

AIDS — dramatic surge in ex-Soviet Union, no respite worldwide, new data show

The Russian Federation and other parts of Eastern Europe are facing a major AIDS crisis according to the latest HIV/AIDS figures released last December by the Joint UN Programme on HIV/AIDS (UNAIDS). Although sub-Saharan Africa has still the highest number of cases, some of the largest recent increases have been in the Russian Federation, the UNAIDS report says.

Latest research suggests the number of people infected with HIV in Eastern Europe and the former Soviet Union has jumped to 700 000, a rise of nearly 70% in the space of a year. Most of the increase is due to injecting drug users. The worst affected countries, in descending order of numbers of people living with HIV/AIDS, are Ukraine, the Russian Federation, Belarus, Republic of Moldova, and Kazakhstan.

Vadim Pokrovsky, director of the Russian Centre for the Prevention of AIDS, predicts that one million Russians will be infected with HIV within two years: "Given the existing growth trend in the number of HIV cases, Russia will have millions of HIV cases in two to three years time," he said.

For Neff Walker, epidemiologist with UNAIDS, "the big surprise is what has

happened in Eastern Europe. To see the epidemic suddenly take off as it has in Russia was a shock."

Sub-Saharan Africa, however, has still by far the biggest AIDS problem. Nearly 9% of adults there are living with the infection or the disease, vs a worldwide adult prevalence rate of 1.1%. Former South African President Nelson Mandela warned in a World AIDS Day message: "We are facing a silent and invisible enemy that is threatening the very fabric of our society". But not all the news from Africa is bad. "For the first time, there are signs that HIV incidence may have stabilized in sub-Saharan Africa," the report says. New infections there in 2000 totalled about 3.8 million vs 4 million in 1999.

Asia is a cause of growing concern. With 0.6% of the population living with HIV/AIDS in South and South-East Asia, it is the most affected region after Africa. Dr Chris Beyrer, director of the Johns Hopkins Fogarty AIDS International Training and Research Program, says: "Now at risk are some of the largest human populations. The window of opportunity to respond to HIV in Asia is narrow and closing. The time for action is now."

The UNAIDS report says that industrialized countries are facing a different type of AIDS problem — complacency due to the mistaken belief that the disease can now be easily treated with drugs. The result is that "in high-income countries prevention is faltering," the report says. "Risk behaviour is undeniably on the rise in some communities."

"In the developed countries, people in some communities may engage in more risk behaviour because they have a mistaken belief that the new drugs will solve the problem," commented Dr Walker in an interview. "But we don't know how long these drugs will work and for some people they don't work. The virus can also mutate and become resistant, so we don't know what the long-term prospects for these treatments will be." ■

Roger Dobson, *Abergavenny*

Tannery pollution threatens health of half-million Bangladesh residents

About half a million residents of the Bangladesh capital, Dhaka, are at risk of serious illness due to chemical pollution

from tanneries near their homes, according to a report released last year by the Bangladesh Society for Environment and Human Development (SEHD). The report says large numbers of the 8000–12 000 workers at the tanneries suffer from gastrointestinal, dermatological and other diseases that could be related to the pollution and that 90% of them die before the age of 50 vs less than 60% for the country as a whole. About a quarter of these workers are under 11 years of age.

The affected area is Hazaribagh, a community in the south-east corner of Dhaka, where 240 tanneries are located on 25 hectares of land, the report notes. Most of the tanneries are 30–35 years old and use mineral tanning processes that discharge about 6000 cubic metres of liquid effluent and 10 tons of solid waste every day, according to figures from the Bangladesh government and the Food and Agriculture Organization.

Chromium, the SEHD report says, is one of the most harmful chemicals found in the tannery waste because of its carcinogenic potential. Acidic effluents, it adds, can cause severe respiratory problems. Gaseous emissions from the tanneries contain sulfur dioxide that is converted into sulfuric acid on contact with moisture and can damage lungs. "You only have to see the corrosion of iron that has occurred in buildings and sheds in the area, to realize what these people are exposed to," says Han Heijnen, WHO's environmental health adviser in Bangladesh.

The SEHD report says that 58% of the tannery workers suffer from gastrointestinal disease (vs 24% for the country as a whole), 31% from dermatological diseases (vs 9%), 12% from hypertension (vs 0.9%) and 19% from jaundice (vs 0.07%).

A recent article in a Bangladesh newspaper, *The Independent*, says that "residents in the Hazaribagh area have been complaining for a long time that the tanneries emit bad odour and pollute the air beyond tolerable limits".

A local environmentalist group urged the government a few years ago to move the tanneries to a less populated site, Mr Heijnen told the *Bulletin*. "The proposal was opposed by industrial interests." Two years ago, the United Nations Industrial Development Organization recommended installing a plant to treat the tannery waste but, says Mr Heijnen, "beyond debating

Global summary of the HIV/AIDS epidemic, December 2000

People newly infected with HIV in 2000

Adults	4.7 million
Women	2.2 million
Children < 15 years	600 000
Total	5.3 million

Number of people living with HIV/AIDS

Adults	34.7 million
Women	16.4 million
Children < 15 years	1.4 million
Total	36.1 million

AIDS deaths in 2000

Adults	2.5 million
Women	1.3 million
Children < 15 years	500 000
Total	3 million

Total number of AIDS deaths since the beginning of the epidemic

Adults	17.5 million
Women	9 million
Children < 15 years	4.3 million
Total	21.8 million

the matter, authorities have done nothing concrete so far". He adds: "Observers from abroad sometimes fail to realize that these environmental problems, which are serious and widespread, compete with a multitude of other health and environmental problems that have to take priority in a country with very limited resources."

Another environmental problem on Bangladesh's to-do list is arsenic contamination of ground water used for drinking, which a recent article in the *Bulletin* (Vol. 78, No. 9, 1093-1104) called "the largest mass poisoning of a population in history". ■

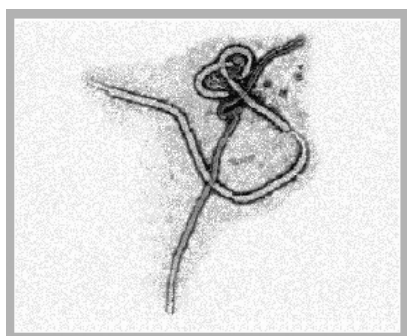
John Maurice, *Bulletin*

Experimental vaccine protects monkeys against Ebola virus

Scientists have created a two-part vaccine that has protected monkeys from the deadly Ebola virus, they reported in the 30 November 2000 issue of *Nature*.

One part of the vaccine consists of DNA, "naked DNA", coding for several Ebola virus proteins from the three strains of the virus — *Zaire*, *Sudan*, and *Ivory Coast* — known to cause disease in humans. This part is given in three monthly injections to "prime" the immune system of the vaccine recipient. The second part consists of an adenovirus, divested of its disease-causing potential, that carries a *Zaire* Ebola gene — one of the same genes contained in the prime part of the vaccine — into the cells of the vaccinated host. This second part of the vaccine, given 12 weeks after the initial priming series of injections, is designed to boost the immune response.

In the study, which was conducted by a group headed by Gary J. Nabel, director of the Vaccine Research Center at the National Institutes of Health (NIH) in Bethesda, Maryland, the "prime-boost" DNA vaccine protected all four vaccinated monkeys against lethal doses of the *Zaire* strain of Ebola virus. The monkeys were without symptoms or detectable virus 6 months after infection. The researchers



plan to test the vaccine against the other two strains.

This is believed to be the first report of successful immunization of primates against Ebola. In earlier experiments performed at the University of Michigan and also by the NIH group, a similar DNA vaccine protected mice and guinea pigs.

"There is still some way to go before a human vaccine is available, but this is a step in the right direction," noted Dennis Burton and Paul Parren, of the California-based Scripps Research Institute in La Jolla, California, in a commentary in the same issue of *Nature*.

Dr Nabel told reporters that the prime-boost vaccination approach is "a highly effective way to boost immunity to otherwise deadly viruses". It is being tested in an experimental AIDS vaccine and could, he believes, be applied to infections such as malaria or tuberculosis. ■

Scott Gottlieb, *New York*

Treaty bans pollutants but allows DDT for malaria

After two-and-a-half years of discussions, in December negotiators for 122 governments meeting in Johannesburg, South Africa, finally agreed on the text of a legally binding convention that will ban or restrict the production and use of a dozen so-called persistent organic pollutants known to be damaging to human health and the environment. The week-long meeting was sponsored by the United Nations Environment Programme, with technical input from WHO.

The convention, when it is signed in May at a high-level ceremony in Stockholm, will allow DDT, one of the "dirty dozen" as these highly toxic chemicals have been dubbed, to continue to be used for control of malaria until suitable alternatives are found. The other 11 pollutants are polychlorinated biphenyls, dioxins, furans, aldrin, dieldrin, endrin, chlordane, hexachlorobenzene, mirex, toxaphene and heptachlor. Most of these pollutants are known to be damaging to health to various degrees and in various ways — promoting cancer, damaging the central and peripheral nervous systems, causing reproductive disorders, disrupting the immune system and interfering with normal infant and child development.

"The special status accorded to DDT is excellent news for the Roll Back Malaria partnership and for WHO," John-Paul Clark, the partnership's policy adviser and chair of WHO's working group on DDT, commented to the *Bulletin*. The Roll Back Malaria

partnership, involving several international organizations and humanitarian agencies, was set up two years ago to halve the world's malaria burden over the next decade.

Indoor spraying of DDT was the cornerstone of WHO's partially successful malaria eradication programme in the 1940s to 1970s. Since the 1970s, most countries have outlawed DDT for agricultural use. In 1997, the World Health Assembly, responding to growing public concerns over the possible ecological and health effects of DDT, called on WHO Member States to reduce their reliance on insecticides for control of vector-borne diseases, like malaria. Several countries have begun phasing out DDT use and only two, China and India, still produce it. Today, as one of the least expensive yet effective means of combating the mosquito vector of malaria, it is still the insecticide of choice for malaria programmes in about two dozen countries, all among the world's poorest.

The new convention must be ratified by at least 50 countries. It stipulates that every three years countries using DDT must inform the treaty secretariat and WHO about how much they use and specify the extent to which such use is essential for their efforts to combat malaria. The convention also calls on all treaty signatories to provide support for research on alternative insecticides or other antimalarial tools and strategies and to provide technical and financial assistance to countries trying to wean their malaria programmes off DDT.

"By allowing the use of DDT specifically for the control of malaria vectors and at the same time promoting the development and use of alternative antimalaria strategies that don't require insecticides, the convention achieves a win-win situation both for the environment and for public health," said Dr Clark.

Already, through a regional initiative orchestrated by the Pan American Health Organization, eight Central American countries — Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama — have raised US\$ 750 000 towards reducing their dependence on DDT. Similar projects are due to start in Africa and Asia. ■

John Maurice, *Bulletin*

Mental illness and smoking show strong links

Mentally ill Americans are nearly twice as likely to smoke as those without mental illness, according to a study reported in late November in the *Journal of the American*