to determine whether previously cleaned dwellings had been re-contaminated. The IG Report concluded that EPA should take a leadership role in addressing the health and environmental concerns with air pollution from environmental catastrophes.

The EPW Committee handles air pollution and global warming issues. As the Energy bill was being debated, the Senate took time for 5 hours of pre-arranged debate on Global Warming to consider the McCain-Lieberman bill. S. 139 is a modest first step to stabilize carbon dioxide and other greenhouse gases at 2000 levels by 2010 through tradeable allowances of greenhouse gases that could be used interchangeably with passenger vehicle economy standard credits. By exceeding the Corporate Average Fuel Economy (CAFÉ) efficiency standards by more than 20 percent, automakers earn carbon dioxide reduction credits that may be sold on the open market to other industries that are capped under this bill.

Global Warming is one of the major environmental problems facing us today and will be a gargantuan one for our children if we don’t begin to address this problem now. The New York Times has reported that the last two decades have been the warmest in over 150 years of records in the U.S. The cause of this warming is the greenhouse effect from carbon dioxide and other greenhouse gases reflecting infrared radiation back to the surface of the earth. Carbon dioxide has been measured on the summit of Mauna Loa in Hawaii since 1959 and has shown a steady rise from 310 ppm to 379 ppm. This year’s increase of 3 ppm above the average level last year, significantly outpaces the average annual increase of 1.8 ppm over the last decade. This remarkable increase parallels the rapid industrialization in the Western countries after World War II. Furthermore, measurements of carbon dioxide in Antarctic ice cores show that carbon dioxide has been at the level of 300 ppm for 500,000 years, and only recently has there been such a dramatic increase. Methane, another greenhouse gas, was about 500 ppb for these same 500,000 years
but now is at 1707 ppb! Most of the greenhouse gases come from power plants, industry, and transportation sources. The US is responsible for 25% of the earth’s greenhouse gases, yet Americans constitute only 4% of the world’s population. Countries in Europe and Japan produce far less greenhouse gases per capita and still have as high a standard of living as we have.

What are the consequences of not acting? We are told that glaciers are retreating all over the world. In March of 2002 the Larsen Ice Shelf on the Antarctic peninsula completely broke off and disintegrated. The glaciers in the mountains in the tropics are rapidly melting, e.g. the snows of Kilimanjaro will be gone by 2015. In the debate on the Senate floor, Senator Hillary Rodham Clinton said that glaciers are retreating in Alaska, in island wildernesses like South Georgia, in New Zealand, in the Alps and will completely disappear from our own Glacier National Park in 50 years. Sea levels will rise eventually-likely to the detriment of our coastal communities. There is evidence of altered bird migrations and propagation, loss of coral reefs due to ocean warming, and increases of certain diseases, such as malaria and dengue fever, as the tropical areas expand northward due to warming trends. Although disappointed that it didn’t pass, Senators McCain and Lieberman were delighted with the first debate on the Senate floor on global warming and the 43 votes they were able to muster! Yet the words of EPW Chairman Senator James Inhofe of Oklahoma still ring in my ear as he called global warming the greatest hoax ever perpetrated on the American people.

Mercury must be regulated as a hazardous air toxic by 12/2004 and 40% of mercury in the environment comes from coal-fired power plants. Under the Clean Air Act, EPA must require Maximal Achievable Control Technology (MACT). EPA’s own Office of Research and Development has studies that MACT will reduce mercury by 90%. However, the power companies and Administrator Leavitt have proposed only 70% in a cap-and-trade scheme to reach the goal by 2018. 45 Senators have written a letter to Administrator Leavitt to reconsider his rule. Mercury can be methylated, enter the food chain reaching 2 ppm in the flesh of game fish and cause behavioral changes and developmental defects in the fetus of pregnant women. EPA has revised upward their estimate to 630,000 infants with unsafe levels of mercury in their bloodstreams.

There are huge challenges remaining. 60 million acres of national forest land were subject to the Roadless Rule under the Clinton Administration requiring Congressional evaluation for wilderness protection. President Bush attempted to rescind this rule but was blocked by the courts. On March 23, 2004, the President announced opening up 24 million acres of Old Growth Forest for logging: this effectively shredded the Northwest Forest Plan negotiated among the environmental community, the timber industry and the federal government to protect the Spotted Owl habitat and Old Growth Forests. 300,000 acres of the Tongass - our temperate rainforest – have been opened for logging.

Since the Wilderness Act was passed in 1964, each President has signed, on average, 14 wilderness bills protecting 13 million acres; President Bush has signed only 4 protecting 0.5 million acres, the least of any President. Of great concern, however, has been his unrelenting attack on the wildest place in North America, the Arctic National Wildlife Refuge. The 120,000 member Porcupine caribou herd migrates over the Brooks Range every summer to calve on the 1.5 million acre coastal plain. This “biological heart” of the Refuge is the last 5% of Alaska’s vast North Slope that is still legislatively protected from exploration or development. The last U.S. Geological Survey in 1998 projected that the coastal plain would yield only 3.2 billion barrels of commercially recoverable oil. This is less than what the U.S. consumes in 6 months. The incomparable wilderness of the Arctic Refuge is by far worth saving; it is one of America’s great treasures. Henry David Thoreau said, “In Wildness is the Preservation of the World.”

Statement by H.E Anwarul K. Chowdhury
Under-Secretary-General, High Representative for Least Developed Countries, Landlocked Developing Countries, Small Island Developing States

Thank you very much Mr. Moderator, Dr. Durbak, Ambassador Drobnjak, dear colleagues on the podium, distinguished audience. I’m very happy to be here with all of you. It’s always a pleasure to be at the forums organized by World Information Transfer. During the last eight years I think I had attended a number of the events organized by the WIT, and I’m very grateful for their continuing collaboration and invitation to me. I remember that last year at the twelfth conference, soon after the Kyoto Forum on Water, I had made a presentation on the impact of water issues on the poorest countries of the world. I’m very happy to see a number of our friends, partners and colleagues from the non-governmental organizations, civil society organizations. I’m very happy to see a number of young people, the students who are present here. Dr. Durbak in her opening statement presented the various aspects of the theme that we are discussing today, linking conflict with environmental population. I think her statement in many ways outlines the challenge we are facing in addressing these issues. This morning’s theme is of great interest and relevance to modern times.

As I’m supposed to make some opening remarks, I’ll avoid written texts, and share some of my thoughts with you. I think two of the most challenging scourges of the present-day, for human civilization in general, are poverty and war.”
general, are poverty and war. These two scourges are preoccupying humanity in a way that human progress is being stored, obstructed and sometimes, frustrated. Poverty, by itself, is a great constraint to human progress, but also to see in its various dimensions. Poverty, as a matter of fact, is the worst polluter that we can have. Poverty brings in the kinds of pollution, the kinds of environmental degradation that we can never think of. In the same way as Dr. Durbak has outlined in her speech, and as we just saw in the presentation by Dr. Micovic, war leaves a mess in our society, in our countries, in a manner that becomes very difficult to get rid of it. War not only leaves a mess with regard to military hardware, destruction and death, but also the worst effect of the war is a total destruction of the social fabric, and I think that is the worst environmental disaster that war can bring in, or a conflict can bring in.

About twelve years ago the international community got together in Rio, the Earth Summit, to craft what we know as Agenda 21 and this was the blueprint for addressing the environmental and developmental challenges of the 21st century. Ten years have passed by. Nothing much has happened; the poverty situation worsened, conflicts increased in number, environmental degradation continued to challenge us. Then in 2002, in Johannesburg we got together to see what needs to be done, why Agenda 21 has not made the progress that it was expected to, and then we came up with this Johannesburg Plan for further implementation of Agenda 21, and we are now in the process of identifying various areas for focused attention. There, I think, in Johannesburg we have found out that to address the challenges of environmental development it is very important to build a global partnership. This alone cannot be done by the governments; this alone cannot be done by international organizations like the United Nations. There has to be a partnership and this partnership involves civil society organizations, involves NGOs, involves people working in the private sector. The corporations need to contribute to this partnership and that is why I would like to underline this aspect of global partnership in our effort to meet the challenges of environment and development. We would also like to recall that when the leaders of the world came together at the Millennium Summit in the year 2000 and then out of the Declaration of that Summit, the Millennium Development Goals, Eight such goals have been identified by the United Nations and we are now in the process of implementation of these goals. The target here for most of these goals is the year 2015. The most important goal of this cluster is the goal to reduce poverty by half worldwide by the year 2015. I think if we can do that, if we can achieve that goal, I think that many of our environmental and developmental challenges will be addressed in a big way.

In my present responsibilities, I am responsible for the most vulnerable countries of the world, and three most vulnerable groups as recognized by the United Nations, are the least developed countries, the landlocked developing countries, and small island developing states. All these three groups are vulnerable because of their special situations.

The least developed countries, of which there are fifty in this world and thirty-four of them are in Africa. You can very easily understand why these countries are vulnerable. There are structural vulnerability of these countries, poverty is acute in these countries, and of course, environmental and other challenges exist.

In the landlocked developing countries and the small island countries, these countries are vulnerable because of geography. The landlocked countries have no access to the sea and therefore it adds to their development efforts a very special vulnerability. They are not able to export their products to the international markets directly. They have to go through other countries to reach the international ports to export their products, and this adds on to the cost of the products themselves, which becomes non-competitive in the international market and thereby producing serious developmental handicaps for these countries. There are 31 landlocked developing countries and then there are 44 small island states, mostly located in the Caribbean and in the Pacific. These small islands apparently are known for their tourist attractions, idyllic natural beauty, but they have serious vulnerability, environmental vulnerability, which causes serious concerns to these countries. The climate change, sea-level rise, marine pollution, coastal degradation, all these things, cause serious developmental handicaps to these countries. Landlocked and small island countries have also a number of least developing countries among them, increasing their vulnerability. As our theme indicates conflicts in these countries add on to their vulnerability. We see now a small island country, Haiti, how it is going through a serious conflict situation and what kind of agony it is going through. We have seen that out of the thirty major conflicts of the past and the present, fifteen have been taking place in the least developed countries. Fifty percent of the major conflicts and challenges have been in these countries. We think of Democratic Republic of Congo, Sierra Leone, Liberia, all these are least developed countries. Timor L’Este is another least developed country coming out of conflict.

So it is very important to bear in mind that while we support the development efforts of these countries, we need to see to it that the conflicts in these countries are resolved in a sustainable way. What happens is that we tend to react, the international community, tend to react in a very strong way whenever there is loss of life, serious conflict, but as soon as the countries start coming out of conflict we seem to be forgetting them. Soon thereafter we find that conflicts have started brewing again in these countries. So it is very important to bear in mind that we need to provide international community support to these countries coming out of conflict in a sustainable way, in a longer-term way.

HIV/AIDS has been mentioned as a serious security and development challenge to many countries. I think the countries, which belong to the
category of least developed countries, are a major victim of this global scourge, and as Dr. Durbak mentioned in her statement, most of these countries suffering heavily from HIV Aids are also heavily indebted countries. In view of their heavy indebtedness they are not able to provide any additional resources to meet the challenges of HIV Aids. So it is very necessary that the international community comes up with a permanent solution to the debt problem of these countries. Otherwise it will be absolutely difficult for these countries to address, not only their general environmental development problems but also the scourge of HIV Aids. As you can see the last two editions of the World Ecology Report have covered HIV Aids pandemic in a major way. So I would urge all of you to have a look into those two issues of World Ecology Report, which cover HIV Aids pandemic in a very elaborate way.

Let me mention that while we talk about international cooperation, global support to address the issues of global concern, we must bear in mind that the most vulnerable countries, the three groups of countries that I mentioned need special attention of the international community. That is why in the Millennium Development Goals, Goal 8 mentions very clearly that it is necessary to address the special needs of the least developed countries, the landlocked developing countries and the small island developing states. In doing so we must bear in mind the critical role that could be played by the women and young people in these countries. I think to involve women and young people in these countries in meeting these challenges is absolutely essential and I would like to underline that fact and let me conclude again by highlighting again the need for global partnership. That is the most essential component in any effective action that we can take to address the challenges of environment and development. In this particularly the role of civil society and private sector is very important.

United Nations
Environment Programme (UNEP)
Statement by Dr. Adnan Z. Amin, Director,
New York Office

The links that are the subject of this 13th annual WIT conference - those between environmental degradation, population pressures and conflict - are widely acknowledged yet poorly understood. A survey of Governments that UNEP undertook last year to assess how best to enhance the scientific base of UNEP, indicated that the two main gaps in environmental understanding around the world are the relationship between the environment and conflict, and between the environment and poverty. Improving our comprehension of these linkages could serve as an important early warning system, alerting policy makers to environmental factors which could spur tensions. Distinguished chair, I would like to devote my remarks to providing information about UNEP’s perspective on these linkages and activities that UNEP has been undertaking in this field.

While it is commonly assumed that environmental factors can spike tensions and trigger disputes, it is important to stress that environmental degradation and resource scarcity do not directly lead to conflict. They are one strand within a complex web of causality in which a series of socio-economic problems, such as population pressure, poverty, forced migration, refugee movements, political instability and ethno-political tensions are intertwined. For example, environmental pressures and socio-economic marginalization can lead to confrontations if they are combined with high population density, a lack of social safety nets, and institutional mechanisms to mitigate or prevent conflicts.

Such interplay of factors was studied in an initiative that UNEP has been undertaking in collaboration with the Organization for Security and Cooperation in Europe (OSCE) and UNDP, and a constellation of other UN agencies and NGOs, on ‘Environment and Security in Europe’. The initiative promotes the use of environmental management as a strategy for enhancing cooperation and reducing insecurity, with an initial focus on Southeastern Europe and Central Asia. It was a response to a growing understanding that increased resource scarcity and degradation of natural systems, and problems such as inequitable access to critical resources and trans-boundary movement of hazardous materials can pose substantial threats to security for the countries of these regions.

The initiative included research which revealed numerous environmental hot spots, where water and groundwater pollution, availability and distribution, legacies of conflict, industrial and agricultural pollution, toxic and radioactive waste, land degradation, salinization and desertification, and depletion of natural resources negatively impact on economic development and public health. These environmental issues become national security concerns when they are combined with high population density or urbanization, socio-economic pressures, weak governance structures, and tensions between communities or trans-boundary disputes.

Take the example of the Ferghana Valley, which stretches over three Central Asian countries, Kyrgyzstan, Tajikistan and Uzbekistan, with linguistically and ethnically distinct populations. The unclear borders crossing the Valley led to a disruption of the social and economic structures, further exacerbated by population influx and density. Scarce natural resources and their intensive use as a source for basic human survival and livelihoods, high levels of pollution (mainly water pollution), soil degradation and overpopulation have led to major threats to human development and security. Several communities have experienced ethnic clashes trigger-ing violence since the late 1980s.

There are ample cases of such conflicts throughout the world. Consider, for example, the semi-arid land of northern Uganda, usually referred to as Karamoja. It is home to pastoralists called karimojong, made up of several tribes which depend on livestock for food, payment of bride price and other cash needs. Karamoja is characterized by low/unreliable rainfall. Scarcity of water for human and animal needs, and inadequate pasture for grazing, results in overstocking of livestock in the area in relation to the carrying capacity of the limited pasture. The groundwater resources on which the population depends have been reducing because the water table in the area has been falling since 1960, as a result of the effects of drought and other aspects of environmental degradation. Also, the rate of livestock loss is high, due to the effects of drought and disease. Furthermore, about 50 per cent of Karamoja is a protected biodiversity conservation area, where the government prohibits any human activities. This explosive combination of factors has led to internal armed conflicts and cattle raiding between the different tribes, and also to external armed conflicts with people from neighboring countries with the same resource scarcity problems.

On the other end of the spectrum from early warning of conflicts, UNEP has a unit devoted to post-conflict assessment, which extends
the organization’s work in areas of the world where the natural and human environment has been damaged as a direct or indirect consequence of conflict. Post-conflict environmental assessments are a vital tool for making independent and reliable investigations of environmental impacts and for providing clear recommendations on the necessary remediation. Environmental activities following a conflict must meet urgent environmental and health needs. Keeping environmental priorities on the agenda throughout the post-conflict reconstruction is equally important. A healthy environment is a prerequisite for sound and sustainable development. People cannot secure real and sustainable economic development if they are confronted by contaminated water, polluted land and declining natural resources. Activities must support longer-term goals for managing natural resources, address environmental management practices and promote regional environmental cooperation.

Most recently, UNEP’s Post Conflict Assessment Unit compiled a study of Liberia, which found that nearly 15 years of conflict have severely compromised the country’s environment, with drinking water and sewage systems in such a damaged state they pose a serious threat to public health. Urgent action is needed to restore electricity supplies, including the country’s main hydroelectric plant, as serious electricity shortages are forcing many Liberians to chop down trees and destroy precious habitats like mangrove swamps for fuel wood and charcoal. In addition, the reports says, collection of urban and municipal waste had all but ceased as a result of the conflict leading to waste mountains and forcing local people to burn their rubbish, creating air pollution and further threats to human health.

In 2003, UNEP issued a report on the environmental conditions in Iraq, offering a preliminary assessment of the main environmental threats facing the country and recommending actions for immediate relief and long-term recovery. The report stressed the need for urgent measures to address humanitarian issues. Recommended priorities included restoring the water supply and sanitation systems, cleaning-up possible pollution ‘hot spots’ and cleaning-up waste sites to reduce the risk of disease epidemics from accumulated municipal and medical wastes. Another recommended priority activity should be conducting a scientific assessment of sites struck with weapons containing depleted uranium (DU). The report recommends that guidelines be distributed immediately to military and civilian personnel, and to the general public, on how to minimize the risk of accidental exposure to DU. A major threat to the Iraqi people is the accumulation of physical damage to the country’s environmental infrastructure. In particular, the destruction of, and lack of investment in, water and sanitation systems have led to higher levels of pollution and health risks.

In 2002, UNEP’s assessment mission to Afghanistan found that the environment had been degraded to an alarming extent, with potentially serious implications for human health. The report highlighted the pressures that conflict, poverty and population growth have placed on freshwater, soils, forests, wildlife and other natural resources. Poor environmental management of wastes had further contributed to health risks. Tests of drinking water in urban areas revealed high concentrations of bacterial contaminants creating a public health threat, particularly for children who are susceptible to deadly cholera. UNEP’s investigations of oil refineries and transport terminals and brick, asphalt and lead battery factories revealed acute environmental and human health risks, due to poorly maintained, rudimentary technologies and a lack of management know-how.

Distinguished Chair, as Colin Powell, the US Secretary of State, observed before the World Summit on Sustainable Development, “Sustainable development is... a security imperative. Poverty, environmental degradation and despair are destroyers of people, of societies, of nations. This unholy trinity can destabilize countries, even entire regions”. So as we consider at this annual WIT conference the linkages between environment, population and conflict, we must stress that environmental security, both for reducing the threats of war, and in successfully rehabilitation a country following conflict, must no longer be viewed as a luxury but needs to be seen as a fundamental part of a long lasting peace policy.

The WHO World Report on Violence and Health: Collective Violence and Health and Environmental Damage

Dr. Alberto Concha-Eastman, Regional Advisor on Violence and Injury Prevention, PAHO/WHO

On behalf of PAHO and WHO, I want to thank WIT for the invitation to present the World Report on Violence and Health (WRVH) and make some comments on the effects of violence on health and the environment. This is an opportunity to share, learn and move ahead for a better world, a more peaceful world, and a world that respects and salutes the differences of opinions.

The Report was launched by Dr. Gro Harlem Brundtland, former WHO Director General, in 2002, in Brussels, Belgium. At the same time, she launched a worldwide violence prevention campaign aimed at increasing government and society commitments for violence prevention. The preventability of violence is the main message of the Report, and it is presented in the book as an outstanding contribution of the public health sector to governments and to the society at large to face the global epidemics of violence.

Although the Report itself does not go into depth for a broader analysis on the connections between violence and the environment, a central topic of this Conference, it points out that collective violence, wars in particular, and some forms of organized crime, such as narcotics cropping and trafficking, have a tremendous impact on land and soil degradation. I will explore some of these situations later on.
“Violence is the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation.”

The definition of violence is complemented by a typology of violence. At the first level this differentiates between violence people inflict upon themselves, interpersonal violence inflicted by another individual or small group of individuals, and violence inflicted by larger groups such as states. Although not shown here, each of these broad categories is further divided to reflect more specific types of violence.

Self directed violence is divided into suicidal behavior and instances of self-abuse. Interpersonal violence is divided into family and partner violence, and community violence. Collective violence is divided into social, political and economic violence. The typology also includes the nature of violent acts, which can be physical, sexual, psychological, or involving deprivation or neglect. In this conference I would focus later on the collective part of this typology.

Interpersonal violence is related to family or parental violence and violence at a community level. Also this could be hate against children, one’s partner, the elderly or violence acted out by acquaintance or stranger, which is a very common way of this type of this violence. Lastly, the typology takes collective violence, which could also be physical, sexual, psychological, or deprivation, and I think we have to add to the nature of this violence the ecological problems that the collective violence can produce.

It is very important to know that in this typology of violence, we have to know that there are links between different forms of violence, after war or even during war, in which suicide occurs very often. It is not a problem that is only happening in peacetime, but it is also related to war. In the case of Latin America, for example, in El Salvador, Guatemala, and Nicaragua, interpersonal violence has increased tremendously after the signing of Peace Accords, which occurred more than ten years ago to stop the civil wars happening in these countries. There are relationships between the different types of violence that cannot be isolated one from the other.

The WRVH has nine chapters. The first chapter is directed to understanding why public health is involved in violence prevention and explains the theories behind that. The next seven chapters are on youth violence, sexual violence, self-directed violence, elder abuse and neglect, violence by intimate partners, child abuse and neglect by parents and other caregivers, and finally on collective violence, in particular armed conflicts. Each of these seven chapters contains information about its magnitude, what is known about its risk factors, what prevention interventions has been applied, what works, what doesn’t work and a very extensive bibliography.

The ninth chapter is dedicated to present the nine recommend-ations of the Report. At the end, it contains statistical annexes with information from countries and the WHO regions.

Magnitude of the problem. All around the world in the year 2000, the WHO recorded more than 1.6 million deaths from different types of violence. When mortality figures are compared with other conditions such as AIDS, this disease doubles those figures from violence, but violence kills about the same as tuberculosis, and a bit more than traffic injuries and malaria. It is important to recognize that much of this data came from developed countries, where the information systems are more reliable and where more suicides happen than in the developing world. From those 1.6 million people who died from violence, 815,000 were suicides. Another, 520,000 deaths were due to interpersonal violence or homicides, and 310,000-recorded deaths occurred during wars or internal conflicts, a very high toll as well.

Homicides from interpersonal violence are registered with higher rates in Latin America, Africa Sub-Saharan and the former Soviet Union. On the other hand, suicides are more common in developed nations such as Canada, Australia, Western Europe, but also in Russia and China. Studies show a strong relationship between homicide rates, economic development and economic inequality with poorer countries (especially those with large gaps between the rich and poor) tending to have higher rates of homicide than wealthier countries. The Report contains maps where the global distribution of homicides and suicides can be seen.

By age and sex there were marked differences in homicide rates. Gender differences were least marked for the age groups 0-4 and 5-14 years. For the age groups 15-29 and 30-44 male rates were four times as high as female rates and for the remaining age groups around 2.5 times as high as female rates. From age 15 onwards female rates showed little difference between age groups while male rates varied substantially.

The health consequences of violence are many. They are physical, sexual, mental or behavioral consequences. Actually, many people who are suffering from the effects of violence also use drugs, or consume alcohol and exhibit eating and sleep disorders, engage in unsafe sexual behavior, smoking, and in other risk-taking behaviors. These kinds of problems are common in those who have suffered violence, in particular when violence comes from their loved ones.

An ecological model to study and intervene violence. To understand the problem the WRVH presents an ecological model in which the individual, the family
Inequality is a risk factor and signs of it are widening social and economic inequalities; insecurity affecting civilians and others not engaged in fighting; abuses of human rights; and deterioration of public services with its consequences in public health. The case of Argentina at the end of the year 2001, when the economic crisis erupted and lead to increasing violence and social riots in the streets, is an example of economical collective violence.

Going back to the WRVH, the Report has nine recommendations, six of them addressed to the country level and three of them addressed to the international level. The first six are:

- Create, implement and monitor multi-sectoral national plans for violence prevention;
- Enhance capacity for collecting data on violence;
- Define priorities for, and support research on, the causes, consequences, costs and prevention of violence;
- Promote primary prevention responses;
- Strengthen responses for victims of violence;
- Integrate violence prevention into social and educational policies, and thereby promote gender and social equality.

At the international level, the three recommendations are:

- Increase collaboration and exchange of information on violence prevention;
- Promote and monitor adherence to international treaties, laws and other mechanisms to protect human rights. (We know that the United Nations has made wonderful conventions on these types of problems but not all countries have applied these conventions or have not yet signed them.)
- Seek practical, internationally agreed responses to the global drug trade and the global arms trade.

After the launching of the WRVH and during the global campaign for violence prevention, WHO and each Regional Office have concentrated on how these recommendations may be applied at country level. Progress has been made, but more has yet to be done. I end this presentation citing a phrase taken from the Nelson Mandela foreword for the Report: “We must address the roots of violence. Only then will we transform the past century’s legacy from a crushing burden into a cautionary lesson.”

UN 3 X 5 Initiative on HIV/AIDS

Teguest Guerma, MD, Associate Director, HIV/AIDS Department, WHO

My presentation today will be about treating three million people by the end of 2005. Currently called 3X5, this is a WHO, UN AIDS global treatment initiative. I’ll first speak about HIV/AIDS as a global health emergency, then speak about what the 3X5 Initiative is, who needs the treatment, and explain why we should treat three million people with anti-retroviral therapy. I will describe the strategy to you by explaining the five pillars of the 3X5 initiative, then I will explain to you what...
we have done so far, the funding needs, and the challenges the program poses.

HIV/AIDS is a global emergency; you all know that HIV/AIDS is a very big public health problem. Forty million people are living with HIV/AIDS today, twenty million have died since the pandemic began, and three million deaths and five million new infections were recorded in 2003.

What is the 3X5? It is an initiative to massively increase access to antiretroviral therapy in developing countries. For the time being, six million people are estimated to be in need of antiretroviral therapy, while only 400,000 people receive treatment today. What we are trying to do is treat three million people by the end of 2005. This is just a target, a measurable fixed target, towards the goal of universal access to antiretroviral therapy. As you know this is the main goal of the WHO.

In the developed world, 75 out of 100 people who need the treatment, get it, but in Africa and South-East Asia only 5 out of 100 persons are getting the treatment. For years since the introduction of antiretroviral therapy, it has been disheartening for those of us who work with Africa to see those who receive the antiretroviral therapy get well and contribute to their social life, while those who do not have it die every day and this gap is widening. Why is the UN committed to treating 3 million people by 2005? Because antiretroviral therapy keeps people alive, they contribute to their society, and also because 8,000 people die every day from this treatable and preventable illness. Finally, the global community has recognized that this is morally unacceptable. We know that this enemy has a great social and economic impact and that entire countries are facing economic and social collapse if we don’t do something about it.

What are the payoffs of the 3X5 initiative for the world? The five pillars are global partnership, sustained country support, simplified and standardized treatment delivery tools, reliable medicine supply and diagnosis. This is not something the UN can do by itself. This has to be done in partnership with the Global Fund, other multilateral agencies, and international partners. We should also work with governments, civil society, the private sector, communities, people living with HIV/AIDS, as this is the only way that we will be able to get grants for those who need it. We should help countries develop a national plan for treatment, to train their health workers, build their capacity, and implement this plan.

Simplified and standardized tools for delivery of treatment. At the UN, we should develop models for treatment and delivery in impoverished countries. We should have guidelines to train health workers, provide clinical protocols for treatment delivery, and also we should have guidelines for monitoring adherence to drug regimens and drug resistance. We should include effective and reliable medical supply and diagnostic systems; we should support countries with their supplies of high quality low cost medicines and diagnostic tools. For this, we will be developing a network, helping coordinate an effort to improve access to medicine and support services tailored to country needs, and provide information to manufacturers about where to provide the treatment. We have now simplified our full first line regimen, and they are widely used and highly effective. We have also recommended a simplified fixed dose combination of drugs, and I am sure some of the speakers will speak about this later. These combinations are working for tuberculosis co-infections.

The fifth pillar is also documenting lessons for national treatment plans, pilot projects and resource savings. We are building on the successes, but we are also learning by doing because this is a very new initiative. We are coordinating an agenda for operations and research.

What have we done so far? What did the UN do? Some people will say that we are too slow. People need treatment and the UN hasn’t done anything. This is what we have done in a very difficult context. First, we launched this initiative in Kenya, in December 2003. We sent an assessment mission to high burden countries to see what is there, how is the health system functioning, who is working in this country, who are the partners, how can we develop and implement the mission plan, is there a government commitment? The assessment teams came back with a report from this Kenya, and later we mobilized the WHO staff in all the departments and sent them to countries to develop the fourth round proposals for the Global Fund. This was done because we were not able to get technical staff to the countries as soon as we wanted.

Currently, we are recruiting technical staff for the twenty two countries, and we are hoping that we will have more staff for the remaining twenty countries which will bring the total to forty. This technical staff will assist countries in training their health workers, help countries to develop their national plans, and assist them to implement the treatment programs. We have developed guidelines for training, guidelines for treatment, and all of this has been distributed to countries for use. In the near future, we will be providing countries with maps, which will demonstrate how many voluntary testing and counseling centers we have, how many partners are working, what kind of regimens we are using, and where the gaps are.

We are also going to move forward in a few countries that are ready. If you speak to country representatives they are ready to start, and they are waiting for us to show them the way. We are going to move forward in a few countries that already have the
Twenty seven high burden countries have already requested funds available and the coordination system working very well. Twenty seven high burden countries have already requested assistance from us to help them implement their plans. Twenty-one other countries have requested assistance also. Only seven high burden countries have not decided to request our help. We have to be ready to provide assistance for these 21 countries, but for that we need funding of at least 5.5 billion dollars though the end of 2005 for the treatment alone.

There is money for the treatment. We have 15 billion from the Bush Initiative. We have another 5 billion from the Global Fund. There is money but we have to use money equitably. The WHO needs to provide technical assistance to help health and community workers develop and implement their plan of action. The funding is not there for this. Now we are trying to advocate for more funding in order to get this groundwork started. If we don't get this work done, no one can go into the country and implement the treatment program because we need to build the capacity before anything starts. Even if we have money, if nationals are not ready to implement that then we will not be able to. The only thing we will be able to do is bring in external technical assistance and implement the programs very quickly, but this will not have any sustainability for at the end of the project everything will collapse. Remember, this is a lifelong treatment.

What are our challenges? There is a misperception by the countries. When we first proposed the 3X5 initiative many people thought that the WHO would do it all and we would provide the treatment and money. What we are providing to the countries is technical support, and we are also acting as brokers, mobilizing the resources for the implementation of treatment. This is finally being understood and countries are mobilizing resources themselves. The other challenge was working together with the UN, the NGOs, and the private sector. In some countries, like Mozambique, we have several donors and bilaterals working in different districts with different regimens. Coordination is not there. The WHO can help by building the coordination mentality. That is why we are now proposing what we call the 3-1. 3-1 means one national plan, one coordinating mechanism, and one monitoring and evaluation mechanism. This is the only way we can coordinate everything that is happening on the country level.

The other challenge is the obstacles from the private sector. WHO’s position is to stand by our prequalification system, and we still think that the fixed dose combination is the best. As you all know after the Botswana meeting this is being accepted by most of the parties. The other thing is lack of financial commitment from most of the donors. There were so many pledges in the beginning, but as you know pledges are not concrete. Substantial funds are not there. This 3X5 initiative is not unattainable. Imagine even if we reach only one million by 2005 that will make a difference for those who have zero now.

We had some challenges within the WHO itself. We had to change the management. We now have a new management team, and I hope this will change the organization’s image for this program. Finally, I would like to finish by saying that antiretroviral therapy can save millions of lives, and that it is up to us to decide to either ignore this and let millions die or do something about it.

Role of Sex and Race in HIV Infection
Kathryn M. Anastos, M.D., Principal Investigator, Bronx/NYC Consortium, Women’s Interagency HIV Study, Montefiore Medical Center, Bronx, New York

My presentation will focus on several parameters that deal with sex and race in HIV infection. Who has HIV infection, who’s being treated, drug testing parameters and on what kind of virus are they tested so that we know if they will work for most of the human population.

This is a world wide epidemic. The largest portion of infected people is in sub-Saharan Africa with about 30 million cases and at least 3 million new infections per year. Next is South-East Asia with 8.2 million infections.

Epidemiology in the treated world, which is United States and Western Europe, shows the following in the United States. What was reported in the United States until recently was AIDS not HIV infections. The average time for developing AIDS after being infected is 10-11 years in the United States and probably the same worldwide. This means tracking an epidemic that is 10 years old wherever you are seeing the numbers. The number of incidences decreases, not because of primary prevention but because of tertiary prevention. We prevent progression from HIV infection to AIDS.

Let me just comment on what a miracle these treatments are. Within a month of having the antiretroviral drugs available, death rates started to come down. To an individual doctor, it looked like patients who were dying got better. However, in the U.S., the proportion of cases that are in women are going up. It’s a little more obvious when you compare African American women to the rest of the population, where the prevalence is 20 fold higher, and is one of the biggest racial disparities you see. In the United States,
ethnic minorities, those of African or Latino heritage have also been disproportionately overrepresented and now represent over 70% of cases.

If there is a difference in how people respond to treatment both worldwide and locally it matters that we know what those differences are and tailor our therapies to the individual. In the US, people of color are less likely to be able to access both high quality primary care which is what you need to be able to get good antiretroviral treatment and the drugs themselves. There’s no evidence that people adhere less well by sex or race to the regimen, and with HIV, more than many other diseases, adherence to the regimen can save your life or kill you. By my assessment, what drives most deaths now is that either the person didn’t know they had HIV and left it untreated, (this is in the developed world), or they’ve been treated with everything and none of the drugs work anymore.

What in our biology could determine how well we handle an infection or how well we handle a drug or how well a drug works for us? The mapping of the human genome has allowed us to start to understand what drives individual response to medication. It’s not until you get to late stage disease that you get rid of this difference. It took years to have this accepted as fact despite multiple studies that demonstrated it, which tells you something about the hubris of medical science. It is pretty clear that women’s viral lodes are lower than men’s by about half a log. Half a log is the difference between treating and not treating the patient. One of my studies asked if the viral load is lower in women, and the viral lode drives disease, then women should do better. However, people of color also have lower viral loads by about the same amount, by about 1/3 of a log. We had to hypothesize that both people of color and women should do better in the face of untreated HIV infection. We were right about ancestry but wrong about women. With ancestry, people of color had their T-cells decline much slower than white Americans. Black and Latino Americans had a 41 T-cell less decrease per annum. But for women, they also had their T-cells go down faster despite a lower viral lode. The people who did best were men of color, 31 cells lost per year, a very slow progression. Whereas the white women were progressing 4 times more quickly.

In order to understand how AIDS makes people sick, it’s much better to know what happens from point of infection. The following study is of sufficient sample size to tell us whether there is a sex difference in HIV progression. This French based study, called the SEROCO cohort, involved 424 people who knew the date of infection within 2 years, and who were followed for 6.5 months. Researchers found that all women’s T-cells were higher, but they declined faster and at eight years they overlapped with the men. Women’s viral lodes were lower and at eight years they started to cross those of the men. The big question was whether the higher T-cells and lower viral lodes protect the women. The answer is yes. It protected them very substantially.

How do we understand what protects people from HIV disease? If we can understand these differences, it might help us treat other people. This same cohort study also asked do people do equally well when you treat them. This was a 548 person cohort of whom 32% were women followed for 3.5 years. Probably the best study I have now has a median follow up of 5 years. We expect to treat for 40 years. Though this is a long follow up for a study, it’s a short follow up in a lifetime of treatment. This study found that there was no difference between women and men. I agree that the current data shows that there is no reason to treat men and women differently. But I don’t think we have the answer yet.

The classic way of looking at who does well and who does poorly on a treatment is by examining two major parameters, T-cells and viral loads. We used to treat when the T-cells were way up above 500, now we treat somewhere between 250-300, and we don’t know exactly where this point should be. We don’t know it worldwide, and we don’t know it in the so-called resource replete settings, and frankly it is a question that we will answer over the course of several more years.

I want to switch now from what differences are driven by sex to what differences might be driven by ancestral history, which really means geography in this case. We all have gene mutations that influence how we get sick or how we transport or metabolize drugs, and they are primarily driven by where are ancestors came from, and what they were exposed to. A study published as a sex study in London Free Hospital showed that women of color were 3.5 times more likely than the white subjects to be hospitalized after initiating HART. Ancestral history in the U.S. is African Americans, European Americans, Asian Americans, but in London there is a large population of African immigrants. Those immigrants are usually infected with a virus which is different

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Number of Cases</th>
<th>Female AIDS Cases</th>
<th>Rate per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>White, not Hispanic</td>
<td>2040</td>
<td>18%</td>
<td>2.4</td>
</tr>
<tr>
<td>Black, not Hispanic</td>
<td>7023</td>
<td>63%</td>
<td>48</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1894</td>
<td>17%</td>
<td>13</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>69</td>
<td>1%</td>
<td>1</td>
</tr>
<tr>
<td>American Indian/ Alaska Native</td>
<td>42</td>
<td>&lt;1%</td>
<td>5</td>
</tr>
<tr>
<td>Total*</td>
<td>11,082</td>
<td>100%</td>
<td>9</td>
</tr>
</tbody>
</table>

* Includes 14 women of unknown ethnicity

Prevalence of AIDS Cases Among Women/Adolescent Girls in the US, 2001

Sex and Clinical Outcomes After Starting HAART

<table>
<thead>
<tr>
<th>All women vs men</th>
<th>Nonwhite vs white</th>
<th>White women vs men</th>
<th>Nonwhite women vs men</th>
<th>Women by race</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.76 (0.46-1.27)</td>
<td>1.50 (1.03-2.20)</td>
<td>0.24 (0.05-1.21)</td>
<td>1.04 (0.5-2.14)</td>
<td>3.55 (1.05-12.04)</td>
</tr>
<tr>
<td>0.70 (.36-1.33)</td>
<td>0.58 (.09-3.67)</td>
<td>0.58 (.09-3.67)</td>
<td>1.06 (0.34-3.25)</td>
<td>1.94 (0.42-8.99)</td>
</tr>
</tbody>
</table>

HR= Hazard Ratio; ADI= AIDS-defining illness
from that of Europeans and American. What might drive differences by ancestral history, and how can our genes mediate disease? Fighting disease is actually very different across varying genetic types and varies by ancestral history. How do genes drive the response to therapy, and what are the adverse events. We do two things with drugs in our bodies. We transport them and metabolize them. This means we break them down into something that is not toxic, and we get it out of our body. There is a system in the body called the P-glycoprotein system which pumps material out of the white cell. All of these drugs for HIV work inside the cell. Many of the HIV related drugs are transported by P-glycoprotein. Once they get into the cell it works hard to pump it out of the cell. High pgp activity, most common in people of African descent, increases your serum drug level which drives your adverse events but decreases your intercellular levels and this drives drug efficacy. If you have high pgp activity, which is highest in West Africans, intermediate in African Americans and low in whites and Japanese, you might have high adverse effects and low efficacy.

In conclusion, the proportion of AIDS in US women and worldwide is increasing. 58% of infected Africans are women. Race and sex can influence disease progression. Differences by ancestral history are probably mediated by our genetics, and we don’t know what is mediating the differences by sex. To bring this back to our unifying theme for today, we can and we must treat the world now. It is completely achievable. Some countries such as Rwanda are clearly providing a model of service delivery and particularly a grass roots model of care. People who most want to be treated are the ones who are most likely to make it happen. There is some evidence that treatment is not only as effective in Africa and among Africans, but might actually be more effective. Conflict in Rwanda resulted in 150,000 women, at a minimum, being HIV infected deliberately through brutal, prolonged, and repeated genocidal rape. This is a behavior that we should never find tolerable. Yet, for most of the world’s history, this has happened over and over again. The AIDS epidemic, in particular, not just through genocidal rape, but through many other sources is perpetuated by women’s disempowerment. We will not stop this epidemic until we shift the balance of power between women and men everywhere - not just in Africa, or in Asia, but everywhere. I believe Rwanda will treat 380,000 people, maybe not by 2005, but pretty close and can provide a model of decentralized care to the rest of the world because it is our obligation.

The Power of Acting Early


Despite exponential growth in global attention and in available resources, financial and others, the HIV pandemic keeps on growing equally exponentially. Every day, 14,000 people become newly infected with HIV while 8,000 die of AIDS, numbers that are even more significant when compared to other infectious diseases that have managed to upset the global order. Most recently we had SARS, a disease that sparked fear in countries across the globe, a disease that dominated the front pages of newspapers for months, a disease that caused economic losses of billions of dollars over its official life span of 6.5 months. And yet in the end, “only” 8,096 people were considered “as probably infected with SARS” while SARS’ mortality rate turned out to be 9.6%. The scale of the HIV pandemic is much beyond SARS with more than 60 million people already having been infected over the history of the disease and with a mortality rate of 100% if medications are not available or taken properly by the patients. Even though the majority of HIV-infected people live in Sub-Saharan Africa, the epidemic is growing most rapidly in Asia and Eastern Europe with annual percentage increases in new infections of 30% and 20% respectively.

While we have spent billions of dollars on the HIV pandemic – USD 4.2 billion in 2003 alone - we still have a long way to go before we achieve the HIV prevention or treatment goals the global community agreed upon years ago. Sadly, as was pointed out in the report “Access to HIV prevention: Closing the Gap” released by the Global HIV Prevention Working Group in 2003, fewer than 1 in 5 people in high risk groups have access to even basic HIV prevention services. In terms of creating access to treatment for those HIV-infected patients who need it, our achievements have not been much better. UNAIDS has estimated that 6 million patients of all HIV-infected patients in developing countries are in dire need of antiretroviral medication today. It needs to be kept in mind that there is a 7 to 10 year lag time between becoming HIV-infected and having actual symptoms that justify the diagnosis of “AIDS”. Once diagnosed as having AIDS, patients’ lives can be extended by taking
antiretroviral medication, a triple drug combination, taken daily for life. Hence, the numbers of patients in actual need of antiretroviral medication today is lower than the number of patients who are HIV-infected today. Despite all our efforts, only 400,000 of the 6 million have access to these drugs. And of those, 150,000 live in Brazil, the country that has made “health” a constitutional right in 1988 and has since successfully halved its nationwide HIV prevalence rate within 5 years.

Obviously, solving the HIV epidemic is not as easy as advocating “abstinence only” sexual behavior or providing free drug supplies. As stated in the report by the Global HIV Prevention Working Group, effective prevention is combination prevention, meaning targeting everyone at the same time, including those whose behavior is not socially acceptable in many countries around the world. Effective prevention combines advocating delayed sexual intercourse while providing condoms at the same time, realizing that humans are humans. It also includes prevention and treatment of sexually transmitted diseases, institution of harm reduction programs for injection drug users, ensuring injection safety in clinic settings, etc. A frequently overlooked risk of HIV transmission was highlighted in a study conducted by the WHO and the Centers for Disease Control (CDC) who examined injection practices in health care settings in non-industrialized nations (excluding Latin America). The study concluded that, of the 16 billion injections given in a single year in hospital settings, 39.9% were done with re-used and un-sterilized equipment. Regions where re-usage of un-sterilized needles was higher included Southeast Asia (India, Bangladesh, N. Korea, Bhutan, Myanmar, Maldives) with up to 75% re-usage, the Middle East with 70% re-usage, and the West Pacific (Cambodia, China, Vietnam, S. Korea, Indonesia, Fiji, Laos, Malaysia, the Philippines…) with up to 40% re-usage. As has been widely published, the HIV transmission through a contaminated needle is 1/300 (versus a transmission risk of 1/1000 to 8/1000 for heterosexual contact).

In terms of providing access to antiretroviral medication, one of the easiest factors to blame has historically been the high cost of antiretroviral medication. However drug prices have significantly decreased over the past 4 years; currently the cost of triple therapy hovers around an annual cost of USD 140. But, as many of us who work in developing countries know, even if treatment were available for free today, that fact alone would not guarantee that patients actually receive what they need. A good example of other issues in need of tackling is India, home to 4.5 million HIV infected people. A study exploring HIV expertise amongst healthcare providers found the following results: In low HIV prevalence states, 70% of the participating physicians were unaware of the existence of diagnostic tests for HIV/AIDS while 99% of them didn’t know that antiretroviral medication needs to be prescribed according to certain medical criteria. No participating physician was aware of the need to provide counseling to the patient or regular monitoring of the treatment, both of which help ensure treatment effectiveness, addressing of side-effects, and treatment adherence. Even in high HIV prevalence states, 50% of the participating physicians were unaware that objective parameters for treatment initiation exist. Many admitted to irrational use of the medication and to “prescribing mono therapy for a short duration in order to pacify the patient”. It needs to be kept in mind that when antiretroviral medication is prescribed and / or taken haphazardly, the risk for the creation of resistance is significant, making the virus impervious to existing medications. The lack of healthcare infrastructures capable of handling the HIV-infected patient load is not the only issue impeding access to HIV treatment. Other hurdles include societal discrimination and stigma, the lack of drug distribution systems and testing centers, etc.

However, amidst this dissatisfying news, there are success stories in the fight against the HIV pandemic. The notable success story is Brazil, a country with the most advanced anti-retroviral treatment program in the developing world. In 1985, the Brazilian government set up a national AIDS program providing HIV education and treatment guidelines. By 1988, health was declared a constitutional right in Brazil, and by 1996, at a time when the HIV prevalence was 1.2%, a national antiretroviral treatment program was instituted, providing free antiretroviral treatment through the public health system to every HIV infected patient in need. As a result, Brazil has cut its HIV prevalence rate in half in just 5 years.

How did Brazil manage? As a first step, the Brazilian government acted when the HIV prevalence rate was still low: 1%. Furthermore, the government created partnerships with civil society, including religious leaders, prostitutes, and injection drug users, and implemented the earlier described “combination HIV/ AIDS prevention programs”. As a result, the HIV prevalence rates even in the most hard-to-reach high risk groups fell dramatically. In Injection Drug Users it declined from a high of almost 50% in 1997 to less than 10% in 2001, in prostitutes from 17.8% in 1996 to 6.1% in 2000, in Men-having-Sex-with-Men from 10.8% (1999) to 4.7% (2001), and in pregnant women the HIV prevalence rate was halved from 1.2% to 0.6% within 5 years. In order to provide universal treatment access, Brazil not only supplied the antiretroviral medication for free, but it also expanded its healthcare system, set up testing centers and drug distribution centers, and worked towards assuring patient confidentiality. One point that does deserve special attention is that, even though Brazil produces its own generic version of some antiretroviral drugs, the country has yet to break any single patent law. Instead, for those drugs that still are under patent protection, the government negotiates successfully with the pharmaceutical industry to have the prices lowered.
The overall result of the Brazilian program is that the HIV prevalence rate has been halved within 5 years to 0.6%. 150,000 patients receive antiretroviral treatment – something that mitigates the effect of the epidemic on society and the economy greatly. The death rate due to AIDS has plummeted by 30%, a 60-80% drop in opportunistic infections has been observed with a decline of almost 80% in the incidence of tuberculosis alone, and there has been a seven-fold reduction in hospital admissions. While this program may sound prohibitively expensive, the government estimates that it has saved USD 2.2 billion just in hospital admissions alone, resulting in a net savings of USD 1 billion after the cost of medication is taken into account.

Unfortunately not all countries have realized that it is easier and less costly to contain something when it is smaller as opposed to larger. What could have been a success story, but really isn’t, is South Africa. Ten years ago the HIV prevalence rate in South Africa was less than 1%. By 2001, it had grown to more than 20.1% and by 2002, 26.5% of pregnant women were HIV-infected. Voluntary counseling and testing services were not available in South Africa before 2000; prevention of transmission from the mother to the baby was not available until late 2001; and until mid-2003, no action was taken on the provision of anti-retroviral medication. The results of inaction cut across all sectors of society, from social, to economy, to health care. By 2005, 80%, a 60-80% drop in opportunistic infections has been observed with a decline of almost 80% in the incidence of tuberculosis alone.

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then allows for the reconstitution of the immune system and prevents resistance to the ARV agents used. In order to achieve optimal results, patients must maintain very high levels of adherence over long periods of time. Studies have shown that for a typical protease-based regimen, patients must take better than 95 percent of their doses in order to have the best chance of success. In a twice a day regimen over the course of two weeks, this translated to not missing more than one dose. One of the greatest challenges is managing the frequent and persistent side effects which may complicate the ability of many patients to adhere as noted. Not sustaining very high levels of adherence to drug regimens promotes the development of resistance mutations to those antiretroviral agents used by the patient. Although we have 19 agents, once multiple resistance mutations occur, the potency of the drugs against ARV occurs.

The single greatest challenge we face as providers of care to HIV-infected patients requiring “life-saving ARV therapy” are the long-term metabolic/morphologic complications of therapy. First described approximately two years after the advent of protease inhibitors in 1998, the exact etiology and pathogenesis of these changes in body habitus as seen in my slide set, also known as lipodystrophy, and/or serum lipid levels is still unclear. As we do not understand exactly why lipodystrophy occurs, changing drugs may not be the answer. We do know that protease inhibitors are associated with insulin resistance, elevations of cholesterol, and accumulations of intra-abdominal fat. We do know that nucleoside inhibitors are associated with elevations of lactic acid levels. But we do not understand how this all fits together as a paradigm. Ironically, many of our most successfully treated patients have developed these changes of fat-loss in their faces and extremities, fat gain in their bellies and behind their necks or both. Patients manifesting the worst forms of these changes may become dispirited and depressed and may discontinue their ARVs outside of medical supervision. Clearly, this adverse effect of drugs has the tendency to worsen long-term adherence.

In terms of our treatments, research has enabled us to interfere with three key points in the life-cycle of the virus: inhibition of the reverse transcriptase enzyme, the protease enzyme, and fusion of the HIV envelope with the cell membrane serve as the targets of our three classes of drugs. Viruses are nonliving and they must enter cells in order to reproduce themselves. What makes HIV different is that it is a retrovirus allowing it to establish latency in cells it infects and thus making it difficult to eradicate with current therapeutics. Once the HIV gets into a mammalian cell, it takes over the nuclear genetic mechanisms of the cell subverting the cell’s protein producing capacity for its own uses to make copies itself. The enzyme reverse transcriptase is what makes HIV different from other viruses allowing it to transform viral RNA into a form of DNA to enter the cell’s DNA, able to remain quietly as a Trojan horse and start replicating again at a point in the future. As noted, this makes eradication of this virus particularly difficult. The enzyme protease helps to form the developing viral proteins into functional units to ultimately form an infectious virion to bud off and infect another cell.

Pharmaceutical companies continue to search for agents to expand our current armamentarium of ARVs. As shown, there is a need to find drugs which retain potency when a patient develops resistance to currently licensed drugs. There are some promising candidates on the horizon from our current classes: tipranavir and TMC 114 from the protease inhibitors, capravirine and TMC 125 from the class of non-nucleoside reverse transcriptase inhibitors, and two new combination fixed-dose nucleoside reverse transcriptase inhibitors. There are new targets of the HIV life-cycle sighted as sources of new therapies, namely the attachment inhibitors and integrase inhibitors. The drug enfurvitide, formerly known as T-20 is an example of this new approach which blocks HIV from infecting a cell as well as not requiring entrance to cells thus potentially limiting their toxicities to cells. Currently, there is research into a number a steps making up approaches to block HIV from gaining entrance to cells, thereby potentially providing a number of new therapeutic classes to use, which may facilitate new opportunities for those patients highly resistant to current drug classes as and noted, offer therapeutic options to patients with a lower cost of long-term toxicity. Vaccine development will not be discussed here as it is an extensive topic in itself and from a therapeutic point of view has not yielded any benefits for those already infected to date.

In conclusion, practicing HIV medicine in New York City affords my patients and me access to the therapeutic advances which have revolutionized the treatment of this infection, transforming it into a chronic disease, rather than a fatal epidemic. Our current challenges involve encouraging very high levels of adherence to these rather complex medications in order to limit the development of resistance and to cope with the long-term toxicities manifesting in a significant proportion of the patients which may limit the effectiveness of the therapy. Clearly, the next step is to make these life-saving agents available on a global scale and reproduce the kind of results we have seen here in this country.

World Health Organization
Statement by Kerstin Leitner, Ph.D., Assistant Director-General for Sustainable Development and Healthy Environments, WHO

I would like to share with you the work that the World Health Organization has done in the aftermath of this terrible accident. The numbers that you see on this slide show the immediate effect within the first 48 hours. This was truly a tragedy and an emergency.

As we stepped up our work, it brought home, not only to people who work in the public health arena but to all of us, the inherent dangers to human well-being that arise if and when nuclear reactors are not managed carefully throughout their life-cycles, from the design through construction and operation, and eventually until they are closed down. I am from Germany originally, and I can assure you that in my country, Chernobyl has led to a major rethinking in terms of using nuclear power plants for the production of electricity. In fact, by now the government has decided that all existing plants should be phased out and that Germany should rely no longer on nuclear energy as a power supply.

Now, we do know that in many countries, we are still struggling to find a lasting solution for handling the radioactive waste of
nuclear reactors. What this accident has done, has in fact produced something very good. It has given us the opportunity to assess how we need to be prepared in case, hopefully never, similar accidents were to happen. The accident happens on April 26, on the 6th of May, our colleagues in Europe convene the first meeting of leading experts from 11 countries to assess the possible consequences of this accident. On May 10th, WHO, the director general informs the World Health Assembly of the actions taken up to then and receives a mandate from the WHO to continue to work and assess as best we can the countries immediately affected by the consequences. As you can see, the official request for assistance comes at a much later point, so what this slide shows you is that in fact, as a global public-sector organization experts can be convened and will be convened immediately to see what is the most appropriate solution, assistance and support that the international community could and should provide.

In WHO’s case, as a technical agency, we focus our attention on getting medical supplies and equipment, getting specialists’ knowledge to the local agencies so they can respond to the emergency situation, and making sure that we very quickly set up an international program that can support and sustain the further efforts. It was children who suffered first and foremost, therefore, a lot of the research and medical services were focused on attending to their needs.

In the second stage, the strengthening of the epidemiological and medical monitoring system was in focus and centered particularly on those workers involved in the cleanup operations. We started to monitor the long term effects of this accident. We aimed at building international partnerships so that local hospitals and research institutions could work with their international counterparts who were known for their specialization in this field. In this way, as quickly as possible, the necessary knowledge could be transferred to local hospitals and practitioners.

In the third phase, we aimed at making sure that we could have a much more robust emergency response and assistance network in place. Of course, everybody hopes that there will never again be such an accident, but what we also found is that when it happened, we were not at all ready to respond to it. We have established the radiation emergency response and assistance network, which communicates via the internet with a lot of the institutions that continue to do research in the field of radiation accidents. We also have networked the organizations and national administrations that are immediately concerned with the management of this, as in the Ukraine, and have helped to set up the joint emergency radiation management plan, both for the local and international organizations.

There are some 10 organizations who actually have a stake in providing the most appropriate response in such an emergency. Furthermore, we have now developed educational material, medical preparedness and responses, so that in medical schools, in public health institutes, in public health services, people can get better prepared to deal with similar accidents. We have produced a report on the Human Consequences of the Chernobyl Nuclear Accident and a Strategy for Recovery. The United Nations Environment Program (UNEP) is now tasked to put this strategy for recovery into action, to raise funds, to raise the necessary support. We had planning and strategic meetings that led to the production of this document.

We launched the International Chernobyl Research and Information Network, in which several UN organizations participate, and we helped in the preparation of the deliberation at the UN General Assembly in December of 2003 that did in fact lead to a resolution that said that there should be a strengthening of international cooperation and coordination in an effort to study, minimize and mitigate the consequences of Chernobyl disaster.

I would like to also point out that it is not only the immediate physical damage that people have suffered, but clearly by now we know that society has suffered a major trauma. There is still a big problem in dealing with the psychological damage that the accident has caused to the people who live in those areas. But, as often happens, something good comes out of something bad, and we now understand much better where the thresholds of radiation that the human body can withstand are. The WHO documents regarding Chernobyl are available on our website. We hope that this accident is indeed enshrined in the sarcophagus and that never again will we face a similar disaster. If it were to happen again, we
Chernobyl unit 4 after accident

Consequences of the accident

- 28 fire-fighters and staff at the reactor site killed and >560 heavily exposed to radiation
- 400,000 clean-up workers exposed to radiation
- 270,000 living in areas of Belarus, Russia and Ukraine contaminated by radioactivity
- 116,000 people evacuated from heavily contaminated to safe areas
- Stress from the accident and upheaval to lives causing psychological problems in many families
- Many children exposed to radio-iodine (>2000 thyroid cancers in children)
- Human and ecological disaster

will be much better prepared to respond and assist the people who will suffer in such a case.

Statement by the United Nations Development Program to the 13th International Conference on Health and Environment: Global partners for Global Solutions

It is my great pleasure to speak at this international event that keeps the memory of the Chernobyl catastrophe alive for the benefit of us all. I am very pleased to see the interest of young people in a United Nations conference. I hope that you will leave this room with a better understanding of the catastrophe, its consequences, and how one can overcome those consequences.

I'm also delighted to be on the same panel as my dear friend, Ambassador Valeri Kuchinsky, who is really the best advocate of this wonderful country, Ukraine, in the heart of Europe. For those people attending who don’t have that much experience with Europe, Ukraine is one of the largest countries in Europe. In both size and population (47 million), it is comparable to France. It is also extremely talented nation. The country is very important to me. As a native of Hungary and thus a neighbor of Ukraine, I have followed Ukraine’s history and its struggles with great personal interest.

The Chernobyl catastrophe in 1986 contributed to the demise of the Soviet Union. The many days of denial of the catastrophe by the Soviet leadership caused much more harm and much more damage than otherwise would and should have been the case. It helped to speed the downfall of a failed social and economic system because it worsened the social problems that were already so evident in the Soviet Union.

It was also a catastrophe that lacked physical visibility. I have been to the Chernobyl area, and visited the reactor itself. You don’t see anything. Radiation is not a visible enemy. If you have this type of problem in a society like the Soviet Union where information was a very highly centralized public good, the people down there on the ground, those that our programs primarily target, do not understand the true nature or magnitude of the threat. This is an important problem that UNDP, the development arm of the UN system, plans to address in a much more systematic way.

This year UN Secretary General Kofi Annan has decided wisely that, 18 years after the catastrophe, the main emphasis of the UN’s work in overcoming the consequences of the Chernobyl disaster should shift from humanitarian aid to development efforts. This does not mean that there are no longer any humanitarian problems to be addressed. However, in order to help the affected communities in Ukraine, Belarus, and Russia to overcome the consequences (including the psychological ones) of Chernobyl, we are convinced that development assistance is the best path. We need to look forward rather than backward. We need of course to remember the catastrophe and reach out to the millions of people traumatized by it, but the best way to help is by providing a more forward-looking, more optimistic approach to the consequences of the Chernobyl nuclear explosion.

Let me speak briefly about the way we would like to approach the problem. This approach is summarized in an excellent report that UNDP commissioned two years ago to mark the 15th anniversary of the catastrophe, entitled Human Consequences of the Chernobyl Nuclear Accident: A Strategy for Recovery*. This is an outstanding publication that laid the foundations for the UN system to shift to a more development-oriented strategy towards Chernobyl. This shift in approach is also dictated by pragmatic considerations, namely that in the midst of crises in Iraq, Afghanistan, and Sudan, and many other ongoing humanitarian tragedies, the reality is that appeals for funding for Chernobyl on purely humanitarian grounds do not resonate with donors. This may not be a just reaction, but it is a reality for those who are trying to assist affected communities.

It is important to remember, as well, that the assistance provided by UNDP can at best serve as a catalyst, designed to have a targeted impact alongside the enormous budgetary outlays that the affected countries themselves, primarily Ukraine and Belarus, are contributing to their citizens’ wellbeing. What do I mean by a catalyst? First, it is important to show solidarity with the nations that suffered the most. Second, we think that our support should target those areas where we are equipped to provide advice to policy makers and civil servants in the governments of Ukraine and Belarus.

As in all the work that UNDP does, one basic tenet of our approach is to help people help themselves, to develop self-reliance. One of the characteristics of the Soviet system, as the more mature generations in this part of the world are well aware, is its centralization. Centralization tends to promote fatalism among citizens, because they have much less influence over their fate than do their counterparts in more decentralized societies.

That fatalism unfortunately applies to the Chernobyl accident, and it is badly exacerbated by a dire shortage of information. Again, information is a social good; if you decentralize the information flow, you get a better information flow than when it is centralized.

United Nations Development Program (UNDP)

Statement by Mr. Kalman Mizsei, Director, Regional Bureau for Europe and CIS (RBEC) Assistant Administrator UNDP
When I visited the Chernobyl area in Belarus, I witnessed how little people there know about the real extent of the problem. Again, radiation is an invisible enemy. It is easy to exaggerate, but also easy to underestimate the problem. There is great uncertainty about what you can eat, what foods absorb radioactive materials, what the likelihood is of developing different kinds of cancers, and how you can avoid or treat thyroid cancer (a major risk). All of these questions can be better answered if you have better information.

Providing better information requires a very determined joint effort with the governments of the affected countries, as well as UNICEF. In fact, UNICEF is going to take the lead in this effort, by preparing Facts of Life—a popularly written, easy-to-digest booklet—to provide guidelines for people who have remained in the Chernobyl area.

The UN report that I mentioned, Human Consequences of the Chernobyl Nuclear Accident: A Strategy for Recovery, estimates that some 200,000 people still live in the heavily contaminated parts of Belarus and Ukraine, and also in Russia in the Briansk Oblast. It is an interesting paradox that, psychologically at least, some of the people who remained in the heavily contaminated areas have weathered the problems better than those who were resettled. Again, the rigidities of an economic system in transition have caused major discomfort, even for people who were not so heavily affected by radioactivity but had to be resettled for safety reasons. So information is very important.

So is research. Some of the research that is being done on the consequences of the Chernobyl disaster, both within the Chernobyl region and abroad, does not focus on people living in the affected communities. So our aim is also to bridge the gap between scientific research and the day-to-day questions that plague people living in the region.

Another aspect of research concerns the fate of the contaminated regions themselves. It sounds very morbid, but these regions provide a laboratory of very long-term medium-level radiation, something that was not the case in Hiroshima and Nagasaki. This experience was unfortunate and unwanted, but humanity needs to take stock of it. Yet the international scientific community has not yet managed to gain an understanding of what happens to life in an environment like this. We plan to address this issue as well.

Our focus is very much on people, and one issue we face is that of people who had to be resettled from contaminated areas. We would like to address their economic situation in a more systematic way. We realize that it’s much easier to weather the consequences of this tragedy—remembering again that we don’t know exactly what these consequences are because we are working with a shortage of information—if you are blessed with economic prosperity. So we will do a great deal to support the development of small businesses and entrepreneurship. This is already faring quite well in Ukraine, but, particularly in Belarus, we need to do a lot more to support business activity.

The shift in focus of UN efforts on Chernobyl is already yielding results. Just in the past few months we have been able to mobilize $4 million in Ukraine, thanks in large part to contributions from Switzerland, Canada and Japan. Part of this money is going to be directly targeted to the Chernobyl-affected communities through what we call an “area-based development” program, which aims to ignite local development through the activity of citizens. I have visited this project in Ukraine and am very encouraged by it. In Belarus, unfortunately, we have more difficulty in attracting donor interest, but we will persevere here as well. If any of you have ideas on how to attract the support that we have outlined—for information, small enterprise development, provision of healthcare in a more decentralized manner, and so on—we will be delighted to pursue them.

This important event helps us remember the Chernobyl catastrophe and its consequences. Thank you all for your interest, particularly our young generation, where hope always lies.

Thyroid Cancer in Children and Adolescents of Ukraine, Having Been Exposed to Radiation as a Result of the Chornobyl Accident, Mykola D. Tronko, M.D., Director, Institute of Endocrinology and Metabolism, Academy of Medical Sciences of Ukraine, Kyiv, Ukraine

I would like to give an analysis of thyroid cancer incidence rate among children and adolescents (who were aged from 0 to 18 years during the Chornobyl accident) for the Ukraine as a whole, and for the most contaminated regions, as well as to present data obtained in the framework of the Ukrainian-American Project for the study of thyroid cancer and other thyroid diseases in Ukraine following the Chornobyl accident; to consider some aspects of thyroid cancer incidence depending on gender, age, exposure dose, and place of residence at the time of the accident.

A clinical-morphological Register has been established at the Institute of Endocrinology and Metabolism of the Academy of Medical Sciences of Ukraine in 1992, based on statistical reports on the number of thyroid cancer cases in subjects aged 0-18 years at the time of the Chornobyl accident in all the 27 regions of Ukraine, and on a review of medical records of patients having undergone surgical or post-operative treatment at the Clinic of the Institute of Endocrinology. Also, the incidence per 100 thousand representatives of different age populations has been calculated, and a comparison made of the incidence rates for 6 regions of Ukraine being the most contaminated by iodine radio nuclides (Kyiv, Chernihiv, Zhytomyr, Rivne, Cherkassy regions, and City of Kyiv), and the other 21 regions of Ukraine for the period 1986-2002. The Register data are regularly renewed by adding extra information.

When assessing the Register’s data by age at the time of the accident, it should be noted that for the post-Chernobyl period
(1986-2002) 2674 cases of thyroid cancer in patients born in 1968-1986 (0 to 18 years at the time of the accident) have been registered; among them 1887 were children aged up to 15 years during the accident (0 to 14 at the time of the accident), and 787 were adolescents aged 15 to 18 years. The increase in the number of thyroid cancer cases was the most pronounced in those who were children aged up to 15 years during the Chornobyl accident.

Calculation of the incidence per 100 thousand children aged 0 to 14 years (at the time of the accident) showed that for the Ukraine as a whole this indicator was 0.12 in 1986-1989. In 1990-1995 it has increased by 5.8 (0.70), and in 1996-2001 by 13.8 times (1.65) as compared to the period 1986-1989. In 2002 the incidence in children's cohort at the time of the accident (2.16) was 18.0 times higher than in 1986-1989.

The number of cancer cases per 100 thousand adolescents' population (15 to 18 years at the time of the Chornobyl accident) points out that over the period under study, the incidence has increased in this age group less markedly: 0.45 in 1986-1989; 1.40 in 1990-1995, and 2.51 in 1996-2001. In 2002, the incidence in children's cohort at the time of the accident (2.16) was 18.0 times higher than in 1986-1989.

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If we consider the incidence separately for children who were exposed following the Chornobyl accident (born before 1987), and those having not been exposed (born in 1987 and later), it is evident that in the group of exposed children there is no decrease in the incidence for the period 1990-2000, and, on the contrary, in 1998-2000, the highest indices have been reported in this group.

There is also a marked difference in the incidence between 6 and 21 regions during the period 1990-2000 among children who were exposed following the Chornobyl accident (born before 1987). In the 6 most affected regions, thyroid cancer incidence in adolescents exceeded that for the rest of the territory of Ukraine in 1990-1995 by 2.7 times (1.55 vs. 0.57), in 1996-2001 by 5.0 (3.83 vs. 0.76), and in 2002 by 7.1 times (4.35 vs. 0.60). Thus, a difference in adolescents' incidence between 6 and 21 regions increased with the time elapsed after the accident.

In the 6 most affected regions thyroid cancer incidence among young adults (at the time of surgery) exceeded that for the rest of the territory of Ukraine in 1990-1995 only by 1.8 times (1.72 vs. 0.95), in 1996-2001 by 2.5 times (4.00 vs. 1.57), and in 2002 by 3.4 times (5.88 vs. 1.73). Thus, the difference in adults' incidence between 6 and 21 regions is lowest compared with children and adolescents, and becomes more significant beginning from 1998.

An analysis of the 2674 patients included in the Register, who were aged 0 to 18 years at the time of the accident, has shown that the most vulnerable group was represented by children aged from 0 to 4 years during the accident, their thyroid gland being most sensitive to radioactive iodine. As shown by this figure, the part of these children is rising with increasing time elapsed after the accident.
An analysis of thyroid cancer incidence depending on the thyroid radiation dose in the most contaminated northern regions of Ukraine has been conducted. The mean age-related thyroid exposure dose has been estimated, taking account of the place of residence at the time of the accident. This analysis has shown that beginning from 1990 among children aged 0 to 4 years at the time of the accident, a steady rise in excess incidence was noted practically in all dose zones. The most significant increase was reported for the zone with the highest mean exposure level (~1 Gray and more). For those subjects who were aged over 4 years during the accident, the rise in excess incidence was less pronounced.

Allow me to dwell on certain results obtained in the framework of the Ukrainian-American Thyroid Project. According to the Project, the study cohort of 13,227 subjects, who had direct measurements of thyroid activity in 1986, was divided into three groups: low dose group “A” (thyroid exposure doses from 0 to 0.3 Gray), middle dose group “B” (doses from 0.3 to 0.99 Gray), and high dose group “C” (doses from 1 Gray and more).

As of April 1st, 2004, among 13,227 cohort subjects, 75 thyroid carcinomas have been detected, among which 46 in the first cycle, 26 in the second, and 3 cases in the third cycle of medical screening. Also, 34 cases of benign surgical thyroid pathology have been reported (31 in the first cycle, two in the second cycle, and one case in the third cycle of screening). As to their place of residence at the time of the accident, patients with thyroid carcinoma (identified both by the first, second, and third screenings) were distributed as follows: 36 were residents of Chernihiv oblast, 20 of Zhytomyr oblast, and 17 of Kyiv oblast. The prevalence per 1000 screened subjects among 7542 representatives of low dose group “A” was 1.33; among 3450 subjects of middle dose group “B” it was 3.48, and among 2235 representatives of high dose group “C” it was equal to 10.7. Thus, prevalence of thyroid cancer cases is rising with increasing exposure dose.

An analysis of cases from the second screening has shown the same tendency, though less pronounced. On the whole, this index was 3.48 cases per 1000 screened subjects in the first cycle, 2.1 in the second cycle, and 0.5 in the third cycle of screening. 3 patients with thyroid carcinoma identified among 6048 screened subjects in the third cycle, belonged: one to the group “A”, one to the group “B”, and one to the group “C”.

Conclusions:
- After the Chernobyl accident, during the period 1990-2002, we have observed a significant increase in the number and incidence of thyroid cancer cases in the cohort aged 0-18 years at the time of the accident, especially in children aged 0-14 years at the time of the accident.
- By their age at surgery, an increase in thyroid cancer incidence was also observed in all age groups: children until 15 years, adolescents 15-18 years, and young adults aged more than 19 years. The rate of growth of the incidence was the highest in children having been operated at the age up to 15 years, and it was reported beginning from 1990. The rise in the incidence occurred mainly at the expense of the 6 above regions of Ukraine having the highest levels of contamination by iodine radioisotopes following the Chernobyl accident.
- First and second cycles of screening examinations performed in the framework of the Ukrainian-American Thyroid Project have revealed a high prevalence of thyroid cancer among the study subjects. 46 cases among 13,227 persons who have had screening examination have been detected by the first screening, and 26 additional cases out of 12,419 subjects by the second screening, which represent 3.48 and 2.1 cases per 1000 screened individuals, respectively. Also, 3 cases of thyroid cancer among 6048 screened subjects have been found by the third screening.

In conclusion, it should be stressed that the data obtained need further study and a very careful analysis so as to answer the question of radiation impact on the development of thyroid cancer.

Reproductive Health Effects of the Chernobyl Nuclear Accident

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I am going to give a general background on the reproductive effects of ionizing radiation, talk specifically about known about the effects of the Chernobyl accident on the populations, and divide that into the discussion of the populations most immediately affected in the area and those at greater distance.

There are several pathways by which we might ask about the effect of ionizing radiation on reproductive health and populations. One of these concerns the exposure to non-pregnant adult females. Females, as soon as they are born, carry all of the ova, or eggs, they will ever have so that exposure at any point in their lives could potentially could do harm to their ability to have a successful pregnancy. Secondly, there is concern regarding both near-term and long-term effects to sperm when adult males are exposed to ionizing radiation, and that can affect fertility, as well as possibly affecting the health of the offspring.

The greatest attention is typically directed towards pregnancies and the effect on the fetus in stages of development. There are a number of problems that can result from toxic exposures incurred during a pregnancy. There can be a loss of the pregnancy, that is, a miscarriage or a stillbirth. There are concerns about congenital malformations, birth defects, children that are born with serious health problems from the time of birth, concerns with fetal growth and also long-term effects on intellectual, cognitive and psychological development that may show up somewhat later in life. Sterility, the inability to reproduce later in life, is another concern.

This is a summary of some of the laboratory evidence regarding what ionizing radiation has been shown to do in experimental studies. There has been a great deal of experimental research on rats and mice to understand better the consequences of this agent. Basicall, if there is an exposure early in life, that is pre-implantation, before the fetus develops, the main effect is the loss of the pregnancy or death of the fetus. If there is exposure somewhat later, these exposures can result in birth defects, a live-born child that has a defect. As you progress and have the exposure later and later, it is less often fatal, but more often will have lasting consequences, either through malformations or as
problems in neurological development.

We know a fair amount about the human experience with ionizing radiation. The studies of atomic bomb survivors at Hiroshima and Nagasaki continue to this day to show effects, as do studies of medical radiation exposure in patients, particularly in past periods when exposure levels were much higher. Such exposure had very distinct, adverse and unintended consequences. Finally, we actually have variation even in the natural background radiation across the world and are able to sometimes learn something from examining that pattern.

Now in asking about the effects of radiation from Chernobyl, we are certainly interested in the direct effects of ionizing radiation. What have been the consequences to the physical health of these populations from that exposure? There is a series of populations who might experience reproductive health consequences from the disaster. Certainly, the workers that were present at the time of the accident, although obviously there would be very few, if any who would be pregnant at the time or conceiving soon after. Liquidators constitute a larger worker population that was exposed to substantial levels of ionizing radiation, and then there are a series of populations at increasing distance: the nearby populations in the countries affected most directly; the remainder of those populations; much more distant populations in Northern and Western Europe where there was measurable exposure in countries such as Finland and Sweden.

With workers, delayed reproductive effects are rather unlikely as it is unlikely that there would be any pregnant workers at the time of the event. But as you look towards the general populations there is concern with a range of adverse reproductive effects from the loss of pregnancy, birth defects and so on. Another indirect effect had to do with women who because of this disaster feared for the health of their offspring and chose as a result of that to have an induced abortion. One of the clearest manifestation of a reproductive effect, and one that should not be neglected, is a reduction in live births following this event. The public concern, almost independent of dose, was experienced throughout much of Europe, and there was a reduction in live births from delayed conception. That is, individuals felt that because of this disaster, it was not a good time to have children.

The long-term consequences on the liquidators, from examining endocrine functions and semen quality in the men who had been exposed, indicate that there were, overall, very modest differences unrelated to the radiation doses. However, since the assessment that was done some 7 to 9 years after the exposure itself, if there had been an adverse affect that was shorter in duration it would not have been something that could have been detected so many years afterwards.

Most of the research on the general populations has been focused on spatial and temporal variation, that is looking for patterns in populations that, because of where they lived, were getting a higher exposure nearer in time to when the accident occurred. The studies look for changes in those patterns, that is for some sort of a signal in which there is a higher rate of adverse reproductive outcomes in those places and times that had the highest exposures. This is a reasonable approach, but does have a real limitation, that is that it requires that there be accurate and complete assessment of these events before and after the event. In many of the most heavily affected areas there were not good registries in place to detect all the birth defects, for example, lacking detailed health information collected in a systematic way. One of the concerns in fact is that after the event, it is quite possible that people started being more attentive and looking harder for these problems, and it makes it very difficult to interpret when you do see an increase whether it was caused by the accident itself or simply by doing a better job of identifying these events. Of course, there are other conditions that were affected beyond the accident itself. There are many indirect effects.

We know a lot about ionizing radiation, and according to most of the evidence form other populations, the effects of exposure for the European population in general would be expected to be very small, probably too small to detect through these methods. This doesn’t mean effects are absent. It simply
overall there was not a pattern across Europe that suggested there was measurable increase in birth defects. There was also some suggestion of neural-tube defects, a particular kind of nervous system defect, increasing in the Turkish population.

There is a continuum between the health of a pregnancy and the health of the child, and exposures during pregnancy can have lasting effects, particularly on neural development. One of the ways that can occur is if there is damage to the thyroid, there can be damage that results in reduced or poor neurological and psychological development. One of the more sophisticated studies looks at this among children in Belarus compared children who had been exposed to radiation as fetuses when in utero, with unexposed children and found an indication of a reduced IQ, reduced intellectual development at the age of 6. However, those effects tended to go away a little bit later as the children got older. They also found some indication that because of the parental anxiety surrounding this disaster that there was some suggestion that emotional development in children could be affected. Again, this is a very plausible pathway, that as parents are concerned it certainly has an effect on the development and well-being of their children.

In closing, I want to say something about what we don’t know, and that unfortunately with the passage of time we might never know with certainty. There is very limited research of a high quality on the most exposed populations, the workers, and the nearby populations. The distant populations in Western and Northern Europe have been very carefully monitored, but it is highly unlikely that we would see any effects at these distant sites, even with the modest increase in exposure. Finally, the indirect effects are difficult to sort out, and in a sense might not be important, but when you see consequences following the Chernobyl accident, you can’t automatically attribute it to radiation. You have to consider that the other effects on the population; the disruption of services, the effects on behavior and so on, may be a plausible cause.

I will close with this quote from a very thorough review of literature up to that time in 1993, “There is no consistent evidence of a detrimental physical effect, (notice how it’s circumscribed, physical effect) of the Chernobyl accident on congenital anomalies or other measured outcomes of pregnancies. There is evidence of indirect effects, an increase in induced abortions substantial enough to show as a reduction in total births due to the anxieties created.” I would just add that this may well not be, or may not have been the only consequence of the other non-radiation aspects of the Chernobyl accident.

I AM DAVID
Film produced by Walden Media

The film "I am David", which was screened at the United Nations on April 30, 2004, reflected both the goals of the conference and the work of the United Nations High Commissioner for Refugees (UNHCR). This inspiring movie, with its splendid cast and vivid pictures of the good and the bad in Europe during the early days of the Cold War, educates as it lifts the heart.

Based on Anne Holm's 1963 novel of the same name, the film tells the story of David, a 12 year old boy who early in life is enslaved along with his father in a Communist labor camp in Eastern Europe. Having learned to mistrust practically everyone, David manages to escape the camp and begins the difficult trek crossing Eastern Europe to safety in Denmark, and his mother.

On his own, David must readjust his views of the world, whom he can trust and whom he can't. As he travels through Italy, towards his destination, David learns to protect his new found freedom and also learns to share, love and care about others.

Ben Tibber, who plays David, conveys the alienation that David faces through his fateful trip. The film's writer/director Paul Feig puts his protagonist into diverse landscapes that capture the tension and danger of the youth's "coming of age" experiences.

Because "I am David" exemplifies the current 40 million people classified as refugees around the world, UNHCR and Walden Media have partnered to educate audiences about the plight of the world's refugees, especially children and youth. The film, which is now being circulated through smaller educational venues and high schools, will be shown in theaters in early October, 2004.
World Information Transfer is a Non-Profit, Non-Governmental Organization in General Consultative Status with the United Nations, Promoting Health and Environmental Literacy.

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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