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## Childhood environmental health concerns in Russia

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## Childhood environmental health concerns in Russia

V. Furman, N. Lebedeva and A. Biran, Russia

ENVIRONMENTAL HEALTH CENTRE (EHC) is one of the few Russian organisations responsible for the development of environmental epidemiology and health risk assessment methodologies in Russia. Being a WELL resource centre network partner we considered the possibilities for environmental interventions to address major causes of child mortality and morbidity and environmental health concerns in Russia. It was based on the results of the preliminary scoping studies carried out by our Centre during May – October 2002. The scoping studies themselves were based on published and unpublished literature and on consultations with key stakeholders.

Each of the scoping studies concluded with initial recommendations for further priorities in work for the next four years. The most important thing for us was the identification of environmental health problems, which are meaningful but not under proper consideration in responsible agencies or organisations in our country and assessment of the possibilities for environmental interventions to address those problems.

### Findings of the scoping studies

As a result of analysis of a number of national and regional acts, statements, reports and other documents a wide spectrum of environmental health problems in the Russian federation were identified. These included the microbiological and chemical contamination of drinking water and food products, ambient and indoor air pollution, traffic and industrial accidents and radioactive pollution in specific regions. Discussions with a number of stakeholders reaffirmed the perceived importance of these problems. However, prioritising these concerns, both for the whole of Russia and for different regions within the country, is difficult. Not only are there few professionals with training in environmental epidemiology and health risk assessment, but the data available at local and regional levels is thought to be unreliable and raw, primary data is not accessible to allow verification.

### Child survival

There is still a very high level of maternal and infant mortality in Russia. Two years ago the Russian parliament recognized that the state policy in the field of protection of maternal and child health was ineffective. There has been a rise in alcohol and drug abuse, leading to an increase in children with mental disorders. Disorders of reproductive functions of women and an increase in morbidity among pregnant women has caused a decrease in normal deliveries

and an increase in the number of prematurely born children.

The proportion of child mortality in Russia attributed to different causes varies slightly between regions. However, the relative importance attributed to different causes remains consistent. Acute respiratory infections emerge as the leading cause of deaths in the 0 to 1 year age group, followed by diarrhoeal disease and congenital abnormalities, appearing in the perinatal period.

Infant mortality has stagnated during the last 5 years in the Russian Federation at around 18 deaths per 1000 live births. In a regional aspect the level of infant mortality is 25% higher in 12 regions of the Russian Federation, which are considered environmentally unsafe in comparison with the other environmentally favorable regions. Nevertheless it is considered that the major cause of high level of deaths among infants is an ineffective public health service especially as a result of poor intranatal and perinatal medical assistance. Almost all stakeholders whom we interviewed during the scoping study confirmed it.

The feeling amongst the stakeholders consulted is that the state is more inclined to take an interest in the problems of infant and maternal mortality, but tends to regard the health of children from the age of 1 year as the responsibility of individual families.

There are few publications and little research related to the causes of mortality in children aged 1-4 years, however accidental poisoning, drowning and other accidents are suggested to be a major cause of childhood mortality in Russia.

Accidents and injuries are a significant component of the 'other' causes of childhood mortality. Childhood accidents and injuries is an area in which there may be potential for environmental interventions, but about which knowledge is limited. One PhD thesis on causes of death in a Russian city reports 23.9% of childhood deaths from accidents, poisonings, traumas and burns (Korchagina 1997). The poor suffer the highest rates of childhood deaths. The Federal Programme of Scientific Research and Engineering Works (2001) recognises that child mortality is generally worse in rural areas, and is highest amongst the indigenous populations of the far north of the country. Here it is reported to be 1.7 times the national average.

### Environmental health concerns

The National Environmental Health Action Plan (NEHAP) (Ministry of Health, 2001) also suggests a rank order of

priority for environmental health problems. As causes of mortality, traffic accidents and ambient air pollution are ranked highest, with 30,000 and 22,000 attributed deaths annually. The two leading causes of morbidity listed are microbiological contamination of water and food products, and ambient air pollution. The first of these is thought to result in over 400,000 cases of gastro-intestinal infections annually, and the second between 240,000 and 370,000 cases of respiratory disease annually.

There are a number of regions in the Russian Federation where the situation with drinking water is not satisfactory and regional programmes on the improvement of water supply systems and quality of drinking water are currently under way. In Russia 27.9% of public and 40.4% of industrial water supply systems till now have incomplete treatment systems and 12.3% and 28.3% correspondingly do not have disinfection.

In rural areas 78% of water supply systems are using underground water, most of them are obsolete and supply water of poor quality. 23% of all decentralized water supply sources do not meet Russian sanitary standards. There is a strong tendency of growth of outbreaks of waterborne gastro-intestinal diseases (112 in 1997 to 168 in 2000). [State report on "Sanitary and epidemiology situation in the Russian Federation in the year of 2000", 2001]

There are two main agencies responsible for the provision of safe drinking water in Russia. These are Gossanepidnadzor (a state-wide department within the Ministry of Health) and Vodocanal (a municipally-owned enterprise, regulated by the state). Gossanepidnadzor is responsible for monitoring drinking water quality at the tap and Vodocanal is responsible for water treatment facilities and within the distribution system. The patterns and relative importance of chemical and microbiological pollution of drinking water vary across the different regions of Russia. Less is known about microbiological pollution. *Cryptosporidium* has recently been recognised as one of the causes of gastro-intestinal infections associated with drinking water quality in Russia (Ford et al, 1999), and has been found in samples from the water supplies of a number of cities. However, the scale of this problem is not known. The secondary contamination of water and re-growth of pathogens within the distribution systems is also thought to be a problem. Concern is growing over the health risks posed by the by-products of disinfection. These are frequently found at concentrations in excess of the standards used in the United States. Several of these by-products are believed to be associated with cancers, birth defects and spontaneous abortions.

A number of federal programmes and legislative acts exist with the aim of improving the health of children. For example clause 28 of the Federal Act About Sanitary and Epidemiological Well-being of the Population, adopted by the State Duma on March 12<sup>th</sup> 1999, states that in all schools and kindergartens there should be programmes of preventive health care and health promotion.

In order to begin to address the environmental health problems identified, NEHAP includes research and the development and implementation of guidelines in a number of areas. These include:

- Identifying the hazards and exposures associated with polluted air and drinking water.
- Standardising the methods of collection and analysis of pollutants.
- Identifying the priority pollutants in drinking water and assessing their impact on health.
- Studying particulate pollution in cities with different types of industry and different climates.
- Developing guidelines and expertise for the use of health risk assessment for environmental hazards and the risks posed by drinking water quality.
- Studying the health impact of disinfectant by-products in drinking water.

Particular attention is also given to the need to train environmental health specialists in environmental epidemiology and health risk assessment for priority setting in decision making.

A lack of funding means that many government actions have amounted to declarations of intention rather than actual programmes of work. There is however, at least on paper, a commitment by the state to improving the health of nation and children especially.

#### **Proposals to address the concerns**

The health of children, in contrast to that of infants, appears to be a largely neglected area in Russia, and the environmental influences on children's health in particular has received little attention.

#### **Register of child accidents and traumas**

Drowning, poisoning and other accidents emerge as important causes of childhood deaths in Russia. However, little information is available on the causes or epidemiology of accidental childhood deaths in the country. The primary data on the causes of accidents are collected in local and regional hospitals and clinics. There is no centralised database. The value of developing a register of child accidents and traumas has been recognised and discussed within the Ministry of Health, but no practical action has been taken. An information and reporting system could be developed as a first step to understanding and addressing these causes of death.

The Ministry of Health of the Russian Federation, the Scientific Research Institute of hygiene of children and teenagers of the Scientific Centre of children health, and the Russian Academy of Medical Sciences are interested in the development of a register of accidents, poisonings and traumas of children. The development of this register could be justified under a statement of the Federal Government (Federal Government, 2001).

### Reporting and information system

EHC has proposed to help develop a reporting and information system for childhood accidents in Russia. This would be done in collaboration with the Ministry of Health, local and regional hospital staff and other stakeholders. In order for this work to progress in collaboration with key stakeholders in Russia, it will be necessary to write a detailed protocol setting out the scope, process, outcomes and timeframe for the work. The development of this protocol would be a useful process in itself. A first step in this process would be to review existing systems operating in other countries and to prepare a short proposal to share with key stakeholders in Russia.

### Water safety plans

Drinking water quality in Russia is clearly a matter of concern. The risk-based approach to setting targets for drinking water quality, and the management of drinking water supply based around a Water Safety Plan - as proposed by WHO in the draft water quality guidelines for 2003 - are of interest to the Ministry of Health. WHO has also expressed an interest in seeing this approach developed for use in the Russian region. This approach would also allow the risks associated with disinfection by-products in drinking water to be considered in a balanced framework and compared with the risks posed by microbiological contamination.

It might be desirable to pilot the approach in one of the major cities. However, at present little is known in Russia about the concept of Water Safety Plans, and the use of quantitative risk assessment is not accepted as valid by all stakeholders. A useful and important first step would therefore be to review existing materials relating to drinking water quality and Water Safety Plans and to summarise current thinking on the subject for key stakeholders in Russia.

### Dissemination and training

Dissemination could take the form of a short concept note in Russian and a preliminary workshop with stakeholders at which these ideas could be presented and discussed.

There is a great need for training of Russian professionals in environmental epidemiology, health risk assessment and statistical methods in order to improve decision making in environmental health. With this in mind, the teaching and guidance materials currently available in Russia and abroad could be reviewed. Following this, in consultation with Russian institutions such as the Gossanepidnazor and the Environmental Protection Committees, the existing materials could be revised or new materials written. These materials could then contribute to short taught courses for professionals from interested agencies.

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